

- जग्गा प्राप्ति ऐन २०३४ संग सम्बन्धित बिषयबस्तु, विश्लेषण र बिगतको प्रश्न र सम्भावित प्रश्नका उत्तरहरू पेज १७
 - नेपालमा विकास निर्माणका कार्य जस्तै सडक, सिंचाई आदिका संरचनाहरू निर्माण गर्ने प्रयोजनका लागि जग्गा प्राप्त गर्दा अपनाउनुपर्ने कानूनी प्रक्रियाका बिषयमा उल्लेख गर्नुहोस् ।
 - जग्गा प्राप्ति ऐन २०३४ मा पुनर्बास सम्बन्धि नीतिको संरचनाको सन्दर्भमा जग्गा प्राप्ति ऐनमा गरिएको व्यवस्थाहरू बारे उल्लेख गर्नुहोस् ।
 - अनिच्छित पुनर्बास सम्बन्धमा दातृ निकायका नीतिहरू के के हुन् । अनैच्छिक पुनर्बास तथा अधिग्रहण बारे नेपाल सरकार र दातृ निकायहरूको नीतिहरूको तुलना गर्नुहोस् । राष्ट्रिय नीतिहरूमा रहेको अन्तर (gaps) तथा सीमाहरू घटाउने उपायहरू के के हुन् सक्छन ।
- सार्वजनिक सडक ऐन २०३१ विश्लेषण र बिगतको प्रश्न र सम्भावित प्रश्न र उत्तरहरू २४
- बिदेशी लगानी तथा प्रविधि हस्तान्तरण ऐन, २०७५ विश्लेषण र बिगतको प्रश्न र सम्भावित प्रश्न र उत्तरहरू २६
- निजी सार्वजनिक ऐन/नियम संग सम्बन्धित बिषयबस्तुहरूको विश्लेषण र बिगतको प्रश्न र सम्भावित प्रश्न र उत्तरहरू
 - What is the factor which are dissuading private sector investor to invest in road projects? How to attract or solicitate private sector investment in road sector? what is to be done by Government and Private Sector.
- नेपालमा वातावरणीय अध्ययन र प्रचलित नीति र कानुन/नियमहरू (वातावरण संरक्षण ऐन, २०७६ र नियमावली २०७७) संग सम्बन्धित बिषयबस्तुहरूको विश्लेषण र बिगतको प्रश्न र सम्भावित प्रश्न र उत्तरहरू ५५
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 - EPR and EPR विकास निर्माणमा Hurdles गरेको छ त? सुधारात्मक प्रयत्नहरू के के हुन् ?
 - EPA र EPR मा सुधार गर्नुपर्ने केहि बिषयबस्तु
- वातावरण मैत्री सवारीसाधन सम्बन्धि हालको व्यवस्था चर्चा गर्दै यसलाई प्रभावकारीरूपमा लागू गर्न के कस्तो कार्यनीति/सुधार आवश्यक छ ? 71
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- DoR Strategy, 1995 (Summary of Strategy) सम्बन्धित बिषयबस्तुहरूको विश्लेषण र बिगतको प्रश्न र सम्भावित प्रश्नहरू 76
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हाइवे उप समूह, राजपत्रांकित द्वितीय श्रेणी (उपसचिव) र राजपत्रांकित प्रथम श्रेणी (सह सचिव) पदको प्रतियोगितात्मक लिखित परिक्षाको द्वितीय पत्र बिषय :- सेवा सम्बन्धित प्राविधिक बिषय (१००) र प्रथम, खण्ड (ख) बिषय :- सेवा सम्बन्धित सामान्य बिषय (५०)को बिगत १० बर्षका प्रश्नपत्रहरु

नेपाल इन्जिनियरिङ सेवा, सिभिल समूह, हाइवे उप समूह, राजपत्रांकित द्वितीय श्रेणी, उपसचिव वा सो सरह प्राविधिक पदको प्रतियोगितात्मक लिखित परिक्षा

२०७८/११/३० गते

समय :- ३ घण्टा

पूर्णांक :- १००

पत्र :- द्वितीय

बिषय :- सेवा सम्बन्धित प्राविधिक बिषय

तलका प्रश्नको उत्तर छुटाउँटै उतरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

1. The concern for land compensation for road infrastructure is increasing day by day due to the limitations of the government to finance it wholly from the development budget. Discuss all the options available for financing the road projects land costs, outlining its merits and demerits. Is there a need to depart from the existing land procurement policy to ensure land availability for future road projects? 15
2. Explain the importance and requirements of highway drainage system. State the steps of design of longitudinal drain of a road to drain off surface water.
3. Describe the prioritization process/principle for road maintenance adopted by department of Roads. Explain the funding mechanism for road maintenance for roads under provincial government. 10+5
4. Why superelevation (SE) is necessary in a road? Discuss the provision of superelevation as mentioned in Nepal Road Standard, 2070. The radius of horizontal circular curve is 100 m. The design speed is 50 kmph and coefficient of lateral friction is 0.15, calculate the SE required in full friction case. 15
5. In recent times, there has been sinking or subsidence of bridge structures especially piers leading to failures of bridges structures. Narrate your view on the likely causes of such failures? How can such failures be prevented? 20
6. Describe various types of traffic control devices for urban road network. What are the different measures adopted for the safety of pedestrians at crossing of roads? State their relative merits. 20

नेपाल इन्जिनियरिङ सेवा, सिभिल समूह, हाइवे उप समूह, राजपत्रांकित द्वितीय श्रेणी, उपसचिव वा सो सरह प्राविधिक पदको प्रतियोगितात्मक लिखित परिक्षा

२०७८/७/१० गते

समय :- ३ घण्टा

पूर्णांक :- १००

पत्र :- द्वितीय

बिषय :- सेवा सम्बन्धित प्राविधिक बिषय

तलका प्रश्नको उत्तर छुटाउँटै उतरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

1. What is value engineering? Describe its importance in the context of Road Project? How is it used? Explain its concept as envisaged in contracts. 15
2. Road intersections are very prone to road crash. Explain the reasons for such types of road crashes.
3. What are the major types of erosion control measures used in highway drainage system of hill roads? 15
4. What are the basic requirements of an ideal alignment of highway and factors controlling the alignment in our context?
5. Monitoring and evaluating the project cycle at each stage is critical for successful project implementation. Discuss the existing practices of the project appraisal process, elaborating the role of monitoring and evaluation to be undertaken during this stage of the project cycle. How critical is the project's funding and financial and financial return and what steps are needed to bring the project's cost within an acceptable range? Discuss in detail with illustrations. 20
6. Explain the importance of highway information management system. Describe the data type useful for highway planning and project formulation. 20

नेपाल इन्जिनियरिङ सेवा, सिभिल समूह, हाइवे उप समूह, राजपत्रांकित दितीय श्रेणी, उपसचिव वा सो सरह प्राबिधिक पदको प्रतियोगितात्मक लिखित परिक्षा

२०७६/१०/१७ गते

समय :- ३ घण्टा

पूर्णांक :- १००

पत्र :- दितिय

बिषय :- सेवा सम्बन्धित प्राविधिक बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

1. In Highway planning exercise, what are the major technical considerations to be given attentions to? In your objective view, why very often our planning exercises fail to address main issues? Critically assess and give your appropriate suggestions. 15
2. What are the different topics to be covered in carrying out the feasibility study of any road projects and how these studies are conducted and used in project preparation? 15
3. Stitching method is commonly adopted in connecting new deck to existing one in bridge widening works. What are the problems associated with this method in terms of shrinkage of concrete? 15
4. Explain the importance of highway maintenance, its challenges and inspection procedures, giving methods of repair for gravel and bituminous roads. 15
5. It is argued that outcome of development projects depends on the quality of public institutions responsible for them. Discuss analytically and suggest measures that ought to be undertaken towards strengthening of institutions at various levels in the Nepalese context. 20
6. A) What are the main reasons behind the frequent road accidents in National Highways of Nepal?
B) List the measures that can be taken to avoid traffic accidents and explain the measures to be emphasized in the context of road safety. 10

नेपाल इन्जिनियरिङ सेवा, सिभिल समूह, हाइवे उप समूह, राजपत्रांकित दितीय श्रेणी, उपसचिव वा सो सरह प्राबिधिक पदको प्रतियोगितात्मक लिखित परिक्षा

२०७४/११/०५ गते

समय :- ३ घण्टा

पूर्णांक :- १००

पत्र :- दितिय

बिषय :- सेवा सम्बन्धित प्राविधिक बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

1. What are flexible and rigid pavements? Describe them with sketches. Mention suitable pavement for hill roads in Nepal with Concrete reasons. 15
2. A highway passing through rolling terrain in heavy rainfall area has a horizontal curve of radius 500m. Design the length of transition curve assuming suitable data given below. Design speed 80 kmph, pavement width 7m. Allowable rate of change of centrifugal acceleration super elevation 1 in 150. 15
3. How is road maintenance planned and executed in Nepal? How do you think the existing problems in routine maintenance including labor management can be overcome in near future? 15
4. It is generally talked that none of the bridges is designed for earthquake action. Give your opinion on what should be done with the existing bridges? 15
5. Transport system of Kathmandu valley is far below to our satisfaction. Identify and analyze the problems, suggest your recommendations for improvements with implementation strategies. 20
6. It is high time to go for public private partnership (PPP) in infrastructure development in Nepal. Discuss the possibilities and hinderances for applying PPP model in construction of road in general and particularly Kathmandu terai fast track. 20

नेपाल इन्जिनियरिङ सेवा, सिभिल समूह, हाइवे उप समूह, राजपत्रांकित दितीय श्रेणी, उपसचिव वा सो सरह प्राबिधिक पदको प्रतियोगितात्मक लिखित परिक्षा

२०७३/०९/१३ गते

समय :- ३ घण्टा

पूर्णांक :- १००

पत्र :- दितिय

बिषय :- सेवा सम्बन्धित प्राविधिक बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

- Give your appropriate suggestions to solve traffic congestion problems being faced in Kathmandu valley. Keeping in view the ever-increasing traffic and the slow pace of road widening as well as maintenance. 15
- Enumerate and explain the methods to be adopted while tunnelling in soft ground with their advantages and disadvantages. 15
- Critically analyse special considerations needed for design and construction of hill roads in Nepal.
- Steel structures are widely used in bridge construction. What are the different types of steel bridges? Describe the practical difficulties faced in the fabrication and erection of steel structures?
- Road safety is a burning issue and challenges to all of us in Nepal. Identify its issues and problems, explain laws and policies and recommend you suggestions with implementation strategies. 6+4+6+4
- Road infrastructure requires huge investments and the budgetary allocation alone may not be adequate in meeting such requirements. Discuss how private sector can effectively contribute in road infrastructure development. 20

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२०७२/०९/०६ गते

समय :- ३ घण्टा

पूर्णांक :- १००

पत्र :- दितिय

बिषय :- सेवा सम्बन्धि प्राविधिक बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

- What are the sequential and methodological steps that are to be followed in each assessment exercise that bears relevance to both environmental and the social impacts which are likely to occur in road development projects under the strategic road network programs of Nepal? 15
- Elucidate a vegetation structure with sketches vegetative stabilization techniques together with small scale engineering techniques for slope stabilization. 8+7
- What do you mean by California Bearing Ratio (CBR)? Determine the spacing between contraction joints for 3.5 m slab width having thickness of 20 cm for plain cement concrete and for reinforced cement concrete. Take $f = 1.5$, $w + 2400 \text{ kg/cum}$, $Sc+1.6 \text{ kg/cm}^3$, $f.o.s = 2$. Total reinforcement of 6kg/sqm is provided and is equally distributed in both directions. 15
- State the importance and feasibility of highway tunnel in Nepal. Write down the objectives of lighting in highway tunnel.
- A) What is Mountain Risk Engineering (MRE) approach in selection and design of mountain roads? B) Differ between a front battered and back battered retaining wall in terms of implications on cost and construction in hill roads. 12
- Through Kathmandu to terai highway construction is necessary, limited fund exists as a main constraint. Recommend the shortest route analysing the different modes of financing. How to implement this project without any time and cost overrun? Suggest. 10+10

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२०७१/०९/०६ गते

समय :- ३ घण्टा

पूर्णांक :- १००

पत्र :- दितिय

बिषय :- सेवा सम्बन्धि प्राविधिक बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

- What is a national strategic road network? Discuss its significance with respect to the classification of roads adopted in Nepal.
- What is traffic engineering? Explain how to ensure construction of safer roads? What is safety auditing? 15
- Explain in detail with diagrams about the different technologies available for the construction of highway bridges in Nepal. Explain about their advantages and disadvantages. 15

- Soil bioengineering is a tool for stabilizing areas of soil instability. Write down the benefits from its implementation. List out the steps to be followed for bio engineering project planning and implementation. 15
- The concept of BOT could not move forward as desired in Road sector, Analyse the existing situation and recommend corrective measures including alternates with respect to Kathmandu Terai fast track. 7+7+6
- Even with the establishment of road Board Nepal (RBN), the maintenance of road are not satisfactory. Identify and analyse the problems, list down your recommendations for improvements with clear implementation strategies. 6+4+6+4

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२०७८/११/२९ गते

समय :- १ घण्टा ३० मिनेट

पूर्णांक :- ५०

पत्र :- प्रथम, खण्ड (ख)

बिषय :- सेवा सम्बन्धि सामान्य बिषय

तलका प्रश्नको उत्तर छुटाउन्दै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

1. Quality control is an important aspect in road construction projects. Briefly describe the issues with reference to the standard specification for road and bridge works 2073 for quality assurance plan. 10

2. What are the reasons for the current increasing trends in demands for dispute resolutions through dispute resolution mechanism such as adjudications/arbitration? Discuss with examples by identifying the causes, relevant legal provisions and contractual obligations. 10

3. Briefly explain IEE and EIA process. How Environmental Protection Act, 2076 is effective in preservation of environment in the context of road construction? 5 +5

4. Explain the provisions made by Motor Vehicles Transport Management Act, 1993 towards effective management of traffic on Nepalese roads.

5. नेपाल इन्जिनियरिङ परिषद ऐन २०७५ र यसको नियमावली संग सम्बन्धित व्यावसायिकइन्जिनियर (Professional Engineer) को दर्ता सम्बन्धि योग्यता तथा प्रक्रिया लाई सक्षेपमा लेख्नुहोस्। साथै, निरन्तर व्यावसायिक विकास (Continual Professional Development) समावेश गर्ने सकिने कुनै तीनवटा ज्ञान तथा अनुभवहरूलाई विस्तृत रूपमा उल्लेख गर्नुहोस्। 10

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२०७८/७/९ गते

समय :- १ घण्टा ३० मिनेट

पूर्णांक :- ५०

पत्र :- प्रथम, खण्ड (ख)

बिषय :- सेवा सम्बन्धि सामान्य बिषय

तलका प्रश्नको उत्तर छुटाउन्दै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

1. a) what are the role of private sector in financing road infrastructure in Nepal? 2

b) what are the risk that are associated in PPP both for the government and private sector? List down and assign to respective entity with reasons and justifications. 8

2. Discuss the reasons that contribute to encroachment of road right of way. What steps should be taken to control it . 5+5

3. नेपालको विद्यमान अवस्थामा सडक यातयात संग सम्बन्धित गुरुयोजना तर्जुमा, पूर्वाधार विकास निर्माण, यातायात सेवा संचालन, मर्मत सम्भार आदि पक्षहरूको प्रभावकारी रूपमा कार्यान्वयन हुनका लागि कानूनी व्यवस्था तथा संस्थागत संरचनाहरूको आलोचनात्मक विश्लेषण गर्नुहोस्।

4. सङ्क पूर्वाधार बिकासमा आवश्यक बैदेशिक सहायताको भूमिकालाई उल्लेख गर्नुहोस् । साथै यसको प्रभावकारीका बारेमा विश्लेषणात्मक टिप्पणी गर्नुहोस् । सङ्क पूर्वाधार विकास र यातायात सेवा संचालनमा निजि लगानीका पक्षहरूको Strength, Opportunity, Weakness and Threat (SWOT) विश्लेषण गर्नुहोस् ।

5. Explain Four key areas which needs immediate amendment in National Transport Policy, 2058. 10

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२०७६/१०/१६ गते

समय :- १ घण्टा ३० मिनेट

पूर्णांक :- ५०

पत्र :- प्रथम, खण्ड (ख)

बिषय :- सेवा सम्बन्धि सामान्य बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ ।

1. What are the main features of 20 years road plan? Whether the development of road network is being done as envisaged in the 20-year plan. 10
2. A) What are the issues on land acquisitions related to infrastructure development not covered in the prevailing act? 3
B) How do you suggest incorporating social and environmental aspects in the forthcoming revision of "Land Acquisitions Act"? List down and discuss in detail. 7
3. Highlight the objectives of Nepal Engineering Council Act. Explain 3 key challenges to implement the Act. (6+4)
4. Discuss the significance of IEE/EIA in a road infrastructure development project. Highlight the role of stake holders in these studies. 6+4
5. Explain as per Roads Board Act 2058, the provisions for road maintenance. What are the changes required in the Act to finance the provincial roads? 10

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२०७४/११/०४ गते

समय :- १ घण्टा ३० मिनेट

पूर्णांक :- ५०

पत्र :- प्रथम, खण्ड (ख)

बिषय :- सेवा सम्बन्धि सामान्य बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ ।

1. Proper road maintenance is inevitable for the effective, economic and safe of road transport service. Highlight the issues of poor road operating conditions and discuss the role of roads Boards Nepal in this perspective along with the implementation issues of Roads Boards Act. 10
2. Implementation of road projects in Nepal are delayed quite significantly mainly due to issues related to environment, land acquisition and social safeguards. What are your recommendations to improve the situations? 10
3. List down and discuss the role and responsibilities of 3Cs (Client, Contractor and Consultants) in executing and implementing road projects? 10
4. सवारी तथा यातायात व्यवस्था ऐन, २०४९ को उद्देश्य र प्रमुख प्रवाधानहरू उल्लेख गर्नुहोस् । यस ऐनमा समयसापेक्ष रूपमा गर्नुपर्ने सुधार बारे छोटो विवेचना गर्नुहोस् ।
5. What are the sources of disputes during the implementation of contract works? Describes stage wise procedures for the settlement of disputes as per provisions in public works directorate. Is any modification in your opinion is required in prevailing procedures Describe in brief? 3+5+2

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२०७३/९/१२ गते

समय :- १ घण्टा ३० मिनेट

पूर्णांक :- ५०

पत्र :- प्रथम, खण्ड (ख)

बिषय :- सेवा सम्बन्धि सामान्य बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ ।

- What are the role and functions of Nepal Engineering Council? How the capacity of Nepal Engineering's Council can be enhanced to fulfill its objectives? 10
- Traffic growth is rapidly increasing in urban areas especially in Kathmandu. Considering the congestion and hazards in traffic in Kathmandu, suggest options (short term and long term) for improving the transport system. Analyse critically interdependent functions of institutions responsible for the management of urban transport. 6+4
- गरिवी निवारण तथा दिगो आर्थिक विकासको लागि देशमा वैदेशिक पूँजी प्रविधि आकर्षित गर्ने सोच अनुरूप सरकारले वैदेशिक सहायता नीति, २०५९ तयार गरी लागू गरेको लामो समय वित्तिसक्ता पनि नेपालको गरिवी निवारण, आर्थिक विकास र पूर्वाधारहरूको निर्माणमा वैदेशिक सहायता प्रभावकारी हुन् सकेको छैन । सो सन्दर्भमा वैदेशिक सहायता प्राप्ति र उपभोग चरणमा मौजुदा समस्याहरू के देख्नुहुन्छ ? सो समस्या निराकरणका उपायहरू के के हुन् सक्दछन् ? 10
- नेपालको सडक यातायात क्षेत्रमा जलबिधुत र अन्य सेवा क्षेत्रको दाँजोमा निजि क्षेत्रको सहभागिता र लगानी अन्त्यन्तै न्यून रहेको सन्दर्भमा यसका पछाडी के कस्ता कारणहरू हुन् सक्दछन् ? समस्या पहिचान गरी राजमार्ग र मुख्य सडकहरूमा निजिक्षेत्रको सहभागिता र लगानीमा विकास गर्ने के कस्तो सुधारको आवश्यकता देख्नुहुन्छ ? विवेचना गर्नुहोस् । ५+५
- Significant percentage of strategic road network is in a state of unpaved condition. Discuss a strategy to manage or upgrade these roads by categorizing them under different traffic level.

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२०७२/९/०५ गते

समय :- १ घण्टा ३० मिनेट

पूर्णाक :- ५०

पत्र :- प्रथम, खण्ड (ख)

बिषय :- सेवा सम्बन्धि सामान्य बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ ।

- सवारी दुर्घटनाको रोकथाम, पिडितपक्षलाई क्षतिपुर्ति र सर्वसाधारण लाई सरल एवं सुलभ दड्गबाट यातायात सुविधा उपलब्ध गर्नु सवारी तथा यातायात व्यवस्था ऐन, २०४९ लागू गरिएतापनि देशमा बढ्दै गइरहेको सवारी दुर्घटना र जनधनको क्षतिलाई कम गर्ने सकिएको छैन । यसमा देखिएका कमजोरीहरू औल्याउदै समाधानका उपायहरू उल्लेख गर्नुहोस् । १०
- How does Environmental Impact Assessment National Guidelines help the environment as well as the road network, as it is now mandatory to conduct EIA for significant roads in Nepal. Give a critical analysis. 10
- जग्गा प्राप्ति ऐन, २०७५ अनुसार जग्गा अधिग्रहण कार्यविधि बारे उल्लेख गर्नुहोस् । समयमै जग्गा अधिग्रहण हुन् नसकदा सडक निर्माण एवं स्तरोन्नति सम्बन्धि आयोजनाहरू लक्षित समयमा पुरा हुन् नसकिरहेको सन्दर्भमा यसका कारणहरू र निराकरणका उपायहरू बारे प्रष्ट पार्नुहोस् ।
- Discuss on the current status of road system in Nepal with reference to strategic road network. Identify the priorities for future development and the strategy to be adopted for its implementation. 5 + 5
- Government has given permission to private sector to construct Kathmandu Hetauda fast track road. Such policy can be applied to other areas of road network also. What are the strengths and weaknesses of such policy in Nepalese perspective? 5+5

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२०७१/९/०५ गते

समय :- १ घण्टा ३० मिनेट

पूर्णाक :- ५०

पत्र :- प्रथम, खण्ड (ख)

बिषय :- सेवा सम्बन्धि सामान्य बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ ।

- Describe the existing Land Acquisition Act of Nepal. In your opinion is this act perfect? If not, what is your comments and suggestions?
- Transport Policy is major document for streaming the decisions in transport sector. Critically analyze the existing ‘National Transport Policy’. Write down/propose some strategies for the improvement of transport service sector in Nepal.
- सडक एक महत्वपूर्ण सार्वजनिक सम्पति हो | यसको अतिक्रमण गर्नु तथा आवत जावतमा बाधा खडा गर्नु सार्वजनिक तथा दण्डनीय अपराध हो | यस पक्षका वर्तमान चुनौती एवं समस्या पहिचान गरी सरकारी नीति तथा नियमहरूको उल्लेख गर्दै के कस्ता सुधार गर्न सकिन्छ ? ५+२+३
- State the strategy of Department of Roads. Develop action plans based on the strategy for phase-wise development of roads through Nepal. 4+6
- Describe the general conditions of roads in Nepal. What are the programs that should be implemented to improve its conditions? Discuss briefly the policies and programs of roads stated in current plan. 3+3+4

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२०७८/९/१३ गते

समय :- ३ घण्टा

पूर्णांक :- १००

पत्र :- दितिय

बिषय :- सेवा सम्बन्धित प्राविधिक बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

- Nepal is a very difficult country in terms of its altitude, geography and terrain to construct and operate transport infrastructures in the country. From the perspective of transport economics, present your analysis on the comparative advantages and disadvantage of various modes of transport infrastructures such as highway, railway, waterway and airways in framing national transport development plan of Nepal. 5+4+1+5
- Describe the main causes of road accidents in Nepal. Give your opinion to lower and prevent the road accidents in Nepal. 15
- Build, operate and transfer (BOT) has been adopted to involve private sector investor in infrastructure development. This concept is “Talk of Country” since decades but not a single investor is involved in road sector development so far. Briefly discuss the benefit of BOT and how to attract private sector investor? 15
- Explain briefly the necessity of highway maintenance and analyze the suitability of performance-based contracting for maintaining and managing the road infrastructure in the context of Nepal.
- Some major development transport projects are going on and some are being lunched to connect Kathmandu valley with Terai. Analyze critically the various modes of transport which can be selected. 10 +10
- Sustainability of infrastructure like road and bridges up to its designed life period is depend upon the quality of product. 8+12
 - “Quality cost more, but lack of quality cost even more” Elaborate this statement.
 - Explain quality control (QC), Quality Assurance (QA) and Total Quality Management (TQM). Also discuss whether TQM in infrastructure development is achievable or not.

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२०७८/४/२९ गते

समय :- ३ घण्टा

पूर्णांक :- १००

पत्र :- दितिय

बिषय :- सेवा सम्बन्धित प्राविधिक बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

- What are the principal components of a bridge? What are the main factors affecting the selection of type of the bridge with respect to cost and quality? 15
- It is a public opinion that “Road Projects are not completed within time, cost and quality”. Explain in detail about their issues and problems and suggest your recommendation to solve the problems.

3. Road transport sector has been considered as the major indicator of economic growth in Nepal. This sector shall be managed by the scientific and rational institutional arrangement. Review the existing road transport sector institutional provisions in the context of federal hierarchy of governance, and recommend a robust organizational framework for this sector to handle the issues of planning, designing, construction and maintenance. 15
4. Major contributing factors and sequence of road crash are important information for crash reduction activities. Explain this aspect with the help of "Haddon Matrix" Explain the traffic control devices for an urban for leg intersection. 5+5+5
5. What are the various factors of "Vehicle Operating Cost" and how it relates with total system cost in relation with the driving speed of the vehicle? Suggest your recommendation with the help sketches how the Optimum Axle Load Limit are derived? 8+7+5
6. The road condition and traffic congestion of Kathmandu valley calls for urgent attention of decision makers without any further delay. Discuss in detail about the origin of the problems with reference to the data, current institutional, legal arrangement and suggest your recommendation for its sustainable improvements with its implementation strategy. 4+3+3+7+3

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२०७६/९/६ गते

समय :- ३ घण्टा

पूर्णांक :- १००

पत्र :- दितिय

बिषय :- सेवा सम्बन्धि प्राविधिक बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

7. Highway maintenance is crucial aspect for road transport infrastructure. Review the existing practice and propose some alternative approaches to overcome the present problems. 15
8. Construction of highway in mountains is very challenging due to various topographic as well as geological conditions. Construction of tunnels and viaduct could be taken as new approach in road transport sector in Nepal. Explain the issues and challenges for the construction of tunnel and viaduct in Nepal. 15
9. Discuss the functions of road management and finance reform implementation committee. Explain the concept of build operate and transfer (BOT). How can it be made more effective in Nepal? 8+3+4
10. With the opening of number of Northsouth and East West corridors in various parts of Nepal, the Feeder Road Standard, 1997 is become absolute. Analyze in detail about it and propose various criteria for its revision. 4+4+7
11. Road asset management will be further challenging due to the fact that preventing road maintenance should follow the actions as demanded by pavement deterioration curve by the respective governments of Federal Nepal. Identify the problems in this context and suggest your recommendation based on User Pay Principles. 6+6+8
12. The social and Environmental safeguards issues in relation to rehabilitation and Resettlement of displaced people due to the development and widening of various road projects are getting very challenging in these days. Discuss in detail about its national policies in comparison with the international best practices. 20

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२०७४/९/२३ गते

समय :- ३ घण्टा

पूर्णांक :- १००

पत्र :- दितिय

बिषय :- सेवा सम्बन्धि प्राविधिक बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

1. Use of forest lands in the construction of physical infrastructures in Nepal is a time taking and complex exercise for all agencies of Nepal including DoR. What are the issues, problems and challenges in this respect and suggest your recommendation to maintain the balance between brown and green agencies.
2. What are the problems of design and construction of a 4-lane express way such as Kathmandu Nijgadh express way, also called the Fast Track, in Nepal?

3. Terai Roads (Hulaki Roads) of Nepal is being talked since long time in Nepal. Describe in detail about its various components and explain in detail about the issues, problems and challenges of the project. Recommend your doable suggestions to complete the project as soon as possible.
4. What do you understand by road asset management? Explain in detail how the bituminous pavement can be taken under preventative road maintenance. 8+7
5. Urban road infrastructure and transport system are the major causes of dust and air pollution in Kathmandu valley. Identify the problems in this context, describe the current GoN policies and laws, recommend your suggestion to solve the problems and propose a sound and practical implementation strategy. 6+4+6+4
6. What do you understand by road construction technology? Describe in detail the material requirement, equipment requirement, construction steps for quality control for construction of asphalt concrete pavement. Identify the problems; describe the current policies and laws with your recommendations for further improvements. 20

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२०७३/८/४ गते

समय :- ३ घण्टा

पूर्णांक :- १००

पत्र :- दितिय

बिषय :- सेवा सम्बन्धि प्राविधिक बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

1. Explain the economic importance of Mid-Hill Highway. Describe the tentative alignment and highlight its progress status. 5+5+5
2. What are the environmental consequences of highway construction in hilly areas? Suggest mitigation measures to overcome these problems. 5+10
3. Discuss and review Road Safety Action Plan – 2012, for improvement of road safety in Nepal. 5+10
4. Describe the types of pavement structure and method of construction practiced in Nepal. 15
5. Explain the present status of bridge construction in Nepal. Recommend solutions for timely completion of bridges under construction. Discuss the appropriate technology in the context of Nepal. 5+5+10
6. Describe the types of road maintenance practiced in Nepal. Highlight its short comings and recommend suitable measures of sustainable road maintenance system. 5+7+8

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२०७२/८/८ गते

समय :- ३ घण्टा

पूर्णांक :- १००

पत्र :- दितिय

बिषय :- सेवा सम्बन्धि प्राविधिक बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

1. What are the various types of failure in flexible pavement? What is the purpose of pavement evaluation? Explain in details various approaches and methods of pavement evaluation in Nepal.
2. Enumerate and explain the methods which can be adopted while tunnelling in soft ground with their advantages and disadvantages. 15
3. Effective monitoring and evaluation (M&E) are considered to be the key features of successful project anywhere. Express your opinion on above statement linking with Nepalese experience of project delays, cost over runs and effective M and E to overcome them. 15
4. What are the important features of Priority Investment Programme (PIP) of Department of Road of Nepal? How and why this document is followed?
5. Why “Road safety” is a matter of concern in national, regional and international level? What are the measures can be taken on short-, medium- and long-term basis in order to improve in the present situations? 20
6. The concept of Build operates and transfer (BOT) adopted successfully across the global could not proceed effectively in Nepal. Critically analyse the situation in transport sector with special reference to

Kathmandu -Nijgadh expressway and suggest workable model including necessary improvement law and process. 20

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२०७१/८/१२ गते

समय :- ३ घण्टा

पूर्णांक :- १००

पत्र :- दितिय

बिषय :- सेवा सम्बन्धि प्राविधिक बिषय

तलका प्रश्नको उत्तर छुटाछुटै उतरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

1. There are many soil bio engineering systems used as slope stabilization techniques. What is its basic concept? Selection of the appropriate techniques, or techniques, is critical to successful restoration. What are the points to be considered for the appropriate selection? 15
2. Failures of roads are related with quality control activities. What is the difference between quality control and the assurance? Write down the quality assurance procedure and planning and validation process.
3. What kind of road traffic safety surveillance are currently used in Nepal? What are your suggestions to enhance its level and what agencies should be made responsible to implement them? 5+5+5
4. With view of fast-track roads connecting Kathmandu and terai, discuss various methods to ensure private sector participation in construction of highways. 15
5. Road widening program has been started in Kathmandu valley two years ago with the objectives of fulfilling the mission with blacktopping within two years' time frame. But the mission could only accomplish less than 15 % blacktopping. Critically analyze the progress and suggest stepwise programmable activities to complete the mission within short period. 20
6. Guide bunds are meant to confine and guide the river flow through the bridge without causing damages to it and its approaches. Nevertheless, the result is negative due to improper shape and design features. What should be the shape and the design features? What are activities that you suggest to carry out for the maintenance and repair of guide bund? 10

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२०७८/७/१० गते

समय :- ३ घण्टा

पूर्णांक :- १००

पत्र :- दितिय

बिषय :- सेवा सम्बन्धि प्राविधिक बिषय

तलका प्रश्नको उत्तर छुटाछुटै उतरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

1. What are the basic problems faced in land acquisition for development projects? Recommend practical solution to 3 of those problems. 6+4
2. A) What are the fundamental challenges that the road sector is facing toady in implementing road sector programs? List down and discuss. 5
B) Road sector development offers various opportunities to scale up the people and society's economic and social environment. In the Nepalese context, specify these opportunities and discuss on its applicability in the project design framework. 5
3. State each mode of transport used in Nepal with its characteristic features. Railway transport is considered is very advantages, but in Nepal, this mode of transport could not be developed with time, what are factors responsible for this? Explain. Do you agree that modification in transport policy is required to accelerate the Railway transport? Suggest your views. 10
4. What are the institutional issues encountered during the implementation of road projects? List your actions to minimize issues for timely completion of road project with intended qualities of works. 10

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२०७८/४/२८ गते

समय :- ३ घण्टा

पूर्णांक :- १००

पत्र :- दितिय

बिषय :- सेवा सम्बन्धि प्राविधिक बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ ।

1. सडक दुर्घटना कम गर्ने सन्दर्भमा नेपाल विभिन्न अन्तर्राष्ट्रिय मञ्चमा प्रतिबद्धता व्यक्त गर्ने तर कुनै पनि अभिसन्धि, समझौताको पक्ष राष्ट्र नभएको वर्तमान सन्दर्भमा ति प्रतिबद्धताहरु पुरा गर्न एवं नेपालमा बर्षनी सडक दुर्घटनाबाट भैरहेको क्षति न्यूनीकरण गर्ने के कस्ता नीतिगत, कानूनी तथा संस्थागत प्रबन्ध गर्नुपर्ने देख्नुहुन्छ ? १०
2. What are the sources used for the financing of highway development in Nepal? Explain Public- Private- Partnership (PPP) for the development of highway projects with its common types. State briefly reasons behind the non-implementation of PPP in Nepal so far and suggest measures to attract investors. 10
3. How would you evaluate the current status of transport infrastructure in the country? What are the actions that are needed to link the investment in the transport infrastructure to its service delivery for an effective outcome? Discuss in detail. 10
4. State the purpose of establishment of Road Board and its functions, duties and powers as documented in Road Board Act, 2058. What are the sources prescribed to establish separate fund of its own to meet the expenditure? Assess critically its coordination with Department of Road and suggest for the modification if required in Act. 10
5. विद्यमान सार्वजनिक खरिद कानुनको निर्माण कार्य सम्बन्धि खरिद प्रबन्धमा नियोक्ताको डिजाइनमा आधारित पद्धतिलाई आधार मानि कानूनी प्रवन्ध गरेको पाइए तापनि ठुला पूर्वाधार संरचना निर्माणको कार्यान्वयन स्तरमा धैरै जटिलताहरु देखिन्छ। निर्माण व्यवसायी लाई गुणस्तरीय पूर्वाधार निर्माणमा जिम्मेवार तथा जवाफदेही बानि ठुला पूर्वाधार संरचनाहरु स्वीकृत लागत, समय तथा गुणस्तरमा सम्पन्न गर्ने विद्यमान कानुनमा के कस्ता सुधार गर्नुपर्ने देख्नुहुन्छ? १०

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२०७६/९/५ गते

समय :- १ घण्टा ३० मिनेट

पूर्णांक :- ५०

पत्र :- प्रथम, खण्ड (ख)

बिषय :- सेवा सम्बन्धि सामान्य बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ ।

1. What are the current issues and challenges for timely availability of land parcels for road development and management? Considering the provisions of re-settlement and rehabilitation principles. Give your suggestions to improve land acquisition process. 10
2. A) What do you understand by road asset management? Explain in brief. 4
B) What is the basic preparation/tools needed to introduce and effectively manage road asset in Nepal Road System? Discuss illustrating examples.
3. What are the common issues and challenges for both MoPIT and DoR to fulfill its role as central federal agencies for managing strategies road network (SRN). What should be done to strengthen the road ownership for the sustainable transport infrastructure and effective transport delivery in Nepal. 10
4. State the types of financing for the construction of highways in Nepal? What do you understand by public private partnership (PPP) in development projects? What are common types outline the advantages of PPP for the development of highway projects. 2 +2+3+3
5. In the context of "Prosperous Nepal: Happy Nepali" how would you see the role of transport sector in accelerating economic growth? List down and discuss the priority within the transport

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२०७४/९/२२ गते

समय :- १ घण्टा ३० मिनेट

पूर्णांक :- ५०

पत्र :- प्रथम, खण्ड (ख)

बिषय :- सेवा सम्बन्धि सामान्य बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ ।

- Explain the reasons why most of the contracts are not getting completed on schedule date and go under extensive time and cost variation? What measures GON can take to ensure construction of such projects within cost, time and quality?
- A) Why are road sector has been unable to attract private investment in Nepal so far? discuss with examples. 3
B) To attract or solicitate private investment in road sector, what is to be done by the government and the private sector. List down and discuss. 7
- State the strategy for promotion of electric vehicles in Nepal as provisioned by National Transport Policy, 2058. What further actions are necessary to enforce the policy? 5+5
- A) List down and discuss the current issues and challenges that are hindering effective transport mobility in Kathmandu valley. B) In selecting different mode/type for transport in Kathmandu urban transport, what are the choices and preferences? List down and discuss comparative advantages and disadvantages of each mode/type considered.
- State the objective of 20 years road plan point out the financial resources envisaged for the implementation of plan during its preparation critically review the implementation status of the plan so far and suggest actions required to improve the implementation activities, considering the problems encountered in past; in remaining period of the plan.

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२०७३/८/३ गते

समय :- १ घण्टा ३० मिनेट

पूर्णांक :- ५०

पत्र :- प्रथम, खण्ड (ख)

बिषय :- सेवा सम्बन्धि सामान्य बिषय

तलका प्रश्नको उत्तर छुटाउँटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

- नेपालमा विद्यमान सार्वजनिक सडक ऐन, २०३१ अनुसार जग्गा विकास कर सम्बन्धि व्यवस्थाको विवेचना गर्नुहोस् । १०
- नेपालमा इन्जिनियरिंग पेशालाई व्यवस्थित गर्न नेपाल इन्जिनियरिंग परिषद ऐन, २०५७ मा के कस्ता प्रावधान राखिएका छन् ? तिनको कार्यान्वयन र नियमन गर्न नेपाल इन्जिनियरिंग परिषद कति प्रभावकारी भएको छ ? विश्लेषण गर्नुहोस् । ५+५
- नेपालमा सद्खारुको मर्मत सम्भारमा देखिएका समस्या र चुनौतीबारे व्याख्या गर्दै त्यसका लागि विद्यमान्सडक बोर्ड नेपालको क्षमता वृद्धि गर्न के कस्ता उपाय गर्नुपर्दछ ? स्पष्ट गर्नुहोस् ।
- सार्वजनिक निजि साझेदारी अन्तर्गत सडक पूर्वाधार निर्माणमा नेपालमा देखिएका सम्भावना र समस्या बारे विवेचना गर्नुहोस् । १०
- बैदेशिक लगानी संचालनमा रहेका विकास आयोजनामा देखिएका समस्याहरु के हुन् ? नेपालको पूर्वाधार विकासमा बैदेशिक ऋण र अनुदानको प्रभावकारिता कस्तो छ / व्याख्या गर्नुहोस् । १०

नेपाल इन्जिनियरिङ सेवा, सिभिल समूह, हाइवे उप समूह, राजपत्रांकित प्रथम श्रेणी, सहसचिव वा सो सरह प्राबिधिक पदको प्रतियोगितात्मक लिखित परिक्षा

२०७२/८/७ गते

समय :- १ घण्टा ३० मिनेट

पूर्णांक :- ५०

पत्र :- प्रथम, खण्ड (ख)

बिषय :- सेवा सम्बन्धि सामान्य बिषय

तलका प्रश्नको उत्तर छुटाउँटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ।

- What do you understand by public private partnership (3P) and how it differs with private sector participation and private sector outsourcing? Describe the different characteristics of ppp.
- निजामती सेवा ऐन, २०४९ र नियमावली २०५० मा हालै भएको २०७२ को संशोधनले राजपत्रांकितविशिष्ट श्रेणी, सचिव पदको समूहीकरणको व्यवस्था गरेको छ | उक्त व्यवस्थाले निजामती सेवामा पार्ने प्रभावबारे समिक्षात्मक टिप्पणी गर्नुहोस् ।

3. नेपालमा केही बर्ष यता सडक दुर्घटना अत्यधिक वृद्धि भइ धनजनको ठुलो क्षति बहिरहेको छ | यस्तो दुर्घटनाका कारक तत्वहरु के के हुन्? सडक दुर्घटनालाई न्यूनीकरण गर्न तपैंका सुझावहरु के के छन्?
4. What are the planning considerations to be followed while preparing the strategic plan of national highway network? Analyze it's constraints and opportunities in the present context. 4+3+3
5. सडक यातायात क्षेत्रम बैदेशिक ऋणको दायित्व दिन प्रति दिन बढिरहेको सन्दर्भमा सडक विकास तथा मर्मत पनि गर्नुपर्ने र ऋणको दायित्व पनि कम गर्ने गरि सडक विकास तथा मर्मत कार्यमा कसरी लगानी गर्नु उपयुक्त हुन्छ ? सुझाव दिनुहोस् | १०

नेपाल इन्जिनियरिङ सेवा, सिभिल समूह, हाइवे उप समूह, राजपत्रांकित प्रथम श्रेणी, सहसचिव वा सो सरह प्राबिधिक पदको प्रतियोगितात्मक लिखित परिक्षा

२०७१/८/११ गते

समय :- १ घण्टा ३० मिनेट

पूर्णांक :- ५०

पत्र :- प्रथम, खण्ड (ख)

बिषय :- सेवा सम्बन्धि सामान्य बिषय

तलका प्रश्नको उत्तर छुटाछुटै उत्तरपुस्तिकामा लेख्नुपर्नेछ अन्यथा उत्तर पुस्तिका रद्द हुनेछ |

1. परियोजना चक्र भन्नाले के बुझनुहुन्छ? परियोजना चक्रका विभिन्न चरणहरु प्रस्तुत गर्नुहोस् | परियोजना पहिचानलाई प्रष्ट पार्दै केन्द्रीयस्तरका परियोजना निर्धारण गर्ने प्रक्रिया बारे व्याख्या गर्नुहोस् | १०
2. निजामती सेवा ऐन (दोस्रो संशोधन), २०६४ मा व्यवस्था गरिएको आचरण भन्नाले तपैले के बुझनुहुन्छ? नेपाल सरकारका निजामती कर्मचारीहरु ले आफ्नो कार्यसम्पादन गर्दा आचरण अनुरूप काम गरेको/नगरेको प्रति तपाईंकोधारणा के छ ? निजामती कर्मचारीले आचरण पालना गर्नुपर्ने बाध्यता हो कि हैन ? निजामती सेवा ऐन २०४९ अनुसार निजामती कर्मचारीले पालना गर्नुपर्ने अचारन्हारु उल्लेख गर्नुहोस् |
3. Write short notes on: i) National Transport Policy, 2058 ५
ii) The department of road strategy, 1997 A.D. ५
4. विभिन्न उमेर, मोडेल, परिवर्तित आकारपकार , रूप रंग र अनियन्त्रित संघ्याका प्रदुषणकारी सवारी साधनहरुको बाहुल्यता एवं रुट कार्टलिंग भाडादर कार्टलिंग र सिण्डिकेट प्रणाली आदि जस्ता समस्या निराकरण गर्ने बारे मौजुदा सवारी तथा यातयात व्यवस्था ऐनमा भएका प्राबधानलाई विश्लेषण गरीसमस्या समाधानका लागि सुझावहरु सहित लेख्नुहोस् | १०
5. What are the transport sector agencies of Nepal in South Asia Subregional Economic Cooperation (SASEC) coordinated by Asian Development Bank? What are the contributions made by ADB for the promotion of SASEC transport corridors in Nepal? ५+५

जग्गा अधिग्रहण/मुआब्जा सम्बन्धि बिषयबस्तुहरू

जग्गा प्राप्तिको मान्यता

- प्रभावित व्यक्ति र आयोजना दुबैले फाइदा लिने
- Win/Win को स्थिति प्राप्त
- प्रभावित /विस्थापित भएमा पूर्ववतः अवस्थामा ल्याउने
- पुनर्बास /पुनर्स्थापना कार्य सँगसँगै लाने
- आर्थिक/सामाजिक/सांस्कृतिक पक्ष को क्षतिपुर्ति गर्ने

जग्गा प्राप्तिका बिधि

- स्वैच्छिक
 - प्रत्यक्ष वार्ता
 - Land pooling जस्ता जग्गा विकासका कार्यक्रम
 - मुआब्जा र क्षतिपुर्ति
- राज्यले विकास निर्माण कार्यका लागि जग्गा प्राप्ति गर्ने प्रक्रिया वि.स. १९६८ मा ५०० kw फर्पिंग जलबिधुतको लागि ३२४ रोपनी र वि.स. १९७९ मा सुन्दरीजल जलबिधुतको लागि ३८ रोपनी लिएको इतिहास रहेको छ । यसरी तत्कालिन शासक हरूको आदेश र हुकुम प्राङ्गीबाट जग्गा प्राप्त गरी विकास निर्माणका कार्य संचालन भएकोमा वि.स. २०१३ मा जारी अचल सम्पति अधिग्रहण ऐनलाई जग्गा प्राप्ति सम्बन्धि पहिलो कानून रहेको देखिन्छ । त्यस पश्चात क्षतिपुर्ति ऐन २०१८, अचल सम्पति अधिग्रहण प्रयोजनका लागि कार्यान्वयनमा ल्याइएको थियो ।
- जग्गा प्राप्ति सम्बन्धि हाल सम्मको सबैभन्दा पछिलो कानूनी व्यवस्था भने जग्गा प्राप्ति ऐन २०३४ रहेको छ ।
- विकास निर्माणका आयोजनाहरू संचालन गर्ने आवश्यक पर्ने जग्गा प्राप्ति गर्ने बिषय मानवीय हिसाबले संबेदनशील र कानूनी हिसाबले जटिल भएकोले राष्ट्रिय महत्वका ठुला आयोजना समेत समयमा जग्गा प्राप्त हुन् नसकेकोले आयोजना कार्यान्वयनमा ढिलाई हुने, समयमा नै आयोजना सम्पन्न नहुँदा लागत बढ्ने, आयोजना संचालन झन्झटिलो हुने, लगानीकर्ता निरुत्साहित हुनुका साथै नेपालमा लगानीको वातावरण नभएको भनि गलत सन्देश लगानीकर्ता माझा फैलिने र समग्र विकास निर्माणको क्षेत्रमा वैदेशिक सहयोग जुटाउन कठिनाई हुने सम्भावना देखिएको छ ।
- बढ्दो जनसंख्या, जग्गाको सिमित उपलब्धता, जग्गाको अत्यधिक मूल्य वृद्धि (NRB को प्रतिवेदन अनुसार २५ % भन्दा बढी प्रतिवर्ष), जग्गाको बहुपक्षिय उपयोग तथा वाताबरणीय/आर्थिक सामाजिक पक्षका कारण जग्गाको उपलब्धता लाई झाँने कठिन बनाएको ।

सार्वजनिक सडक ऐन, २०३१ ५ राष्ट्रिय यातायात नीति, २०७८ मा जग्गा प्राप्ति सम्बन्धमा भएको व्यवस्था

सार्वजनिक सडक ऐन २०३१ ले पनि सडक निर्माणका लागि जग्गा अधिग्रहण गर्नुपर्ने प्रचलित ऐन बमोजिम गर्न सकिने कुरा उल्लेख छ ।

अस्थायी जग्गा प्राप्ति गर्ने (सडक विस्तार, विकास र सुधार प्रयोजन आदिको लागि)

- सडक ऐन २०३१, दफा २५ मा विशेष परिस्थितिमा जग्गा प्राप्त गर्ने विशेषाधिकारको रूपमा दैवी प्रकोप वा नदीले धर बदली यातायत यथावत चालु रास्ता परे जग्गा प्राप्त गर्ने व्यवस्था छ ।
- त्यस्तै दफा १४ मा सडक निर्माण, बिस्तार वा सुधार गर्दा निर्माण विस्तार वा सुधार कार्य पुरा नभए सम्म देहायका कामका लागि सडक विभागले कुनै जग्गा अस्थायी अधिग्रहण गर्न सक्ने, उक्त कार्यको निर्माणका सरसामान उपकरण राख्न वा उक्त कार्यको रेखदेख वा नियनत्रण गर्ने व्यक्ति बस्ने घर, कटेरो बनाउन, आवागमन सुचारू रास्ता वा सरसामान ओसारपसार गर्न अस्थायी बाटो तर निर्माण सम्पन्न भएपछि जग्गा पुरानै अवस्थामा फिर्ता गरिदिनुपर्ने ।

- यस बाहेक क्षतिपुर्ति नदिइने: घर टहरा, इमारत, उपभोग गर्न नपाए बापत, बालीनाली नाच्ने गरीलिनुपर्ने भएमा बाली नलगाउन पाए वापतको नोकसानी, अस्थायी सडक वा निर्माण सामग्री राखनेले पहिलाकै अवस्थामा ल्याउन तिर्नुपर्ने रकम

राष्ट्रिय यातायात नीतिको व्यवस्था

राष्ट्रिय यातायात नीतिको कार्यनीतिमा जग्गाको उपलब्धतालाई प्राथमिकताका साथ कार्यनीतिको रूपमा लिएको छ | जग्गा उपलब्धतासम्बन्धमा उक्त नीतिले “देशको दुरगामी विकास प्रक्रियाहरूमा समयमै ध्यान पुर्याई भविष्यको बाटो खुला राख्ने दृष्टिकोणले सम्भावित Expressway, Fasttrack, Bypass, Electric railway, Dedicated utility lane in urban area, New International Airport जस्ता आयोजनामा समयमै उपयुक्त जग्गाको पहिचान गरी छुट्याउने एवं प्राप्ति गर्ने कम अग्रिमरूपमा गर्ने भन्ने उल्लेख |

- नेपालमा बिकास निर्माणका कार्य जस्तै सडक, सिंचाई आदिका संरचनाहरू निर्माण गर्ने प्रयोजनका लागि जग्गा प्राप्त गर्दा अपनाउनुपर्ने कानूनी प्रक्रियाका विषयमा उल्लेख गर्नुहोस् |

विकास निर्माणका आयोजनाहरू संचालन गर्ने आवश्यक पर्ने जग्गा प्राप्त गर्ने विषय मानवीय हिसाबले संबेदनशील र कानूनी हिसाबले जटिल विषय भएपनि सर्वसाधारण जनताको हित, लाभ वा उपयोगको लागि हुने कामका लागि केही निश्चित प्रक्रिया र कार्यविधि पुरा गरी जग्गा प्राप्त गर्ने सकिने व्यवस्था जग्गा प्राप्ति ऐन, २०३४ गरेको पाइन्छ | सार्वजनिक सडक ऐन २०३१ ले पनि सडक निर्माणका लागि जग्गा अधिग्रहण गर्नुपर्ने प्रचलित ऐन बमोजिम गर्ने सकिने कुरा उल्लेख छ |

प्रचलित संबैधानिक तथा कानूनी व्यवस्था

नेपालको संबिधान को भाग ३ मौलिक हक र कर्तव्य अन्तर्गतको धारा २५ अन्तर्गत सम्पत्तिको हक २५(२) मा “सार्वजनिक हितका लागि बाहेक राज्यले कुनै व्यक्तिको सम्पति अधिग्रहण गर्ने, प्राप्त गर्ने वा त्यस्तो सम्पति उपर अरु कुनै प्रकारले कुनै अधिकार सिर्जना गर्ने छैन” र २५(३) मा उपधारा २ बमोजिम सार्वजनिक हितका लागि राज्यले कुनै पनि व्यक्तिको सम्पति अधिग्रहण गर्दा क्षतिपुर्तिको आधार र कार्यप्रणाली ऐन बमोजिम हुनेछ “|

जग्गा प्राप्ति ऐन, २०३४

दफा (३): नेपाल सरकारले आवश्यक ठहर्याएको सार्वजनिक कामको निमित ऐन बमोजिम क्षतिपुर्ति दिने गरी जुनसुकै ठाउको जतिसुकै जग्गा प्राप्ति गर्न सक्ने व्यवस्था रहेको छ |

कानूनी प्रक्रिया

- जग्गा प्राप्ति गर्ने नेपाल सरकारबाट निर्णय भएपछि प्रारम्भिक कार्य शुरु हुने |
- जग्गा प्राप्त गर्ने कार्यालयको रा.प. कर्मचारी नभए प्रमुख र परियोजना भए प्रमुखले कुन ठाउमा कति जग्गा प्राप्त गर्ने हो यकिन गर्ने हो सो को यकिन गर्ने प्रारम्भिक कारवाही चलाउनुपर्ने |
- प्रारम्भिक कारवाही चलाउने अधिकारी (यस पछि अधिकारी) ले सरोकारवालाको जानकारीको लागि निम्न स्थानमा सूचना टाँस गर्ने (स्थानीय तहमा, आसपासको क्षेत्रमा, घर र त्यसले चर्चेको कुनै कम्पाउण्ड समेत प्राप्त गर्नुपर्ने भए त्यस्तो घर दैलो वा कम्पाउण्डमा समेत)
- सूचनाको ३ दिन पछि अधिकारी देहायको कार्य गर्न जग्गा वा घर कम्पाउण्डमा प्रवेश गर्न सक्ने
- नाप नक्सा लिन वा सर्वे गर्ने
- प्राप्त गर्नउपयुक्त छ छैन भनि यकिन गर्न दुंगा माटोको नमुना संकलन गर्न, खाडल खन्न, बोरिङ गर्न आदि
- उपयुक्त ठहरिएको जग्गा छुट्याउन, साँध किल्ला खडा गर्न वा निशाना लगाउन वा उपयुक्तता परिक्षणको लागि कुनै उपकरण खडा गर्ने
- नाप नक्सा, सर्वे आदि कुनै कान गर्दा वली, रुख हटाउन वा छेकवार/पर्खाल भत्काउनु परेमा अधिकारीको आदेश लिई कुनै व्यक्तिले गर्न सक्ने

- यी माथिका काम गर्दा नोकसानी भएमा क्षतिपुर्ति दिनुपर्न/क्षतिपुर्ति रकम प्रा.का.च. अधिकारीले निर्धारण गरी वितरण गर्नुपर्ने
- क्षतिपुर्तिम चित नबुझनेले क्षतिपुर्ति निर्धारण भएको जानकारी भएको मितिले १५ दिन भित्र प्रमुख जि.अ. समक्ष उजुर गर्न सक्ने/प्र.जि.अ.को निर्णय अन्तिम हुने
- कारवाही शुरु गरेको १५ दिन भित्र प्रा.का.चलाउने अधिकारीले प्रा.जि.अ. समक्ष आवश्यक प्रतिवेदन पेश गर्नुपर्ने

जग्गा प्राप्तिको सूचना र अधिग्रहणको प्रक्रिया

जग्गा अधिग्रहण प्रक्रियामा २१ चरणहरु सम्पन्न गर्नुपर्ने कानूनी प्रावधान रहेको छ | सो लाई छोटकरी रूपमा विभाजन गर्दा ६ Steps मा विभाजन गरी बयक्त गर्न सकिन्छ |

१. प्रतिवेदनका आधारमा प्रा.जि.अ. ले निम्न विवरण सहित सूचना जारी गर्न
 - जग्गा प्राप्त गर्नुपर्ने कारण/घर कम्पाउण्ड समेत भए सो समेत
 - जग्गाको विस्तृत विवरण/गा.बि.स., स्थानीय तह, वडा, कित्ता.न., चार किला आदि
 - मुआब्जा दावी गर्ने प्रमाण सहित निवेदन पेश गर्न म्याद (१५ दिन)
 - वली, रुख, पर्खाल घर, भत्काई लैजाने पाउने भए त्यसको म्याद समेत
 - सूचना टाँस गर्ने (जग्गा प्राप्त गर्नेको स्थानीय कार्यालय, जि.प्र.का., जि.स.स., स्थानीय मालपोत, स्थानीय तह, बढी आवतजावत हुने स्थानमा आदिमा)
२. रजिष्ट्रेशन रोकका : सूचना टाँस भएपछि भूमि प्रशासनले हक छोड्ने लिखतको रजिष्ट्रेशन रोकका गर्नुपर्ने
३. जग्गा प्राप्त गर्ने कारवाही विरुद्ध उजुरी : सूचना टाँस भएको मितिले बाटोको म्याद बाहेक ७ दिन भित्र जग्गा प्राप्त नगर्नुपर्ने कारण खोलि स्थानीय अधिकारी मार्फत गृह मन्त्रालयमा उजुर गर्न सक्ने/जग्गवालको स्वीकृति लिई मोहीले पक्की घर बनाएको भए उजुरी लाग्ने
४. उजुरी उपर प्रा. का. चलाउने अधिकारी र स्थानीय अधिकारीको समेत रायलिई गृह मन्त्रालयले साधारणयता १५ दिन भित्र निर्णय दिनुपर्ने
५. प्राप्त जग्गा कब्जामा लिने
 - उजुरी परे टुङ्गो लागे पछि /नपरे म्याद नाघे पछि स्थानीय अधिकारी ले जग्गा कब्जामा लिई कार्यालयलाई बुझाउने र जानकारी सरकार लाई दिनुपर्ने
 - घर समेत प्राप्त गर्नुपर्ने भए मुनासिव माफिकको पेश्की वा मुवाज्जको ५०% रकम नदिई घर कब्जा गर्नु हुँदैन |
६. जग्गाको स्वामित्व सर्ने : स्थानीय अधिकारीले प्राप्त गर्ने कार्यालयलाई दिएपछि प्रयोगमा ल्याउन सकिने र स्वामित्व नेपा सरकारमा सर्ने

जग्गा प्राप्ति/अधिग्रहणम रहेको समस्या र सो को समाधानको लागि हुनुपर्ने सुधारहरु

समस्या

१. जग्गा प्राप्ति ऐन २०३४ बनेको झन्डै ५० बर्ष बितिसकदा पनि नियमावली नबन्नु र समय सापेक्ष सुधारका प्राबंधानहरु जग्गा प्राप्ति ऐन २०३४ समाबेश नहुनु
२. जग्गा अधिग्रहण गर्दा जग्गाको दर रेट निर्धारणको लागि स्विकृत बैज्ञानिक, बस्तुनिष्ठ आधार र मापदण्ड नहुनु
३. विकास साझेदारको सहयोगमा र नेपाल सरकारको आफ्नै लगानीमा निर्माण हुने भौतिक संरचनाको लागिको लागि जग्गाको मुआब्जा, क्षतिपुर्ति, तथा पुनर्बास नीतिको एकरूपता व्यबहारमा लागु नहुनु
४. औपचारिक बाहेकको अन्य भूसम्बन्ध (अर्थ औपचारिक, अनौपचारिक तथा अतिक्रमण भएका जग्गाहरु) भएका जग्गा र सम्बन्धित पूर्वाधारको मुल्यांकन तथा क्षतिपुर्ति सम्बन्धिका नीतिको एकरूपता व्यबहारमा लागु नहुनु र सरकार ले यस्ता प्रकृतिमा पटके निर्णय गर्नु
५. जोखिमयुक्त घर परिवार, अल्पसंख्यक, आदिबासी जनजाती हरूको ILO 169 का प्राबंधानहरु जग्गा प्राप्ति ऐनमा अन्तरिक्किकरण गर्न नसक्नु

6. अनैच्छिक पुनर्बास रोकन, टार्न वा घटाउनक लागि ASI framework बमोजिम आयोजनाको विभिन्न बैकल्पिक डिजाइन हेर्नुपर्ने अनिवार्यता जग्गा प्राप्ति ऐन २०३४ मा नहुनु
7. जग्गा प्राप्ति ऐन २०३४ मा भएको पुनरावलोकनको प्राबधान भएपनि अस्पस्ट प्रक्रिया, विधि र अधिकारको प्रयोग गर्ने कठिनाई हुनु
8. जग्गा प्राप्ति ऐन २०३४ मा भएको चलनचल्तीको दर रेट सम्बन्धमा प्रस्तता नहुनु
9. जग्गा प्राप्ति ऐन २०३४, जग्गा प्राप्ति गर्ने अन्य तरिका जस्तै Land pooling, Lease, जग्गा विकास कार्यक्रमहरू बारे मौन रहनु
10. रैकर जग्गा बाहेक अन्य जग्गालाई सम्बोधन नगरेको जस्तै फिल्ड बुक मा नाम भइ पुर्जा नभएका जग्गा मा (महाकाली सिंचाई आयोजना मा पुरै जग्गा पर्ने लाई ९०%, अन्य लाई ८०% मुआब्जा दिने पटके निर्णय), ऐलानी जग्गाको हकमा (सिक्टा सिंचाई आयोजनामा त्यस्ता जग्गा भोग गरेकालाई ६५% मुआब्जा दिने पटके निर्णय), कुनै समय मुआब्जा दिएको वा पहिले देखि सार्वजनिक प्रयोजनको लागि प्रयोग भैरहेको तर लागतकट्टा नभएको तर व्यक्तिको नाममा लालपुर्जा रहेकोमा सम्मानित सर्बोच्च अदालतबाट पुनःमुआब्जा दिने आशयको आदेश (हुलाकी राजमार्ग, बागमती सिंचाई आयोजना), गुठीका जग्गा आदि
11. तोकिएको समयमा मुआब्जा लिन नआउने/नलिने र पछि अदालतबाट वा राजनीतिक पहुँचको आधारमा चलनचल्तीको दररेटमा मुआब्जा माग्ने प्रवृत्ति जस्तै हुलाकी राजमार्ग कलैया बजार, बेगनास नहर कास्की आदि
12. जग्गा प्राप्ति प्रक्रियामा प्रत्यक्ष/अप्रत्यक्ष संलग्न निकायहरू बीच प्रभावकारी समन्वयको अभाव रहनु
13. प्रारम्भिक कारवाही चलाउने अधिकारीमा Teamwork, पर्याप्त तयारी, गृहकार्यको कमी रहनु
14. सुरुंग जस्ता संरचना निर्माणमा सुरुंग पर्ने सबै जग्गा अधिग्रहण नगरेपनि निर्माण कार्यबाट प्रभावित समुदाय/व्यक्तिहरूको हकहित जस्तै पानि सतह घटबढको कारण धारामा पानी नआउने मुद्दा संबोधन गर्ने उचित प्रवन्ध नहुनु

सुधारका उपायहरू

1. माथि उल्लेखित समस्याहरूमा बुंदागत रूपमा सुधारका उपायहरू अपनाउने
2. सामाजिक प्रभाव मूल्यांकन नगरी जग्गा प्राप्ति सम्बन्ध कारवाही नचलाउने
3. विस्तारित हुने र जीवनशैली परिवर्तन, पुरै जग्गा र आंशिक जग्गा पर्नेहरूका सम्बन्धमा बैकल्पिक बसोबास, सामाजिक पुनर्स्थापना सम्बन्धमा सहजीकरण गर्न बहुपक्षिय् समितिको प्राबधान राख्ने
4. पुनर्वास तथा पुनर्स्थापना नीति २०७१ का प्राबधानहरूलाई कार्यान्वयन गर्न सम्बन्धित ऐन, कानुनमा सुधार गर्दै नियमावलीमा प्रस्त व्यबस्था गर्ने
5. सम्बन्धित जग्गा धनीको सहमति वा बनक्षेत्र/सार्वजनिक क्षेत्रमा निर्माण भएका सडक, सिंचाई जस्ता भौतिक संरचनाहरूको जग्गासम्बन्धित सरकारी निकायका नाममा लागतकट्टा गरिनुपर्ने
6. विकास आयोजना निर्माण हुने/बन्ने घोषणा पश्चात अतिक्रमण गरी बसोबास गरेका अव्यवस्थित बसोबासी हरूलाई कुनै किसिमको राहत/क्षतिपुर्ति नदिने व्यबस्था कडाईक साथ लागू गर्ने
7. अधिग्रहण गर्नुपर्ने जग्गा हरु सम्भवत अधिग्रहण पश्चात मात्र निर्माण कार्य शुरू गर्ने र निर्माण कार्यको स्वीकार गर्नुभन्दा जग्गा मुआब्जा/क्षतिपुर्ति/पुनर्स्थापनाक सम्पूर्ण कार्य पुरा गर्नुपर्ने कानुनी व्यबस्था गरी लागू गर्ने
8. देशभरिका विभिन्न भौतिक संरचना निर्माण प्रयोजनका लागि जग्गा अधिग्रहण गर्ने निकायहरूले निर्धारण गर्ने दररेटमा एकरूपता हुनुपर्ने कानुनी व्यबस्था हुनुपर्ने
9. विभिन्न आर्थिक सोतबाट निर्माण हुने जस्तै ADB, WB, GoN वा निजिक्षेत्र बाट जग्गा मुआब्जाको दररेट, पुनर्स्थापना र पुनर्बासका कार्यहरूमा एकरूपता ल्याउने कानुनी व्यबस्था हुनुपर्ने
10. कमक्षेत्रफल भएका जग्गा अधिग्रहण गर्दा थोरै बाकी वा बाँकि जग्गाको उपयोगिता नहुने अवस्थामा जग्गाधनीको सहमति भए पुरै जग्गा अधिग्रहण गर्न सक्ने व्यबस्था हुनुपर्ने आदि

जग्गा प्राप्ति ऐन २०३४ मा पुनर्बास सम्बन्ध नीतिको संरचनाको सन्दर्भमा जग्गा प्राप्ति ऐनमा गरिएको व्यवस्थाहरू

- कसैको निजि सम्पति अधिग्रहण गर्दा र सो वापतको मुआब्जा दिंदा प्रारम्भिक प्रक्रिया, प्रारम्भिक अनुसन्धान प्रक्रिया, जग्गा अधिग्रहण गर्ने सूचना, मुआब्जा वितरण सम्बन्धित सूचना र दावी बिरोध सम्बन्धित सूचनाक प्रक्रियाहरु अवलम्बन गर्नुपर्ने
- अधिग्रहण गरिने जग्गा र सम्पतिको मुआब्जाको दररेट निर्धारण गर्ने मुआब्जा निर्धारण समिति (जिल्लास्तरको) गठन गर्नुपर्ने
- प्रारम्भिक अैथ्ययन गर्दा त्यसबाट कुनै किसिमको हानि नोकसानी भएमा, योजनाले स्थायी रूपमा अधिग्रहण गरेको जग्गा र सम्पति (लगाएको बालि, रुख बिरुवा र घर आदि) समेतको मुआब्जा र क्षतिपूर्ति दिनुपर्ने
- मुआब्जाको दररेट निर्धारण गर्दा जर्ती सामानको हास कतिको समेत हिसाब गरेर निर्धारण गर्नुपर्ने
- मुआब्जा दिंदा नगदमा दिनुपर्छ तर कुनै जग्गा धनीको आफ्नो स्वामित्वको सबै जग्गा गुम्ने भएमा त्यस्ता जग्गावालालाई उपलब्ध भए सम्म जग्गाको सट्टा जग्गा नै दिईने
- मुआब्जा वितरण गर्दा मुआब्जा पाउने अधिकार प्राप्त व्यक्तिलाई नै दिनुपर्ने
- यदि जग्गाधनी ले अधिग्रहण र मुआब्जा सम्बन्धमा दावी बिरोध गर्नुपरेमा स्थानीय अधिकारीले जग्गा अधिग्रहण सम्बन्धित सूचना प्रकाशित गरेको निश्चित अवधिभित्र आफ्नो दावी बिरोध पेश गर्न सक्ने
- मुआब्जा दिंदा सबै जग्गा गुमाउने र आंशिक जग्गा गुमाउनेको हकमा फरक फरक दररेटमा दिन सकिने
- मुआब्जा निर्धारण समितिले मुआब्जाको रकम हिसाब गर्दा नेपाल सरकारले सो सम्बन्धमा लागू गरेको निर्देशिका र अधिग्रहका कारण जग्गाधनीले गुमाएको जग्गा र आफ्नो बासस्थान वा व्यापार व्यवसाय लाई अन्यत्र सार्नु पर्दा व्यहोर्नु पर्ने रकम समेत हिसाब गर्नुपर्ने
- यदि जग्गा अधिग्रहण गर्नुपर्ने हो भने मुआब्जा निर्धारण समितिले अधिग्रहणको सूचना प्रकाशित भएको बेला अधिग्रहण गरिने जग्गाको प्रचलित दररेट अनुसारको मूल्य, जग्गामा लगाएको वालीनाली र त्यसमा निर्मित संरचना र जग्गा अधिग्रहका कारण घरबास र व्यापार व्यवसाय साबिक ठाँ बाट अन्यत्र सार्दा लाग्ने खर्च जस्ता बिषयहरु विचार गर्नुपर्ने आदि

राष्ट्रिय योजना आयोगले प्रकाशित गरेको पूर्वाधार विकास आयोजनाका लागि जग्गा प्राप्ति, पुनर्बास र पुनर्स्थापना नीति २०७९ क प्राबधानहरु

- सबै जग्गा गुमाउनेलाई जग्गाको सट्टा जग्गा दिने
- आर्थिक समाजिक लाभका अवसर उपलब्ध गराउने
- पुनर्बास तथा पुनर्स्थापना योजना तयार गर्ने
- विस्थापन हुनुभन्दा पहिले नै क्षतिपूर्ति, पुनर्बास/पुनर्स्थापना सुविधा प्रदान गर्ने
- स्वेच्छा बाहेक सम्भव भए सम्म आसपासको क्षेत्रमै पुनर्स्थापना गराउने
- आदिबासी/जनजाती तथा दलित लगायतका परिवार लाई थप सुविधा दिने
- स्वामित्व नभएका तर बसोबास गरिरहेका व्यक्तिलाई क्षतिपूर्ति दिने
- लागतको प्रतिफल प्राप्त हुने हिसा प्रभावित परिवार सम्म पुर्याउने
- जोखिमयुक्त परिवार, महिला द्वारा नेतृत्व गरिएका परिवारहरुलाई बिशेष थप सुविधाहरु प्रदान गर्ने आदि

अनिच्छित पुनर्बास सम्बन्धमा दातृ निकायका नीतिहरु

हालका बर्षमा दिपक्षिय र बहुपक्षिय विभिन्न दातृसमुदाय ले पनि आआफ्नो निकायका लागि पुनर्बास नीति र निर्देशिका तयार गरी लागू गरेको पाइन्छ । ति सबै नीति र निर्देशिकाहरु WB, ADB संग मिल्दाजुल्दा छन् ।

WB को नीति

- सम्भव भएसम्म अनिच्छित पुनर्स्थापना/पुनर्बासलाई टार्ने (Avoid) वा न्यूनतम गर्ने
- योजना तर्जुमा सबै सम्भाव्य बिकल्पहरु खोज्ने
- अनिच्छित पुनर्बास गर्दा अधिग्रहण गरेको जग्गाको मुआब्जा वितरण गर्दा पारदर्शी प्रक्रिया अपनाउने

- प्रभावित भई विस्थापित, भएका व्यक्तिहरुलाई उनीहरुले आफ्नो जीविकोपार्जन को स्तर, आयआर्जनको क्षमता र उत्पादनको परिणाम बढाउन वा कम्तिमा तिनलाई साविक काइ अवस्थामा राख्नका लागि गरेको प्रयासलाई पुनर्बास कार्ययोजना द्वारा सहयोग गर्ने
- प्रभावित व्यक्तिहरुलाई उनीहरुले कमाई रहेको जग्गाको स्वामित्वको कानुनी स्थिति जे जस्तो भए पनि सहयोग गर्ने नीतिले अनिच्छित पुनर्बास हुदा पुनर्बास कारणबाट अर्को ठाउँमा भौतिक संरचना निर्माण गर्दा लाग्ने खर्च मात्र होइन, यसरि बसाई सर्नु पर्दा गुम्ने सम्पति, वासस्थान सम्पति र सम्पतिमा हुने पहुँच, आयस्रोत, जीविकोपार्जनमा पुग्ने निक्सनी समेत प्रभावित व्यक्ति अन्यत्र सार्नुपरेमा पनि त्यो खर्च व्यहोर्नु पर्ने

ADB को पुनर्बास नीति

- सम्भव भएसम्म अनिच्छित पुनर्स्थापना/पुनर्बासलाई टार्न (Avoid) वा न्यूनतम गर्ने
- प्रवाभित व्यक्तिहरुको विस्थापन टार्न/रोकन नसकिने भएमा, योजनाका विभिन्न सम्भाव्य बिकल्प हरुको अध्ययन गरी यसलाई न्युनतम गराउनु पर्छ
- प्रभावित भई विस्थापित, भएका व्यक्तिहरुलाई उनीहरुले आफ्नो जीविकोपार्जन को स्तर, आयआर्जनको क्षमता र उत्पादनको परिणाम बढाउन वा कम्तिमा तिनलाई साविक भन्दा राम्रो अवस्थामा राख्नका लागि गरेको प्रयासलाई पुनर्बास कार्ययोजना द्वारा सहयोग गर्ने
- प्रभावित व्यक्तिहरुलाई सबै सुचनाहरु दिनुपर्छ र पुनर्बास तथा मुआब्जा वितरणका विभिन्न बिकल्प बारे उनीहरु संग छलफल गर्नुपर्ने
- विस्थापित हुने व्यक्तिहरु र उनीहरुलाई आश्रय दिने व्यक्ति हरुको पनि विद्यमान सांस्कृतिक संस्थाहरुको संरक्षण गर्नुपर्छ र सकेसम्म बढी मात्रामा उपयोग गर्नुपर्छ र पुनर्बास गराइएका व्यक्तिहरुलाई आश्रय दाता समुदायको आर्थिक तथा सामाजिक अवस्थामा समिश्रण (Integrated) गर्नुपर्छ
- कुनै प्रभावित व्यक्तिसंग जग्गाको कानुनी हक नभए पनि उसलाई यसको मात्र आधारमा मुआब्जा पाउन बाट बन्धित गर्नुहोदैन र यस सन्दर्भमा महिला र आदिबासी जनजाती जातीय अल्पसंख्यक जोखिमयुक्त बर्गका घरमुली भएको परिवारलाई विशेष ध्यान दिनुपर्छ र उनीहरुलाई आफ्नो अवस्था सुधार गर्नका लागि उपयुक्त किसिमले सहयोग गर्नुपर्छ
- सम्भव भएसम्म अनिच्छिक पुनर्बासको कार्यलाई योजनाको एउटा अंगका रूपमा लिएर कार्यान्वयन गर्नुपर्छ
- योजनाको लागत तथा लाभ सम्बन्धि विवरणमा मुआब्जा तथा पुनर्बासक लागि लाग्ने पुरा खर्च पनि समाबेश गर्नुपर्छ
- योजनाका लागि बैंकले लगानी गर्ने ऋण रकममा पुनर्बास तथा मुआब्जाका लागि लाग्ने खर्च पनि समाबेश गर्ने तर्फ विचार गर्नुपर्छ आदि

अनैच्छिक पुनर्बास तथा अधिग्रहण बारे नेपाल सरकार र दातृ निकायहरुको नीतिहरुको तुलना

Common सिद्धान्त/उद्देश्यमा समानता

- अनिच्छिक पुनर्बासलाई विभिन्न बैकल्पिक डिजाइन बारे विचार गरी तीनम सामाजिक बिषयहरु समाबेश गरेर सम्भव भएसम्म टार्न वा घटाउनु पर्छ।
- जहाँ पुनर्बास अपरिहार्य छ यस्तो अवस्थामा समाप्ति, घरवार जीविकोपार्जन र अन्य साधन स्रोतहरु गुमाउने व्यक्तिहरु लाई उनीहरुले खर्च व्यहोर्नु नपर्ने गरी कम्तिमा पहिलेको जीवनस्तरमा पुर्याउन वा सुधार्न सहायता पुर्याउनु पर्ने तर पनि त्यहाँ केहि क्षेत्रहरु छन् जहाँ WB, ADB र अन्य निकायहरुका मापदण्ड लाई समेट्न राष्ट्रिय निर्देशिका तथा ऐनहरुमा भोग चलन गरेको समाप्तिको कानुनी हकहरुक लागि थप उपाय वा प्रब्धान्को निर्धारण आवश्यक छन्।

राष्ट्रिय नीतिहरुमा रहेको अन्तर (gaps) तथा सीमाहरु

- राष्ट्रिय कानुनले दर्तावाला जग्गावाला लाई मात्र क्षतिपूर्ति दिने प्राबधान राखेको छ र दर्ता नभएको मोही, किसान, दुकानदार, कारिगरी तथा दलितहरु लागायत परियोजना बाट प्रभावित अन्य सबैलाई क्षतिपूर्ति दिने प्राबधान छुटेको र जोखिमयुक्त समुदाय हरुका सरोकारलाई संरक्षण गर्न त्यहाँ कुनै प्राबधान छैन।

- राज्यको कानूनले अतिक्रमणकर्ता अथवा अवैध वसोबासीहरुको सम्बन्धमा क्षतिपुर्ति/मुआब्जाको लागि कानुनी हकको प्रावधान बनाएको छैन | तिनीहरुका लागि पनि क्षतिपूर्तिको प्राबधान राखिनुपर्ने कारण यो छ कि गरिव जनताहरु जसको सम्पति तथा घरबाहरहरु परियोजनाको कारणले नष्ट हुन्छ वा बिघिन्छ, तिनलाई सघाउनु हो |
- यसै गरीत्यस्ता जोखिमयुक्त समुदायहरुलाई पुनर्बास सहायता दिने त्यहाँ कुनै प्राबधान छैन |
- नेपाल सरकारलाई जयजथा चाहिएमा प्रैत्स्थापन गर्न लाग्ने वास्तविक मूल्य तिरेर मात्र लिने बाध्यात्मक प्राबधान बारे राज्यको कानुनले कुनै व्यवस्था गरेको छैन |
- भूमि अधिग्रहण ऐन १९९७ /जग्गा प्राप्ति ऐन २०३४ मा आयोजना बाट प्रभावित व्यक्तिहरुको हितमा धिर्घक्लिन रूपमा प्रत्यक्ष असार पार्ने निर्णय प्रक्रियामा सरोकारवालाको सहभागिता र पारदर्शिता बारे जोड दिएको छैन | अङ्ग मुआब्जा निर्धारण समितिमा आयोजना बाट प्रभावित व्यक्तिको प्रतिनिधि वा स्थानीय तहका प्रतिनिधि कसैलाई पनि सहभागी गराउन आवश्यक मानिएको छैन |
- अनैच्छिक पुनर्बास रोक्न/टार्न वा घटाउनक लागि आयोजनाको विभिन्न बैकल्पिक डिजाइन हेर्नुपर्ने गरी स्पष्ट निर्देशहरु राखिएको छैन |
- क्षतिपूर्तिक लागि केवल नगद भुक्तानी दिने मात्र व्यवस्था गरिएको छ | काम फर्छौट गर्ने यो सबै भन्दा सरल विधि हो तर धैरै नगद कारोबार नै नरहेको परिवारहरु मा यसको दीर्घकालीन प्रभाव अरुमा भन्दा बढी नकारात्मक पर्ने कुराको विचार गरिएको छैन |
- ऐनमा जग्गाको बदला जग्गा नै क्षतिपूर्ति दिने प्राबधान छ जस्तो कि यदि दर्तावालाले आफ्नो सबै जग्गा गुमाउछ र क्षतिपूर्तिको रूपमा जग्गा नै लिन चाहन्छ र यदि त्यहाँ ऐलानी जग्गा वा अन्य सरकारी जग्गा उपलब्ध छ भने सरकारले जग्गा उपलब्धके गराउन सक्छ | तर विगतका अनुभवहरुले के दर्शाउछ भने त्यस बिषय संग सम्बन्धित दफाहरु अति सामान्य छन् र तिनले कार्यान्वयनको लागि बाध्य गराउदैन | परियोजनाबाट प्रभावित व्यक्तिहरुले यस प्रब्धान्को प्रयोग गर्न सक्छन वा यसको प्रयोग पूर्ण रूपमा सरकारको निर्णयमा भर पर्छ भन्ने कुरा स्पष्ट छैन |
- अधिग्रहन्को सूचना र क्षतिपूर्ति रकम भुक्तानी गरिने समयसीमाको प्रत्यक्ष अन्तराल बारे विचार नगरिनाले पर्ने जाने समस्या विद्यमान कानुनी प्रभृत्यन्को अर्को कमजोरी रहेको छ |

राष्ट्रिय नीतिहरुमा रहेको अन्तर (gaps) तथा सीमाहरु घटाउने उपायहरु

- परियोजनाबाट प्रभावित व्यक्तिलाई त्यस्तो व्यक्ति वा घर्वार्को रूपमा परिभाषित गरिनुपर्छ, जसले आयोजन कार्यान्वयनबाट जमीनको उपयोगमा परिवर्तन हुन् गई जग्गाको क्षति, घरबास तथा अन्य सम्पतिहरु, आम्दानी अथवा सार्वजनिक सुविधाहरुमा भैरहेको पहुँच गुमेको कारण घरबाट वा जीवनस्तरमा नकारात्मक प्रभाव भोग्नु पर्छ |
- प्रत्येक किसिमको क्षतिको लागि कानुनी हक कायम गरिनुपर्छ |
- जोखिमयुक्त समुदायहरुको हकहित सुरक्षाक लागि विशेष द्यान दिनुपर्ने र अन्तिम म्याद दिएको मितिभित्र लिइएको विवरण नै अधिकारिक हुने र त्यस पछि कुनै जाली अतिक्रमण कर्ता कानुनी रूपले क्षतिपूर्तिको हकदार मानिने छैन | तर कुनै भूमिहीन किसानहरु/अबैध बसोबासीहरु तोकिएको मिति भन्दा ३ बर्ष अघि देखि कानुनी हक बेगर नै सार्वजनिक जमीन ओगटेर बसेका छन् र त्यस्तो जग्गा अरु कसैले दावी गरेको छैन भने त्यस अवस्थामा जति जग्गा गुम्छ, त्यसको क्षतिपूर्ति पाउने कानुनी हक दिनुपर्छ र यदि उनीहरु संग अन्य कुनै खेतीयोग्य जमीन छैन भने बाँकि र प्रभाव नपरेको जग्गामा कानुनी हक दिनुपर्छ |
- जग्गा बाहेक गुमेका धनमाल हरुको क्षतिपूर्ति दिंदा त्यसको सोधभर्ना /सट्टा भर्ना गर्न रकम दिने व्यवहारिक व्यवस्था बनाइनु पर्छ र त्यस्तो धनमाल अन्यत्र सार्ने लाग्ने दुवानी खर्च र अर्को ठाड़ मा निर्माण गर्ने लाग्ने खर्च रकम समेत क्षतिपूर्ति स्वरूप दिनुपर्छ | जोखिमयुक्त समुदायका हकमा उनीहरुको जीवन स्तर सुधिने गरी साहयोग गर्नुपर्छ |
- संभव भए सम्म जमिनको मोल तोकदा खुद प्रतिस्थापन मूल्यलाई नै तोक्ने प्रत्यन गरिनुपर्छ | क्षतिपूर्तिक दरहरु निर्धारण गर्न एक प्रक्रिया निर्धारण गनुपर्छ | साथै गुमेका धनमाल बापतको क्षतिपूर्ति पुनः जोड्न पुग्ने गरी बिना हास कट्टी गरी दिनुपर्ने व्यवहारिक व्यवस्था गर्नुपर्छ |
- क्षतिपूर्ति, पुनर्बास वा पुनर्स्थापना संग सम्बन्धित पुनर्बासक मुद्दाहरु को छिनोफानो गर्दा प्रभावित व्यक्तिहरु तथा सम्बन्धित स्थानीय तहका प्रतिनिधिहरु संलग्न हुने कानुनी व्यवस्था हुनुपर्छ |

7. संभव भए सम्म आयोजनाका सबै बैकल्पिक डिजाइन बारे विश्लेषण गरेर जग्गा अधिग्रहण तथा पुनर्बासको काम टार्नुपर्छ वा त्यसलाई न्यूनीकरण गर्नुपर्छ ।
8. जग्गा अधिग्रहण गर्ने वा नगर्ने बिषय खुला राखिनु पर्छ, आयोजनाको बिस्तृत समिक्षा, परामर्श र प्रभावित हुनसक्ने परिवारहरु लाइ विभिन्न विकल्पहरु बाट पर्ने सबै असरबारे जानकारी गराई सहमतिमा निर्णय लिनुपर्छ ।
9. ग्रामिण क्षेत्रमा जग्गाको बदला जग्गा र सहरी क्षेत्रमा नगद्लाई प्राथमिकता दिएर प्रभावित व्यक्तिहरूलाई क्षतिपूर्ति दिने बिकल्प राख्नु पर्छ ।
10. खेतीयोग्य जमिनको क्षति बाट नरामरीप्रभावित हुने उपयुक्त जग्गाको खोजि गरेर सो खरिद गरी सट्टाभर्ना दिने र पुनर्स्थापना स्वरूप घरको एकजनालाई सिपबिकासको तालिम दिने ब्यबस्था गरिनुपर्छ ।
11. Tenant/मोही ले लिएको जग्गामा घर बनेको भए त्यसको नगद क्षतिपूर्ति दिएर त्यसै किसिमको सुहाउदो अर्को घर खोजनमा सहयोग गर्नुपर्छ ।

सार्वजनिक सडक ऐन २०३१

प्रस्तावना : सर्वसाधारण जनताको सुबिधा तथा आर्थिक हित कायम राख्नेको लागि सबै किसिमको सार्वजनिक सडकहरूमा बर्गीकरण गरी तिनीहरूको निर्माण, सुधार, विस्तार गर्ने आवश्यक पर्ने जग्गा प्राप्त गर्ने र सार्वजनिक सडक बाट Benefit हुने सडक छेउका जग्गावालाबाट विकासकर असुल गर्ने उद्देश्य राखी बनाइएको ।

नेपालमा सडक निर्माण तथा मर्मत सम्भार गर्ने मार्ग निर्देशन गर्ने कानूनी दस्तावेज हो । सडक सम्बन्धि निकायलाई प्राप्त अधिकार/अछित्यारहरु निम्न छन् ।

- सडक सिमा भित्रको जग्गाको सबै किसिमको अधिकार
- सडक निर्माण, पुनर्स्थापना र मर्मत सम्भार गर्नुपर्दा कुनै जग्गा वा जग्गामा निर्मित सम्पति अस्थायी रूपमा अधिग्रहण गर्ने
- मुआब्जा निर्धारण समितिले सडक निर्माण तथा मर्मत गर्दा कुनै सम्पति, ब्यापार व्यवसाय वा उत्पादनमा क्षति हुने भएमा त्यसका लागि दिनुपर्ने मुआब्जा दिने
- कुनै जग्गाबाट निर्माण सामग्री उपलब्ध गर्नुपर्ने भए त्यस वापत दिनुपर्ने मुआब्जा बारे देतैल प्रावधान
- दफा १९ ले सडक सिमा भित्र कुनै काम गर्न अनिवार्य रूपले सडक विभागको अनुमति लिनुपर्ने
- स्थानीय निकायले सार्वजनिक सडकको सीमाभित्र कुनै क्रियाकलाप संचालन गर्नुपर्ने भए सडक विभागको स्वीकृत लिनुपर्ने
- सडक निर्माण र स्तरोन्नति गर्दा समान भण्डार, camp/diversion निर्माण आदिको लागि अस्थायी रूपमा आवश्यक पर्ने जग्गा अधिग्रहण गर्न सक्ने तर सो ले गर्दादिन्हुने क्षतिको क्षतिपूर्ति दिनुपर्ने
- सडकको निर्माण र स्तरोन्नति गर्दा संगै जोडिएको जग्गाबाट माटो, बालुवा, ढुङ्गा जस्ता निर्माण सामग्री झिक्ने
- ऐनमा जग्गा भाडा लिने प्राबधान नरहेको भए पनि सडक निर्माण वा स्तरोन्नति गर्दा सो को कारणले कुनै भवन, बालीनाली, रुख बिरुवा आदिमा क्षति भए सो वरावरको क्षतिपूर्ति दिने
- सार्वजनिक सडक को बर्गीकरण र सडक सिमा तोक्ने/सडक किनारबाट ६/६/ मिटर नबढ्ने गरी पर्खाल बाहेक कुनै स्थायी संरचना बनाउन निषेध गर्ने
- सडकले बहन गर्न सक्ने Axle Load भार बहन तोक्ने
- सार्वजनिक सडकको आवगमनमा बाधा पुर्याउने माल्बस्तु हटाउने
- स्वीकृति नलिई सार्वजनिक सडक/सीमाका कुनै काम गर्न नदिने
- ऐन बमोजिम कसुर सम्बन्धि मुद्दाको तहकिकात गरी तोकेको अधिकारी समक्ष पेश गर्ने
- ऐनले तोकेको काम गर्दा बाधा बिरोध गरेमा दण्ड सजाय गर्ने

सार्वजनिक सडक ऐनमा भएका विकास कर सम्बन्धि प्राबधानहरु र यसको सार्थकता

सार्वजनिक सडक ऐनको प्रस्तावना नै सर्वसाधारण जनताको सुविधा तथा आर्थिक हित कायम राख्नेको लागि सबै किसिमको सार्वजनिक सडकहरूमा बर्गिकरण गरी तिनीहरूको निर्माण, सुधार, विस्तार गर्ने आवश्यक पर्ने जग्गा प्राप्त गर्ने र सार्वजनिक सडक बाट Benefit हुने सडक छेउका जग्गावालाबाट विकासकर असुल गर्ने उद्देश्य राखी बनाइएको बाट विकास करको महत्वपूर्ण सार्थकता रहेको बुझ्न सकिन्छ ।

सो ऐनमा विकास कर सम्बन्धि व्यवस्थाहरु निम्नलिखित छन् ।

- दफा २३ मा विकास कर लाग्ने जग्गा र त्यसको खण्ड विभाजन गरेको छ ।
- २३ (१) मा सडक सिमा तोकिएमा सडक सिमा र सडक सिमा नतोकिएको सडकको किनारबाट कुनै दुवै तर्फ २५० मिटर सम्मको जग्गामा विकास कर लाग्ने, तर दफा ३ क बमोजिम सडक सिमा बाट ६/६ मिटर मा स्थायी बनौट वा संरचना निर्माण निषेधित क्षेत्रमा बिक्स्कर नलाग्ने ।
- २३ (२) मा उपदफा १ बमोजिमको २५० मिटर खण्ड हरूलाई १२५ मिटरक दरले खण्ड क र ख मा विभाजन गरिएको
- दफा २४ (१) मा दफा ५ बमोजिम जग्गा प्राप्त गर्दा जुन क्षेत्र या इलाकामा त्यस्तो जग्गा जे जति मोल कायम भई मुआब्जा दिइएको हो त्यस्तो क्षेत्र वा इलाकामा सोहि मिलको देहाय बमोजिमको प्रतिशतले हुन् आउने रकम विकास कर स्वरूप असुल उपर गरिने ।
- खण्ड क जुन सडक संग प्रत्यक्ष जोडिएको पहिलो १२५ मिटर भित्र रहेको जग्गा मा २०%
- खण्ड ख जुन सडकसंग प्रत्यक्ष जोडिएको पहिलो १२५ मिटर पछि को १२५ मिटर देखि २५० मिटर सम्म रहेको जग्गा मा १०%
- साथै उपदफा १ मा जुनसुकै कुरा लेखिएको भए तापनि नेपाल सरकारले कुनै जग्गामा लाग्ने विकास कर घटाउन वा छुट दिन सक्ने प्राबधान रहेको ।

कार्यान्वयनको अवस्था र सार्थकता

- ऐन बनेको ५ दशक हुन लाग्दा समेत नियमावली नहुनाले विकास कर असुली नभएको
- अधिकांश सडक निर्माण बैदेशिक सहयोग बाट निर्माण हुने बाहेक जग्गा अधिग्रहण नगरी निर्माण हुने हुँदा ऐनले भने जस्तो विकासकर उठाउन कठिन
- विकास कर र जग्गा अधिग्रहण/मुआब्जा सम्बन्धि छुटाछुटै ऐनमा रहेको ले कठिनाई
- अधिकांश सडकको RoW बर्गिकरण/मापदण्ड निश्चित नगरिदा सडक सिमा , क्षेत्राधिकारमा अन्यौलता रहनु
- विकास कर घटाउने वा छुट दिने प्रब्ध्यंते अन्यौल र ठुलालाई चैन र साना लाइ ऐन हुने अवस्था ले कार्यान्वयनमा ढिलाई
- सडक सिमा भित्रका जग्गा तत्काल प्रयोगमा नाए सम्म lease/भाडा मा दिन सक्ने व्यबस्था नहुनु

सार्थकता : विकास निर्माणको लागि आवश्यक पर्ने जग्गाको उपलब्धता र त्यसको संरक्षण गर्न बिषय मानवीय हिसाबले सम्बेदनशील र कानुनी हिसाबले जटिल भए पनि पूर्वाधार निर्माणको लागि अनिवार्य शर्तको रूपमा रहेको छ । संबिधानमा नागरिकको मौलिक हक, जग्गा प्राप्ति ऐनमा भएको व्यबस्था तथा राष्ट्रिय यातायात नीतिमा जग्गा प्राप्ति सम्बन्धि बुँदाहरु कार्यान्वयन गर्दै पूर्वाधार क्षेत्रमा लगानी गर्न समेत सरकारसंग सबै लगानीको रकम नहुँदा जग्गा अधिग्रहणमा लाग्ने खर्चमा पूर्वाधार /सडक निर्माणबाट लाभान्वित हुने व्यक्तिहरूसंग केहि रकम विकास करको रूपमा जम्मा गरी पूर्वाधारमा लगानी गर्न उपयुक्त हुनुको साथै सडक सिमा संरक्षणमा समेत योगदान नै पुग्ने हुँदा तत्काल समय सापेक्ष नियमावली ल्याई विकासकरको प्रावधानलाई कार्यान्वयन गर्नुपर्ने देखिन्छ ।

बैदेशी लगानी तथा प्रविधि हस्तान्तरण ऐन, २०७४

प्रस्तावना : मुलुकको आर्थिक सम्बूद्धिका लागि उपलब्ध स्रोतसाधनको अधिकतम परिचालन गर्दै राष्ट्रिय अर्थतन्त्रलाई प्रतिस्पर्धा, सुदृढ तथा रोजगार उन्मुख बनाउन र उत्पादकत्व वृद्धि गरी आयात प्रतिस्थापन, निर्यात प्रवर्द्धन र पूर्वाधार

विकास तथा बस्तु वा सेवाको उत्पादनका क्षेत्रमा विदेशी पूँजी प्रविधि र लगानी लाइ आकर्षित गर्ने लगानीमैत्री वातावरण सिर्जना गर्दै औद्योगिकीकरण मार्फत दिगो आर्थिक वृद्धि हासिल गर्न विदेशी लगानी तथा प्रविधि हस्तान्तरण ऐन आएको ।

प्रविधि हस्तान्तरण : उधोग र विदेशी लगानीकर्ता विच देहायको कुराको सम्बन्धमा समझौता गरी गरिने प्रविधिको हस्तान्तरण समझनुपर्छ ।

- पेटेन्ट, डिजाइन, ट्रेडमार्क, व्यापारिक ख्याती (Goodwill), प्रविधि विशिष्ट, सुत्र, वा प्रक्रिया
- उपयोगको इजाजत, प्रविधि जानकारी प्रदान वा प्राविधिक जानको प्रयोग
- बैदेशिक प्राविधिक सल्लाहकार, व्यवस्थापन वा बजार सेवा उपलब्ध गराउने वा अन्य प्राविधिक सिप वा जान

विदेशी लगानीकर्ता : विदेशी लगानी गर्ने विदेशी व्यक्ति, फर्म, कम्पनी, गैर आवसीय नेपाली वा बिदेशी सरकार वा अन्तर्राष्ट्रिय संस्था वा अन्य येस्तई प्रकारका संगठित संस्थालाई समझनुपर्छ र सो शब्दले विदेशी लगानीकर्ता कुनै संस्थागत विदेशी लगानीकर्ता भएमा त्यस्तो संस्थाको अन्तिम हिताधिकारीलाइ समेत जनाउछ ।

बिदेशी लगानी : बिदेशी लगानीकर्ताले उधोग वा कम्पनीमा गरेको देहायको लगानी समझनुपर्छ ।

- बिदेशी मुद्रामा गरिने शेयर लगानी
- उधोगमा बिदेशी मुद्र वा शेयरबाट प्राप्त लाभांश रकमको पुनः लगानी
- लिज लगानी गरेर, हवाईजहाज, पानीजहाज, मेशिन, उपकरण आदिमा तोकिएको सीमाको अधिनमा रही लिज लगानी गर्ने
- पूँजी लगानी कोष खडा गरी गरिने लगानी, संस्थागत वेदेशी लगानीकर्ताले कुनै उधोगमा स्वपूँजी (Equity) लगानी गर्ने प्रयोजनको लागि प्रचलित कानून बमोजिम कम्पनी संस्थागत गरी धितोपत्र बोर्डको स्वीकृत लिई पूँजी लगानीकोष (Venture Capital Fund) खडा गरी गरिने लगानी
- धितोपत्रको दोस्रो बजार मार्फत सूचिकृत धितोपत्रमा गरेको लगानी
- नेपाली संस्थापना भएको कम्पनीको शेयर वा सम्पति खरिद गरी भएको लगानी
- नेपालीमा संस्थापित उधोग वा कम्पनीले वेदेशी पूँजी बजारमा धितोपत्र जारी गरी बैंकिंग प्रणाली मार्फत प्राप्त भएको लगानी
- प्रविधि हस्तान्तरण द्वारा भएको लगानी वा
- नेपालमा उधोग स्थापना र बिस्तार गरी कायम भएको लगानी

विदेशी लगानी गर्न अनुमति लिनुपर्ने (दफा १५)

विदेशी लगानी कर्ताले नेपालमा विदेशी लगानी भित्राउने समय तालिका तथा उधोगमा लगानीको कार्ययोजना सहितको विवरण खुलाई विदेशी लगानी गर्ने स्वीकृतिको लागि तोकिए बमोजिमको दंचामा विवरणहरू खुलाई विदेशी लगानी स्वीकृत गर्ने निकायमा निवेदन दिनुपर्छ ।

- ६ अर्ब सम्मको लगानी उधोग तथा लगानी प्रवर्धन विभाग र सो भन्दा बढी रकमको लगानी लगानी बोर्डले : नियम संगत सबै आवश्यक कागजातहरू सहितको प्राप्त विबेदनम सम्बन्धित निकायले सात (७) दिन भित्र निर्णय (Yes/No) गर्नुपर्ने र यसमा चित नबुझेमा मन्त्रालयमा निर्णय उपर पुनरावलोकन गर्न सकिने र मन्त्रालयले ३० दिन भित्र निर्णय दिनुपर्ने

लगानी तथा आर्जित रकम फिर्ता लैजान पाउने (दफा २०)

- नेपाल कानून बमोजिम आफ्नो लगानीको शेयर वा उधोग पूर्ण वा आंशिक रूपमा बिक्रि गरी प्रचलित कानून बमोजिम सबै कर भुक्तान गरी नेपाल बाट आफ्नो लगानी फिर्ता लैजान पाउने ।
- विदेशी लगानीकर्ताले जुन विदेशी मुद्रामा लगानी गरेको हो सोहि मुद्रामा वा नेपाल राष्ट्र बैंकको अनुमति लिई अन्य परिवर्त्य विदेशी मुद्रामा प्रचलित कानून बमोजिम कर तिरी देहायको रकम फिर्ता लैजान सकिने ।
 - बिदेशी लगानीको शेयर बिक्रिबाट प्राप्त रकम

- विदेशी लगानीबाट प्राप्त मुनाफा वा लाभांश वापतको रकम
 - उधोग वा कम्पनी खारेजी वा लिक्विडेसनमा गएकोमा सो पश्चात सम्पूर्ण दायित्व चुक्ता गरी बाँकि रहन आउने रकम
 - प्रविधि हस्तान्तरण समझौता अन्तर्गत प्राप्त लाभ/रोयल्टी वापतको रकम तर १०० प्रतिशत मदिरा निकासी गर्ने उधोग बएक अन्य मदिराजन्य उधोगमा हुने प्रविधि हस्तान्तरण अन्तर्गतको ट्रेडमार्क उपभोग हुने वापतको रोयल्टी वा शुल्कको हकमा त्यस्तो लाभ वापतको रकम प्रचलित कर बाहेकको कुल बिक्रि मुल्यको तोकिए बमोजिम तर ५ % भन्दा बढी नपाइने
 - लिज लगानी अन्तर्गत लिज rent को रकम
 - नेपालमा चलेको मुद्रा, मध्यस्थता वा अन्य कुनै कानुनी प्रक्रियाको अन्तिम व्यवस्थापनबाट प्राप्त गरेको कुनै हर्जाना वा क्षतिपूर्ति वापतको रकम
 - प्रचलित कानून बमोजिम फिर्ता लैजान पाउने रकम
- परिवर्त्य विदेशी मुद्रामा रकम फिर्ता लईजादा प्रचलित दरमा सतही गरी लैजानुपर्ने ।
- कुनै विदेशी लगानीकर्ताले नेपालको छल वा अचल समाप्ति घितो वा बन्धक लिई कुनै उधोग वा कम्पनीलाई ऋण दिएकोमा त्यस्तो ऋणको साँवा वा व्याज रकम भुक्तानी नभएको कारणबाट घितो वा बन्धक दिएको छल वा अचल सम्पति लिलाम बिक्रि वा जफत गर्नु परेमा त्यस्तो ऋण दिने संस्थाले प्रचलित कानून बमोजिम नेपालको बैंक वा बितिया संस्था सरह लिलाम बिक्रि गरी ऋणको साँवा व्याज फिर्ता लैजान सक्ने ।
- लिज समझौता बमोजिम भुक्तानी नभएको वा समझौताको शर्त उल्लंघन भएको क्रंबात लिज समझौता अन्त्य भएमा विदेशी लगानीकर्ताले आग्नो लगानी र लिजको लगानी फिर्ता लैजान सक्ने ।
- फिर्ता लैजाने अनुमति एकल बिन्दु सेवाकेन्द्र ले अँ दिन भित्र निर्णय गर्नुपर्ने र सो मा चित नबुझे मन्त्रालयमा निर्णय उपर पुनरावलोकन गर्न सकिने र मन्त्रालयले ३० दिन भित्र निर्णय दिनुपर्ने ।

विदेशी लगानी भएका उधोग वा विदेशी लगानीकर्ता लाइ प्रदान गरिने छुट सुविधा र सहुलियत

- दफा २४ उधोगले प्राप्त गर्ने सुविधा : यस ऐन वमोजिम छुट, सुविधा, सहुलियत वा संरक्षणको अतिरिक्त प्रचलित औद्योगिक व्यवसाय ऐन र अन्य प्रचलित कानून बमोजिम उपलब्ध हुने छुट, सुविधा वा सहुलियत ।
- दफा २५, विदेशी मुद्राको कारोवार गर्ने सुविधा : नेपाल राष्ट्र बैंकको अनुमतिमा नेपालको बैंक वा वितिय संस्थामा ।
- दफा २६, विदेशी मुद्राको सुविधा : विदेशी विशेषज्ञ/प्राविधिक वा व्यवस्थापकीय कर्मचारीले पाउने पारिश्रमिक भुक्तानी गर्न, ऋणपत्र वा Debenture साँवा वा व्याज भुक्तानी गर्ने रकम वा विदेशी लगानी वा आर्जित रकम फिर्ता लैजान तर नेपाल राष्ट्र बैंकको स्वीकृति लिनुपर्ने ।
- दफा २७, विशेषज्ञ, उच्च प्राविधिक र व्यवस्थापकीय कर्मचारी सम्बन्धि व्यवस्था : गैर पर्यटकीय भिसा दिइने
- दफा २८, औद्योगिक सुरक्षा सम्बन्धि व्यवस्था : नेपाली उधोग सरह
- दफा २९, परिचयपत्रको सुविधा
- दफा३०, भिसा सुविधा सम्बन्धि व्यवस्था:
 - विदेशी लगानीका लागि अध्ययन अनुसन्धान वा सर्वेक्षण गर्न आउने विदेशी नागरिकलाई ६ महिना सम्म गैर पर्यटकीय भिसा
 - विदेशी लगानीकर्ता वा निजको एकजना अधिकारिक प्रतिनिधि र त्यस्तो लगानीकर्ता वा प्रतिनिधिको परिवारका सदस्यलाई तोकिए बमोजिम न्यूनतम रकम (एकै पटकमा १०लाख अमेरिकी डलर) वरावरको विदेशी लगानी कायम रहेसम्म नेपालमा बस्न व्यवसायिक भिसा दिइने
- दफा ३१, जग्गा खरिद सम्बन्धि व्यवस्था: लगानीकर्ताले प्रचलित कानून बमोजिम आफै वा नेपाल सरकारलाई अनुरोध गरी प्रचलित कानून बमोजिम lease वा खरिद गर्न सक्ने
- दफा ३२, राष्ट्रिय व्यवहार गरिने : नेपाली व्यक्तिले गरेको लगानीको व्यवस्थापन, सम्भार, प्रयोग, हस्तान्तरण वा बिक्रीमा लागू हुने शर्त भन्दा कम अनुकुल नहुने गरी राष्ट्रिय व्यवहार गरिने ।
- संरक्षण सम्बन्धि :

- नेपाली नागरिकले लगानी गरेको उधोग सरहको व्यवस्था
 - प्रचलित कानून बमोजिम बस्तु तथा सेवाको मूल्य निर्धारण गर्न स्वतन्त्रता
 - विदेशी लगानी भएको उधोग व्यवसाय लाइ आफ्नो उधोग संग रही तोकिए बमोजिम व्यापार गर्न रोक लगाइने छैन ।
 - नाफा लैजान, ऋणको ब्याज/साँवा भुक्तानी गर्न प्रतिवन्ध लगाइने छैन ।
- दफा ३३, राष्ट्रियकरण वा अधिग्रहण नगरिने: यो ऐन बमोजिम लगानी भएको उधोगलाई राष्ट्रियकरण नगरिने र सार्वजनिक प्रयोजनको लागि बाहेक प्रत्यक्ष/अप्रत्यक्ष रूपमा अधिग्रहण नगरिने तर सार्वजनिक प्रयोजनको लागि अधिग्रहण गर्दा प्रचलित कानून बमोजिम मात्र प्रक्रिया गरिने ।
- दफा ३४, शर्त तथा सुविधा परिवर्तन: यो ऐन बमोजिम प्राप्त सुविधा कटौती नहुने सुनिश्चितता ।

राष्ट्रिय व्यबहार (National Treatment) लागू नहुने अवस्था

- WTO वा अन्तर्गत गरिएका बौद्धिक सम्पति सिर्जना, त्यस्ता सिमा हक हस्तान्तरण वा प्रयोगमा अनिवार्य अनुमति लिनुपर्ने भनि तोकिएको विषय
- सार्वजनिक खरिद सम्बन्धि प्रचलित कानून बमोजिम स्वदेशी उधोग वा मालसामान लाइ कुनै छुट वा सुविधा दिएको बिषय
- नेपाल सरकार बाट प्रदान गरिने अनुदान/सहलियत
- नेपाल सरकार बाट प्रवाह हुने गैर व्यापारिक सेवाको बिषय
- नेपाल सरकार पक्ष रहेको/हुने कुनै क्षेत्रिय वा बहुपक्षिय आर्थिक वा मौद्रिक आदि को कुनै संगठनको पक्ष भएको कारणबाट नेपाल सरकारले विशेष व्यबहार गर्नुपर्ने दायित्व भएको विषय वा प्रावधान
- नेपाल बाहिर लगानी फिर्ता, ऋण भुक्तानी, सेवा शुल्क आदिमा प्रचलित कानून बमोजिम निकायले तोकने शर्तका विषयहरु
- मानव स्वास्थ, जीव जन्तु, बनस्पति वा वातावरण संरक्षणको विषय
- नेपाल सरकारले उचित ठानी अवलम्बन वा व्यवस्थापन गरेका वित्तीय सेवा सम्बन्धि उपायहरु जसमा कुनै व्यक्ति वा संस्थाको आर्थिक स्वार्थ रक्षा गर्ने दायित्वक बिषय

विवादको समाधान सम्बन्धि व्यवस्था (दफा ४०)

- नेपाली लगानी कर्ता र विदेशी लगानीकर्ता विच विवाद उत्पन्न भएमा पक्षहरूले आपसी सहमति वा वार्ता बाट र सो मा विभागले आवश्यक सहजीकरण गर्नसक्ने
- विवाद उत्पन्न भएको ४७ दिन भित्र माथि उल्लेख भए बमोजिम समाधान नभए त्यस्तो विवादको समाधान गर्न विवादका पक्षहरूवीच संयुक्त लगानी वा विवाद समाधान सम्बन्धि समझौता भएकोमा सोहीअनुसार
- माथिको २ बमोजिम समाधान नभए १५ दिन भित्र विदेशी लगानी स्वीकृति दिने निकायलाई जानकारी गराउनुपर्ने
- पक्षहरु विच माथिको २ बमोजिम कुनै प्रावधान नभए नेपालको मध्यस्थता ऐन बमोजिम
- कुनै विदेशी लगानीका सम्बन्धमा उत्पन्न विवादको समाधान विवादका पक्षहरूले अन्यथा मन्जुर गरेमा बाहेक अन्तर्राष्ट्रिय व्यापार कानून सम्बन्धि संयुक्त राष्ट्र संघिय आयोग (UNCITRAL) को प्रचलित नियम वा कार्यविधि बमोजिम मध्यस्थता गरिने
- मध्यस्थता नेपालमा हुने र नेपालको मध्यस्थता सम्बन्धि सारवान कानून लागू हुने तर माथि २ बमोजिमको अवस्थामा सोहि बमोजिम
- पक्षहरु वीच विवाद हुनु अघि विवाद समाधान सम्बन्धि कुनै समझौता नभएको वा भएको समझौता अपर्याप्त भएको महसुस गरेमा विवाद समाधानका लागि पक्षहरूले एकआपसमा थप कुनै समझौता गर्न सक्ने र र सोको जानकारी उधोग दर्ता गर्ने निकायलाई दिनुपर्ने

विदेशी लगानी खुला नगरिएका उधोग वा व्यवसाय

अनुसूची

(दफा ३ को उपदफा (२) सँग सम्बन्धित)

विदेशी लगानी खुला नगरिएका उद्योग वा व्यवसाय

१. पशुपन्छी पालन, माछापालन, मौरीपालन, फलफूल, तरकारी, तेलहन, दलहन, दुग्ध व्यवसाय र कृषिका प्राथमिक उत्पादनका अन्य क्षेत्रहरू,
२. लघु तथा घेरलु उद्यम,
३. व्यक्तिगत सेवा व्यवसाय (जस्तो: कपाल काट्ने, सिलाइ (टेलरिङ्ज), ड्राइभिङ्ज आदि)
४. हातहतियार, खरखजाना, गोलीगछा, बारुद वा विष्फोटक पदार्थ तथा न्यूक्लियर, बायोलोजिकल तथा केमिकल (एन. बी. सी.) हतियार उत्पादन गर्ने उद्योग, आणविक शक्ति (एटोमिक इनर्जी), विकीरणजन्य सामग्री (रेडियो एक्टिभ म्याटेरियल्स) उत्पादन गर्ने उद्योग,
५. घर जग्गा खरिद बिक्री व्यवसाय (निर्माण उद्योग बाहेक), खुद्रा व्यापार, आन्तरिक कुरियर सेवा, स्थानीय क्याटरिङ्ज सेवा, मनिचेन्जर, रेमिटेन्स सेवा,
६. पर्यटनमा संलग्न ट्राभल एजेन्सी, पथ प्रदर्शक, ट्रेकिङ्ज तथा पर्वतारोहण पथ प्रदर्शक, होमस्टे लगायतका ग्रामीण पर्यटन,
७. आमसञ्चारका माध्यमहरू (पत्रपत्रिका, रेडियो, टेलिभिजन र अनलाइन समाचार) को व्यवसाय, राष्ट्र भाषाको चलचित्र व्यवसाय,
८. व्यवस्थापन, लेखा, इन्जिनियरिङ, कानूनी परामर्श सेवा र भाषा तालिम, सङ्ग्रित तालिम, कम्प्युटर तालिम, र
९. एकाउन्ट प्रतिशतभन्दा बढी विदेशी लगानी हुने परामर्श सेवाहरू।

विदेशी लगानी खुला नगरिनुका कारणहरू

- देशमा उपलब्ध स्रोतहरूलाई परिचालन गर्न सानो/कम लगानीमा रोजगारी सिर्जना गर्नसक्ने हुँदा
- घेरलु तथा साना उधोगको संरक्षण र प्रतिष्पर्धात्मक क्षमता बढाउने राज्यको दायित्व भएकोले
- व्यक्तिगतरूपमा एकलै संचालन गर्न सकिने र रोजगार बन्ने व्यवसाय जस्ती कपाल काट्ने भएको ले
- देशको सुरक्षासंग प्रत्यक्ष सम्बन्ध राख्ने उधोगहरूमा देशकै पुर्णरूपमा नियन्त्रण तथा शान्ति सुरक्षा कायम गर्न
- संबिधान बमोजिम असंलग्न राष्ट्रको नीति विपरीत बैदेशिक सहायता ग्रहण नगर्ने राष्ट्रिय सोच
- मानवीय तथा पर्यावरणीय स्वास्थमा प्रत्यक्ष असर गर्ने उधोग/धन्दामा बैदेशिक स्वार्थ हावी नहोस् भन्ने अभिप्राय

- स्थानीय रूपमा संचालित र ख्याती कमाएको बस्तु र सेवा जस्तै घोर्ले खसी, बरमङ्गियाको पेडा, मनकामनाको सुन्तला, जुम्लाको स्याउ आदि को पहिचान कायम गर्ने
- देशमा सामरिक महत्वका बिषय जस्ता पत्र पत्रिका, भाषा आदि को महत्व र पहिचान कायम गर्ने
- अधिकांश जनता कृषिमा निर्भर भएको र स्थानीय प्रजाति हरुको संरक्षण गर्नुपर्ने राज्यको दायित्व भएकोले
- स्थानीय सिपको कदर, प्राविधिक क्षमता वृद्धि र रोजगारी सिर्जना गर्ने आदि
- देशको आर्थिक अवस्था तथा व्यापार/भुक्तानी सञ्चालनलाई स्वस्थ अवस्थामा राख्ने

लगानी बोर्डको काम, कर्तव्य र अधिकार

परिच्छेद-४

विदेशी लगानीको प्रबद्धन, सहजीकरण तथा नियमन

२१. **बोर्डको काम, कर्तव्य र अधिकार:** यस ऐनमा अन्यत्र लेखिएको काम, कर्तव्य र अधिकारका अतिरिक्त बोर्डको अन्य काम, कर्तव्य र अधिकार देहाय बमोजिम हुनेछः-

- (क) औद्योगिक तथा पूर्वाधार संरचना विकासमा विदेशी लगानी आकर्षण गर्न अवलम्बन गर्नुपर्ने नीतिगत, संस्थागत र प्रक्रियागत सुधारको लागि नेपाल सरकारलाई सुझाव दिने,
- (ख) नेपालमा विदेशी लगानीको आकर्षण बढाउन र त्यसको प्रबद्धन तथा संरक्षण गर्न आवश्यक रणनीति र कार्यक्रम तय गर्ने,
- (ग) विदेशी लगानीमा आधारित उद्योग तथा पूर्वाधार संरचना को स्थापनाको लागि स्वीकृति दिने तथा विदेशी लगानीको प्रबद्धन गर्ने,
- (घ) विदेशी लगानीको अभिवृद्धि, विस्तार तथा संरक्षण गरी विदेशी लगानीको लागि सहजीकरण गर्ने,
- (ङ) विदेशी लगानीको नीतिगत तथा कार्यान्वयनको तहमा समन्वय कायम गर्ने,
- (च) विदेशी लगानी सम्बन्धी नीति तथा कानूनको कार्यान्वयनमा सहयोग गर्ने,
- (छ) विदेशी लगानीकर्तालाई एकल बिन्दु सेवा केन्द्रबाट सेवा उपलब्ध गराउने व्यवस्था गर्ने,
- (ज) विदेशी लगानीको स्वीकृति तथा सेवा प्रवाहको काम कार बाही उचित ढङ्गले सञ्चालन भए वा नभएको जानकारी लिई सम्बन्धित निकायलाई आवश्यक निर्देशन दिने,
- (झ) दफा २० बमोजिमको विदेशी लगानी वा आर्जित रकम फिर्ता लैजाने सम्बन्धमा वा यो ऐन वा यस ऐन अन्तर्गत बनेको नियमको कार्यान्वयनमा कुनै समस्या देखिए सहजीकरण गर्ने,

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ऐनमा रहेको समस्याहरु/कमजोरीहरु

- प्रविधि हस्तान्तरणको परिभाषा बमोजिम नेपाली संस्था, कम्पनि, फर्म तथा उद्योगले विदेशी सेवा प्रदायक संस्था, कम्पनि, फर्म, तथा उद्योगसंग लिने सम्पूर्ण सेवाहरु प्रविधि हस्तान्तरण अन्तर्गत पर्ने देखिन्छ | सामन्यता प्रविधि हस्तान्तरणमा कुनै जान, सीप, प्रविधि, एकपक्षबाट अर्को पक्षम हस्तान्तरण भएको हुनुपर्ने भएको विद्यमान् ऐन बमोजिम विदेशबाट हुने सेवा खरिद पनि प्रविधि हस्तान्तरण अन्तर्गत नै पर्ने देखिएकोले कार्यान्वयनमा जटिलता रहेको |
- विदेशी लगानी भएका कम्पनीको एकल उद्देश्य हुनुपर्ने वा नपर्ने सम्बन्धमा पनि अस्पष्टता रहेको तथा एउटा कम्पनीको फरक फरक उद्योग दर्ता गर्ने सम्बन्धमा पनि स्पष्टता नभएको |
- सबै प्रकारका लगानीका क्षेत्रका लागि विदेशी लगानीको एकै न्युनतम सिमा रु ५ करोड तोकिएकोमा व्यवहारिक नरहेको |
- विदेशी लगानीकर्ताले अग्राधिकार शेयरमा लगानी गर्दा सो सम्बन्धमा मापदण्ड नभएकोले कार्यसम्पादनमा अस्पष्टता रहेको |

- ऐनमा ६ अर्ब सम्मको लगानी स्वीकृति गर्ने निकाय उद्घोग विभाग र सो भन्दा बढी लगानीबोर्डको रहेको तर विदेशी लगानी ६ अर्ब सम्मको मात्र तर परियोजनाको लागत रु ६ अर्ब भन्दा बढी भएमा लगानी स्वीकृत गर्ने निकायको क्षेत्राधिकार स्पष्ट नभएको ।
- उद्घोग विभागमा दर्ता नहुने उद्घोगको हकमा तथा छुट्टै नियमनकारी निकायहरूको कार्यक्षेत्र भित्र पर्ने कम्पनि जस्ता बैंक, वित्तीय संस्था, बिमा कम्पनि, धितोपत्र संग सम्बन्धित व्यवसाय गर्ने आदिमा हुने विदेशी लगानीको सम्बन्धमा विदेशी लगानीको स्वीकृत प्रदान गर्ने उद्घोग विभाग तथा लगानी बोर्डको कार्यालयको स्वीकृति आवश्यक पर्ने वा नपर्ने सम्बन्धमा अस्पष्टता रहेको ।
- गैर आवासीय नेपाली सम्बन्ध ऐन, २०६४ मबोजिम गैर आवासीय नेपाली नागरिकले गर्ने विदेशी लगानीको सम्बन्धमा व्यवस्था रहेको कारणले विदेशी लगानी तथा प्रविधि हस्तान्तरण ऐन, २०७५ कार्यान्वयनमा समस्या ।
- एकल विन्दु सेवा केनाद्रमा खटी आउने कर्मचारीहरूलाई सम्बन्धित निकायबाट प्रर्याप्त अधिकार प्रत्यायोजन नभएको र कार्य संचालन कार्यविधिको अभावका कारण अन्तर निअक्य समन्वय र कार्य सम्पादनमा कठिनाइ उत्पन्न भएको ।
- विदेशी लगानी तथा ऋण भित्राउने सन्दर्भमा Country Sovereign Credit Rating नभएकोले लगानीकर्तामा अन्योलता कायम रहेको ।
- ऐनको दफा १५ (३) मा व्यवस्था भए बमोजिम उद्घोगले मात्र पुनःलगानी गर्ने व्यवस्था रहेको छ, लगानीकर्ताले आफ्नो आर्जित नाफा पुनःलगानी गर्न चाहेमा गर्ने अवस्था देखिएन ।
- अन्य नियामक निकायको नियम/व्यवस्था अनुसार कतिपय क्षेत्रमा शतप्रतिशत विदेशी लगानी गर्न पाइदैन जस्तै क्यासिनो, हवाई उड्डयन, दूरसञ्चार आदि तर यो ऐनमा शत प्रतिशत लगानी गर्न सक्ने उल्लेख ।

विदेशी लगानीको हालको अवस्थाको SWOT Analysis

सकारात्मक पक्ष (Strength)	अवसर (Opportunities)
<ul style="list-style-type: none"> • Tourism including sports and adventure, health tourism and culture tourism • Hydropower generation, infrastructure development • Low-cost work force • Substantial natural and cultural assets • Small and accessible bureaucracy and a generally business friendly government 	<ul style="list-style-type: none"> • Located between the two big markets • Recent trend of diversifying investments beyond borders • It based services • WTO membership • MIGA and UNCITRAL membership • DDA (Due Diligence Audit Report by Authorized Auditor)
दुर्बल पक्ष (Weakness)	जोखिम (Threats)
<ul style="list-style-type: none"> • Landlocked country • Poor infrastructure and mostly unskilled workforce • Absence of investment stimulus packages 	<ul style="list-style-type: none"> • Risk of high capital Flight • Money laundering • Chance of serve impact of global economic disorder etc.

The PPP Concept

There is no single definition for PPPs. In fact, the term is used to describe a wide range of contractual relationships between governments and the private sector. In a basic PPP, a government enters into a contractual agreement with a private operator through which the private operator agrees to provide infrastructure services to users according to some service standards and payment structure for a certain period of time. Private financing eases the burden on government budgets and encourages better risk sharing, accountability, monitoring and management.

There are a variety of responsibilities and risks related to providing an infrastructure facility. They include:

- Developing a facility to provide the service. This involves:
 - Designing the facility
 - Financing the facility
 - Building the facility

- Providing the service by operating and maintaining the facility.

Structuring a PPP is about allocating these responsibilities, and the risks related to fulfilling them, between government and the private operator. Risk sharing and responsibility allocation between public and private partners make possible the development of important and necessary projects that neither the government nor the private investors would be willing to undertake alone. There are a number of ways to allocate these responsibilities and risks, and this results in a range of PPP models.

Public-Private Partnerships with respect to PPP, PSP (Private Sector Participation) and Privatization

The term “public—private partnership” describes a range of possible relationships among public and private entities in the context of infrastructure and other services. Other terms used for this type of activity include private sector participation (PSP) and privatization. While the three terms have often been used interchangeably, there are differences: PPPs present a framework that—while engaging the private sector acknowledge and structure the role for government in ensuring that social obligations are met and successful sector reforms and public investments achieved.

- PPPs present a framework that—while engaging the private sector acknowledge and structure the role for government in ensuring that social obligations are met and successful sector reforms and public investments achieved.
- A strong PPP allocates the tasks, obligations, and risks among the public and private partners in an optimal way. The public partners in a PPP are government entities, including ministries, departments, municipalities, or state-owned enterprises. The private partners can be local or international and may include businesses or investors with technical or financial expertise relevant to the project. Increasingly, PPPs may also include nongovernment organizations (NGOs) and/or community-based organizations (CBOs) who represent stakeholders directly affected by the project.
- Effective PPPs recognize that the public and the private sectors each have certain advantages, relative to the other, in performing specific tasks. The government's contribution to a PPP may take the form of capital for investment (available through tax revenue), a transfer of assets, or other commitments or in-kind contributions that support the partnership. The government also provides social responsibility, environmental awareness, local knowledge, and an ability to mobilize political support. The private sector's role in the partnership is to make use of its expertise in commerce, management, operations, and innovation to run the business efficiently. The private partner may also contribute investment capital depending on the form of contract. The structure of the partnership should be designed to allocate risks to the partners who are best able to manage those risks and thus minimize costs while improving performance.
- PSP is a term often used interchangeably with PPPs. However, PSP contracts transfer obligations to the private sector rather than emphasizing the opportunity for partnership. In the mid to the late 1990s, there was a slowdown in public—private contracting in infrastructure sectors, which was largely precipitated by a social backlash against the perceived preference for the private sector over the public sector in delivering infrastructure services in developing countries. To some degree, the social backlash was rooted in confusion between PSP and privatization. Some PSP schemes were overly ambitious and the social agenda was overlooked, leading to legitimate public concerns. The critical analysis of PSP experience has led to the design of a new generation of transactions, which are now more commonly known as PPPs.
- Privatization involves the sale of shares or ownership in a company or the sale of operating assets or services owned by the public sector. Privatization is most common and more widely accepted in sectors that are not traditionally considered public services, such as manufacturing, construction, etc. When privatization occurs in the infrastructure or utilities sectors, it is usually accompanied by sector-specific regulatory arrangements to take account of social and policy concerns related to the sale, and continuing operation of assets used for public services.

Sectors in which PPPs have been completed worldwide include:

- power generation and distribution,
- water and sanitation,
- refuse disposal,
- pipelines,
- hospitals,
- school buildings and teaching facilities,

- stadiums,
- air traffic control,
- prisons,
- railways,
- roads,
- billing and other information technology systems, and
- housing.

Motivation for Engaging in PPPs

The three main needs that motivate governments to enter into PPPs for infrastructure are:

- To attract private capital investment (often to either supplement public resources or release them for other public needs);
- To increase efficiency and use available resources more effectively; and
- To reform sectors through a reallocation of roles, incentives, and accountability.

The rationale for PPPs in infrastructure

The rational for PPP is based on the claim that 3P have the potential to close the infrastructure gap by leveraging scarce public fund and introducing private sector technology and innovation to provide better quality public services through improved operational efficiency. Improving the provision of infrastructure and social services through high levels of efficiency and quality contributes directly to growth and poverty reduction.

Over the last four decades, but recently at a much faster pace than ever, PPPs have become a well-established approach for developing, managing and operating infrastructure projects, in particular toll roads. There are a number of factors that have led to the popularity of PPPs, including.

- Shortage of public funds—Governments are experiencing a growing gap between social demands and availability of fiscal funds. Governments have recognized that private investment is often needed to bridge this gap. Governments have responded by implementing policies that facilitate and encourage private participation (for example, BOT law in Nepal).
- Higher efficiency of private enterprises—the private sector has proven to be more efficient than the public sector in implementing large scale and capital-intensive projects. Unlike governments, a private firm has profit as a clear incentive to operate the infrastructure facility efficiently. Private enterprises operate within a restricted budget that is a function of revenues, operating costs and a targeted return on investment, thus having to control costs to achieve efficiency and profitability.
- The expansion of capital markets and innovative infrastructure finance mechanisms—in recent years the volume of trade and the range of instruments used in international capital markets have substantially increased, as venture capitalists and institutional investors in developed countries seek to diversify their portfolios and achieve higher returns by investing in developing country markets. The large size and long pay back periods of infrastructure projects have required the creation of more innovative financing techniques such as PPP structured deals.

The Roles of Governments and Private Sector in PPP

Government Functions

- Developing policies on service needs and requirements
- Developing regulator\ framework and defining key objectives and outputs (tolls, degree of competition, performance targets)
- Determining the best value option b\ subjecting projects to strict “public sector comparators”
- Monitoring and enforcing
- Adapting to changing conditions
- Balancing the consumers' and the concessionaire's interests

Private Partner Functions

- Providing additional capital
- Providing alternative management and implementation skills to achieve commercial efficiencies
- Providing value added to the consumer and the public at large through service quality and innovation
- Providing better identification of needs and optimal use of resources

- Taking responsibility for the design, planning, financing, construction and/or operation of Projects

Various Types of PPPs

There are several different types of public-private partnership contracts, depending on various aspects such as the type of project (for example, a road or an airport), level of risk transfer, investment level and the desired outcome. Some types of PPPs include:

- **Build-Own-Operate (BOO):** BOO projects can be likened to the actual privatization of a facility because often there is no provision of transfer of ownership to the host government. At the end of a BOO concession agreement, the original agreement may be renegotiated for a further concession period.
- **Build-Operate-Transfer (BOT):** The facility is paid for by the investor but is owned by the host. The investor maintains the facility and operates during the concession period.
- **Build-Own-Operate-Transfer (BOOT):** Ownership of the facility rests with the constructor until the end of the concession period, at which point ownership and operating rights are transferred free of charge to the host government.
- **Build-Transfer-Operate (BTO):** The private sector finances a facility and, upon completion, transfers legal ownership to the public sector. The agency then leases the facility back to the private sector under a long-term lease. During the lease, the private sector operates the facility.
- **Design-Build-Finance-Operate (DBFO):** The private sector partner finances the project and is granted a long-term right of access of about 30 years. The DBFO partner is given specified service payments during the life of the project.

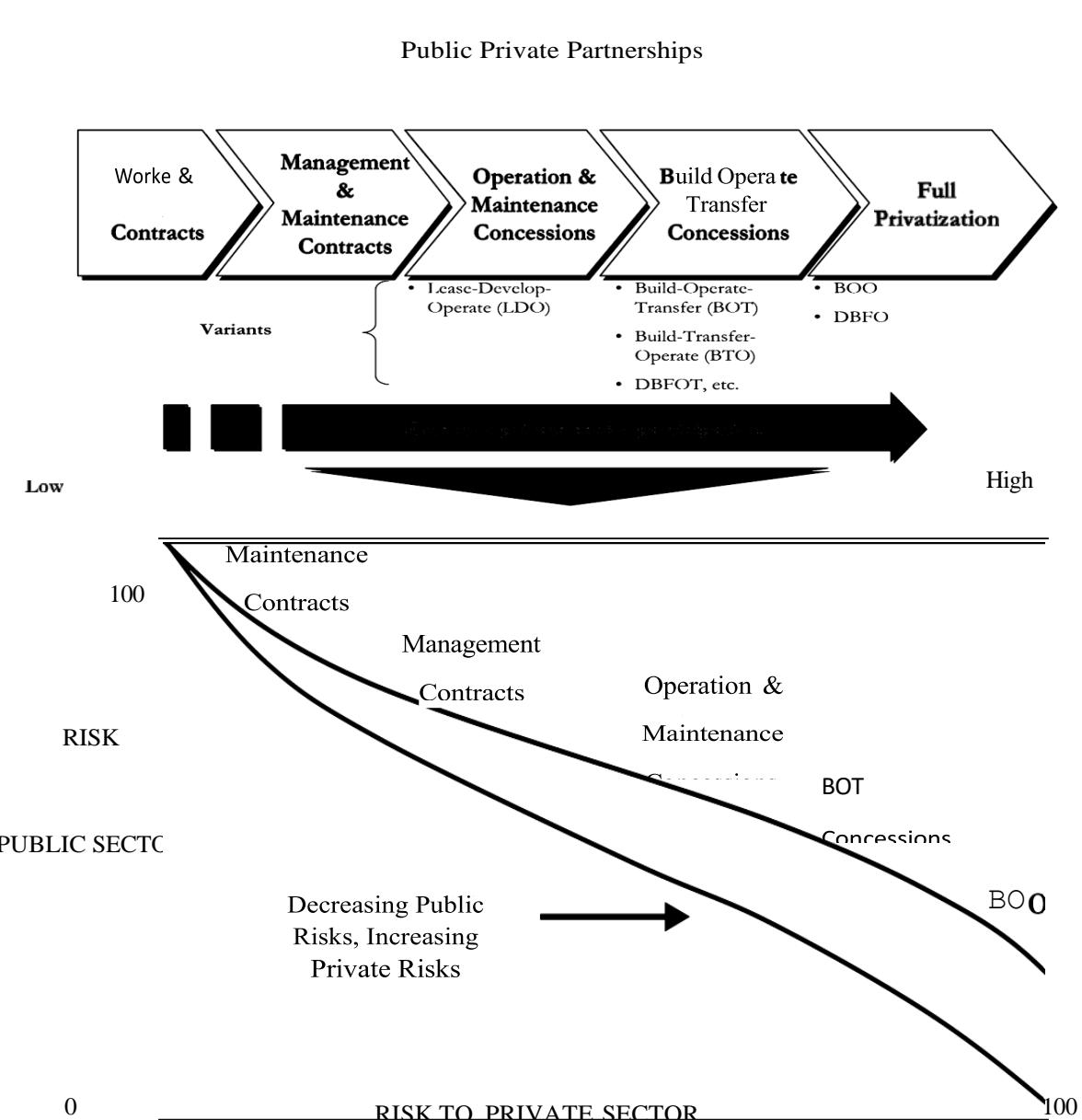
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Public-Private Partnership (PPP)					
Contract Type	Design-Build-Finance-Operate (DBFO)	Build-Transfer-Operate (BTO)	Build-Operate-Transfer (BOT)	Build-Own-Operate-Transfer (BOOT)	Build-Own-Operate (BOO)
Construction	Private Sector	Private Sector	Private Sector	Private Sector	Private Sector
Operation	Private Sector	Private Sector	Private Sector	Private Sector	Private Sector
Ownership	Public Sector	Private Sector during construction then Public Sector	Private Sector during Contract then Public Sector	Private Sector during Contract then Public Sector	Private Sector
Who pays?	Users or Offtaker	Users or Offtaker	Users or Offtaker	Users or Offtaker	Users or Offtaker
Who is paid?	Private Sector	Private Sector	Private Sector	Private Sector	Private Sector

Structural PPP

Some of the structural options available for PPPs in toll roads include the models illustrated in Figure below and described in Table 5.2, listed in ascending order of private involvement and degree of risk transferred to the private partner. The first and last models, works and services contracts and full privatization (or divestiture), are not PPP models per se, but represent both ends of the spectrum. In other words, the former represents the traditional public contracting approach where the private sector's role is limited to the minimum, while the latter involves full private ownership, management, and operation in perpetuity, and with very limited involvement of the public sector.

Structural PPP Options for Infrastructure Development and Management



Source: Queiroz (2005)

Structural PPP Options for Infrastructure Development and Management

Approach	Description	Comments
Works and Service Contracts	<ul style="list-style-type: none"> • Not necessarily a PPP • Private sector performs specific tasks (works or services) under the direction of the public sector • Responsibility for management, operations, maintenance and capital investment remains with public sector • Typically short contracts, generally lasting from six months to one or two years. 	<ul style="list-style-type: none"> • Traditional way of procuring civil works, such as road construction and maintenance • Cost-effective approach to provide specific technical needs of existing road assets, such as routine maintenance, rehabilitation
Performance Management and Maintenance Contracts	<ul style="list-style-type: none"> • Responsibility for operations and maintenance is transferred to the private partner while ownership and capital investment obligations remain with government • Contracts generally last three to five years • Public partner pays private partner a fee based on certain performance criteria, and private partner assumes no commercial risk 	<ul style="list-style-type: none"> • Performance contracts are most often used to inject technical skills of competencies in performing specific tasks
Operation & Maintenance Leases	<ul style="list-style-type: none"> • Private partner leases publicly-owned assets and assumes responsibility for operating and maintaining them • Private partner may be required to make limited capital investments while responsibility for major capital investment remains with government • Incentives exist to improve operating efficiencies because the private partner's profitability is linked to cost reductions and performance targets 	<ul style="list-style-type: none"> • Most appropriate in situations that require significant improvements to operating efficiencies but only require limited "investment (road rehabilitation/partial reconstruction)
Build Operate Transfer (BOT) Structures and Concessions	<ul style="list-style-type: none"> • The private partner undertakes the right and obligation to develop, finance, build, promote, operate and manage the highway in exchange for the right to collect tolls from users • Primary asset ownership remains with government and the full rights of ownership revert to it at the end of the agreement (usually ranging from 30 to 50} years) • Terms of agreement typically govern performance targets, performance standards, capital investment requirements, toll increase mechanisms and arbitration provisions • Agreement may involve some guarantees by government on revenue levels, and provisions for profit sharing when returns on investment exceed agreed-upon levels 	<ul style="list-style-type: none"> • Concessions are most appropriate in infrastructure projects where objectives include improvements to new connectivity, new capacity, and level and quality of service provide to users • BOTs, DBOTs, BTOS, fall in this classification. All these arrangements are a type of Concession.

Full Privatizatio n or Divestiture	<ul style="list-style-type: none"> • Not necessarily a PPP • Transfers ownership as well as complete responsibility for building, financing, maintenance and operations to the private partner • The private partner takes full responsibility for the project and all the risks, but is entitled to all of the rewards. • Depending on the design of the structure, the transfer of ownership may occur through sale of shares or sale of assets through competitive bidding, pre-captive right sale or a non-competitive sale • The public interest aims in such an agreement are defined in an original transfer agreement b}• a regulatory authority 	<ul style="list-style-type: none"> • Not a very common PPP approach in highways
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Source: Aldrete (2006), USAID (2006), Bennet et al (2000)

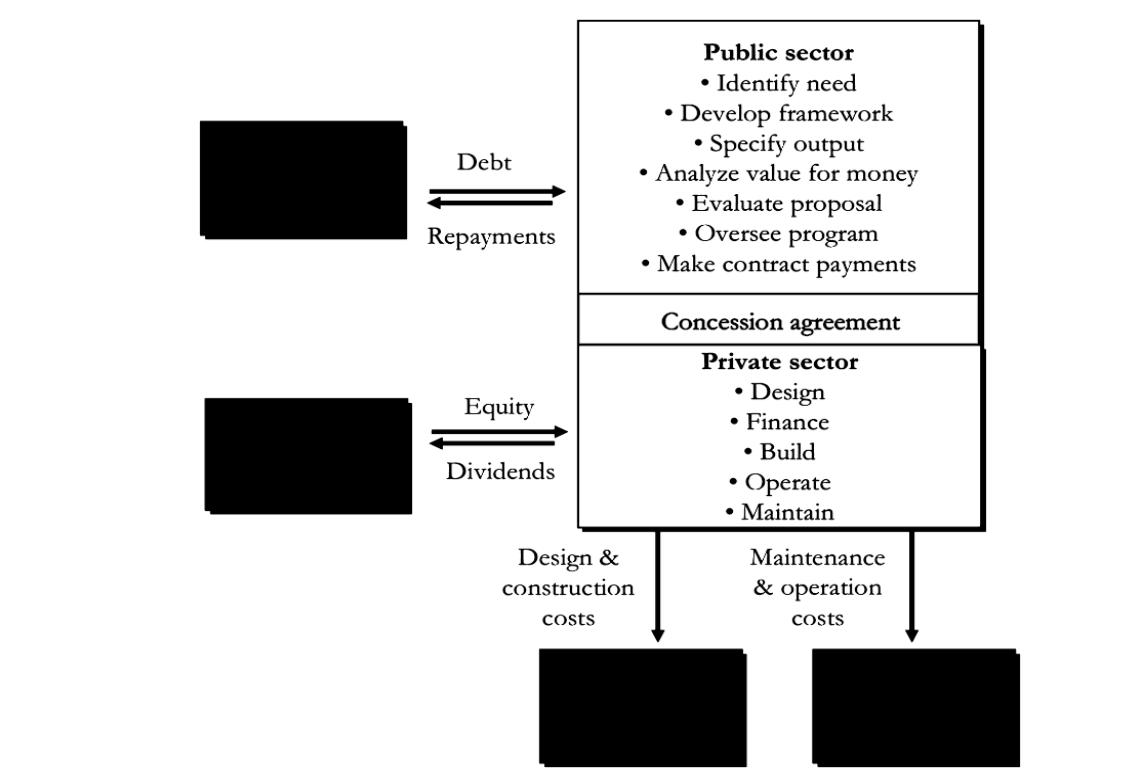
Summary of Key Features of the Basic Forms of Public-Private Partnership (PPP). Source: Heather Skilling and Kathleen Booth (2007)

	MANAGEMENT CONTRACTS		LEASE CONTRACTS	CONCESSIONS	BOT
	SERVICE CONTRACTS				
Scope	Multiple contracts for a variety of support services such as meter reading, billing, etc.	Management of entire operation or a major component	Responsibility for management, operations, and specific renewals	Responsibility for all operations and for financing and execution of specific investments	Investment in and operation of a specific major component, such as a treatment plant
Asset Ownership	Public	Public	Public	Public/Private	Public/Private
Duration	1-3 years	2-5 years	10-15 years	25-30 years	Varies
O&M Responsibility	Public	Private	Private	Private	Private
Capital Investment	Public	Public	Public	Private	Private
Commercial Risk	Public	Public	Shared	Private	Private
Overall Level of Risk Assumed by Private Sector	Minimal	Minimal/moderate	Moderate	High	High
Compensation Terms	Uni prices	Fixed fee, preferably with performance incentives	Portion of tariff revenues	All or part of tariff revenues	Mostly fixed, part variable related to production parameters
Competition	Intense and ongoing	One time only; contracts not usually renewed	Initial contract only; subsequent contracts usually negotiated	Initial contract only; subsequent contracts usually negotiated	One time only; often negotiated without direct competition
Special Features	Useful as part of strategy for improving efficiency of public company; Promotes local private sector development	Interim solution during preparation for more intense private participation	Improves operational and commercial efficiency; Develops local staff	Improves operational and commercial efficiency; Mobilizes investment finance; Develops local staff	Mobilizes investment finance; Develops local staff
Problems Challenges and	Requires ability to administer multiple contracts and strong enforcement of contract laws	Management may not have adequate control over key elements, such as budgetary resources, staff policy, etc.	Potential conflicts between public body which is responsible for investments and the private operator	How to compensate investments and ensure good maintenance during last 5-10 years of contract	Does not necessarily improve efficiency of ongoing operations; May require guarantee

At the present time, most privately provided toll roads are operated under some variation of the BOT concession scheme. Operation and management contracts are common in the United States for the maintenance of local authority roads. BOO is rare because of the public sector regulation on tolls and other aspects of highway projects. LDO and BTO are considered variations of the BOT scheme.

Figure 5-2 shows the typical structure of a BOT concession. In a BOT concession, the concession agreement binds the public and private partners, each having distinct roles and responsibilities. Other elements frequently found in a typical BOT structure include: (a) financial institutions and credit markets, where debt financing is obtained for project implementation, and repaid over the loan term from project revenues; b) equity shareholders or private investors, who provide equity in the form of risk capital to the project, and expect to recover their investment from project dividends; (c) engineering and construction contractors, who are responsible for designing and building the facility and (d) a facility manager or operator, who is responsible for managing and operating the facility through the life of the concession.

Figure 5-2: Typical Concession PPP Structure



A PPP should only be selected over a traditional public procurement if it can deliver “value- for-money”. This depends on the optimal allocation of risks. An optimal allocation of risks is where each particular risk is carried by the party most able to manage them cost-effectively. If too little risk is shifted to the private partner, the principle of “value for money” is not achieved. Conversely, if too much risk is shifted, the project will fail.

Creative financing techniques are being adopted to sustain this shift from public to private sector risk bearing in infrastructure provision. However, the private sector is often reluctant to bear some of the risks involved in large scale infrastructure projects (for example, payment risks and demand risks). Such risks are very high because of the amount of

resources involved and often exceed normal business risks. Government support to facilitate the financial viability of PPPs is therefore necessary. Government support can take many forms. Some examples of mechanisms used b) Governments to share some or all of the risks of an infrastructure project with the private sector include the following:

- Reducing implementation costs b) donating right of way and lower taxes on machines and equipment
- Providing project credit guarantees (that is, traffic shortfall guarantees)
- Reducing operating costs through direct subsidies in the initial years
- Increasing returns to sponsors through tax holidays
- Retaining certain risks that are not transferable at a reasonable cost such as shortfall guarantees on opening traffic volumes
- Providing guarantees for availability and conversion of foreign exchange borrowings

Aspects of the development and implementation of a toll road in PPP

Or, Factors depends on Choice of model and its effectiveness

Or Major consideration for attraction of PPP in Road Sector

- Planning and institutional framework
- Legal and regulatory framework
- Concession contract
- Government support
- Traffic Forecasting
- Setting and adjusting of toll rates
- Financing structure and sources
- Risk allocation

Each of these groups is covered individually in the remainder of this subsection, and is complemented with relevant success and/or failure examples to illustrate their potential impact on the Fast Track project.

Institutional and Planning Framework

- Strong institutional arrangements ensure coordination, technical support and that checks and balances are appropriately applied. Redundancies and overlapping of responsibilities of agencies concerned with toll road development (that is, planning, implementation and regulation) should be avoided.
- A well-established overall strategic planning framework for the multi-modal transport sector in general, and fair the road subsector in particular, optimizes the benefits and minimizes costs (project selection, timing, and economic and financial viability of PPP project implementation). In either word, the individual PPP project must enhance the efficiency of the larger transportation system and vice versa. Competition from alternative routes in detriment of the PPP is a symptom of system planning deficiencies
- Cross subsidization can be a useful mechanism for network expansion, when high-volume toll roads generate excess revenues that can be used to improve low traffic, but critical, network links
- There is a need for proper project preparation. Basic information (for example traffic forecasts, preliminary engineering, and so on) should be established by the grantor prior to inviting the private sector to a toll road project. This includes proper preparation of the prequalification process, including a project promotion effort that allows attracting as many qualified bidders as possible. The key to attracting qualified bidders is the provision of sufficient information on the concession scheme proposed.

Legal and Regulatory Framework

A sound legal and regulatory framework for PPPs is the enabling environment that clearly defines the “rules of the game”. A sound legal and regulatory framework is necessary to encourage private sector involvement. We identify five key lessons on the legal and regulatory aspects of toll road PPP:

- Well drafted laws and regulations are key to the success of toll road PPPs, particularly when the private sector is to be involved in toll road development (BOT schemes)
- The host government must provide the basic legislative and regulatory authority, and define very clearly the agency designated as concession grantor
- The term of the concession must be sufficiently long for investors to a reasonable return on the massive investment required
- A formalized, transparent and competitive tendering process minimizes level of government support and the bearing of residual risk by the government. Uncompetitive procurement gives a strong position to the negotiating private party and can lead to long delays and excessive cost to the government
- The legal and regulatory framework must provide adequate dispute- resolution procedures.

Concession Contracts

In a PPP project, the concession contract is the primary risk allocation tool. The concession contract is the legal document that will govern the allocation of rights and responsibilities for the project throughout the facility's lifecycle. However, the contract itself may be the source of risk when it is not clearly drafted or when contract administration is not efficient. The concession contract must clearly define and assign the risks borne by each party. The following are some of the most relevant lessons learned in terms of concession contracts:

- Concession contracts should be unambiguous regarding the risks involved and their allocation between the public and private partners. Among the essential elements that must be covered in a concession contract are:
 - Credit enhancement of concession grantor
 - Toll rate setting and adjustment
 - Conditions to terminate contract
 - Step in right of lenders / concession grantor
 - Changes in law
 - Exclusivity (regarding competing routes)
 - Dispute resolution
 - Mitigation of risks (including at a minimum these types of risk: political, construction completion, market and revenue, operation, finance, and legal)
 - Post-concession issues
- Having a draft concession contract prepared prior to entering the bidding process enhances fairness and the clarity of negotiations between the parties involved, and improves the efficiency of the negotiation process by clarifying a starting point of discussion.
- Financial profitability and sustainability of the PPP is heavily dependent on Government's respect of contractual agreements. It is therefore critical that concession contracts have credible enforcement mechanisms.

Government Support

- Countries that have been successful in toll road development use an appropriate combination of government support measures
- The extent of support that may reasonably be provided depends largely on the political and economic situation of the country
- Assess critically the possibility of a large contingent liability in the case of guarantees (that is, foreign exchange guarantees, loan/bond guarantees, revenue and/or traffic guarantees).

Traffic Forecasting

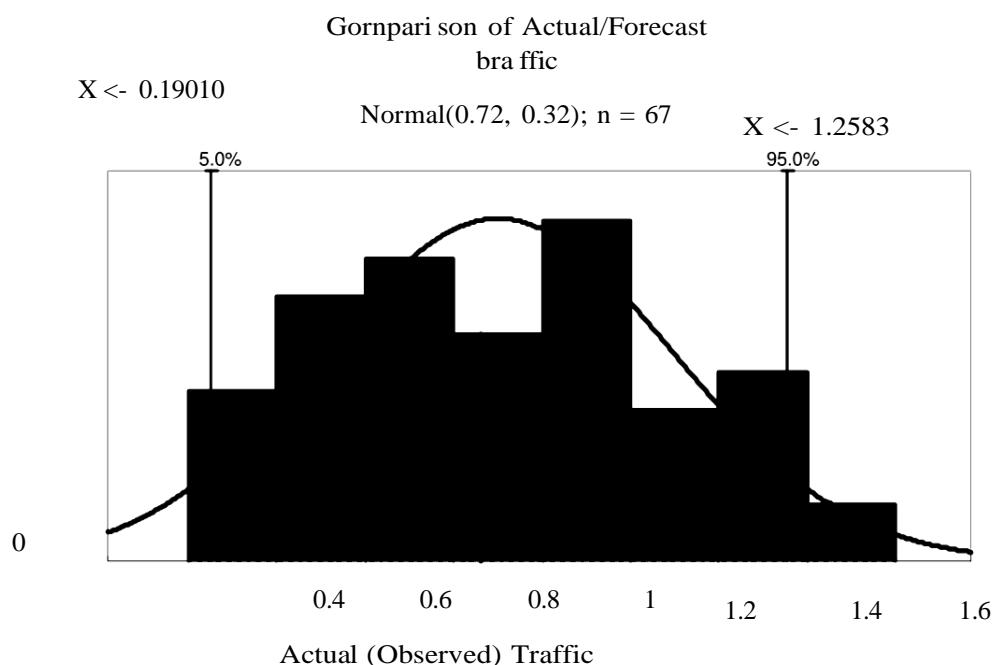
Traffic forecasting is not an exact science and involves a great deal of uncertainty. The uncertainty stems from a wide variety of factors that affect traffic flow. Figure below shows the results of an international study on traffic forecasting

accuracy conducted by Standard and Poor's. The study included more than 67 toll roads that showed that actual traffic figures are on average at 80 percent lower compared to forecasts. This confirms the inherent uncertainty of traffic forecasts.

Some of the factors that influence traffic include land development, population growth along the route, and other economic indicators. Because the viability of a toll road is directly related to expected traffic volumes, toll road operators, grantors, concessionaire, financiers, and investors are all concerned with traffic forecasting. Some of the lessons learned regarding traffic *forecasting* include:

- Traffic has frequently been over-estimated during the planning stage
- Analysts have sometimes used parameters calibrated elsewhere without evaluating their transferability.
- Governments have used traffic volumes estimated by project proponents without re-examining the figures during negotiations.
- Traffic forecasts did not accurately address the issue of toll sensitivity and demand elasticity
- Traffic forecasting should be cross-checked by at least one independent consultation or institution.

Results of International Study of Toll Road Traffic-Forecasting Accuracy by Standard and Poor's



Setting and Adjusting of Toll Rates

The profitability of a toll road project, especially in inflationary environments, depends to a large extent on the toll level and the ability of operators to keep the toll at par with inflation. Some of the lessons learned regarding general guidelines for setting and adjusting toll rates include:

- Balancing the affordability and financial sustainability of PPP toll road projects with attractiveness to the private sector requires estimating a minimum toll rate. All things being equal, this amount will depend on the construction cost and traffic volumes
- Toll rate adjustments can be left to discretion of governmental authority or based on a formula linked to changes in a price index, but procedures must be clearly defined early on to provide certainty to operator.

Financing Structure and Sources

- It is beneficial for a toll road project to obtain domestic financing in order to avoid currency exchange rate risks
- Long-term bank loans for PPP toll road projects are critical in developing countries, where commercial bank loan tenures are usually short (5-7 years) and institutional investors are not generally active
- IPOs of a single asset company with a BOT arrangement can be difficult as the duration of future cash flow is limited by the fixed concession period
- IPOs based on multiple toll road assets that generate stable cash flow may be an appropriate solution to fundraising issues in developing countries
- Securitization of existing highway assets can be attractive to private investors, since they may assume only limited construction/completion risks, and the transactions offer the prospect of high returns.

Public Acceptance

- Addressing land acquisition and relocation and resettlement matters are critical to gain public acceptance
- Effective public relations campaigns have aided public acceptance of well-conceived toll road projects.

Role of Donor Agencies

Donor agencies can help address a variety of financing, institutional, and regulatory issues, and increase the probability of success of a PPP toll road project. More specifically,

- The mechanisms offered by donors to help overcome project-specific, or enabling environment issues include:
 - Long term financing
 - Credit enhancement measures, including political risk insurance, export credit agency guarantee, and partial credit and risk guarantees
 - Expertise and training areas related to toll road development.

Advantages of PPPs as a source of financing project

According to a Canadian report (Government of Quebec, 2004), PPPs present numerous advantages both for the public partner and the private partner. The private partner is likely to get access to new sectors and achieve more business activity, enjoy better margins and get more long-term revenues.

PPPs are advantageous because of the following.

- Improved service quality through the use of contracts and the public partner is able to specify the level of service quality required to be offered to the public. The private sector may also have special expertise and technology that will result in improved service quality.
- May lead to higher quality and timely provision of public services.
- Lower project costs may be incurred since PPP projects usually encompass a wide range of activities — design, construction etc., all in one project rather than being separated into its different parts. Therefore, better overall solutions are possible to accomplish and the chance to exploit scale economies increases.
- Risk sharing in that PPP projects are often designed so that each specific risk associated with the project is borne by the partner best suited to handle this risk. For example, since PPP projects typically give the private sector a greater responsibility for project design, construction,

service obligations and financing, there is a net transfer of risk from the public sector to the private sector. Likewise, the public sector would then take care of aspects such as political issues and regulations.

- If the public sector is unable to finance all the projects that are considered to be socio- economically beneficial then the private sector can participate in the financing of some projects, thereby ensuring earlier and quicker construction.
- PPPs are seen as an instrument that combines the relative strength of government and private provision in a way that responds to market failure but minimizes the risk of government failure. Private sector actors in PPPs can use their management skills and capacity for innovation to improve efficiency and quality standards.
- Reduce whole life cycle costs.
- Provide best solution of Risk in infrastructure.
- Enhance Public management and economic growth.

- Efficiency gains play an important role in increasing value for money through PPPs. Governments pay a fee to the private partner for the services provided (for example, in terms of usage fees and availability payments), which the private sector uses to pay operating costs and interest charges and to repay debt and return on equity. In cases where efficiency increases offset the higher financing costs of the private sector, the PPP may have a higher value for money and hence be the preferred option for the government. Such efficiency effects may include improved analysis during project selection, better planning, on-time and on-budget implementation, improved construction expertise, and adequate maintenance (WBI 2012).
- PPP projects presume long-term commitment from all parties, which may create locking and reduced flexibility.

If implemented well, PPPs can therefore help overcome inadequate infrastructure, which constrains economic growth, particularly in developing countries. PPP's should however be implemented thoughtfully considering the potential challenges presented in the following sub-section.

Challenges with PPPs in Transport

It is worth noting that private sector engagement in infrastructure projects is not traditionally a natural fit because PPPs bring together parties with such diverging interests and end goals. While the Principal-Agent incentive theory (i.e. the principal (often government) introduces a set of incentives in order to increase the agent's (private sector) efficiency), conflicting interests can still exist:

- The agent could act contrary to its instructions because the principal's instructions are not in their interests, for example by increasing profit margins despite cost-effectiveness being in the principal's best interests (also known as moral hazard).
- The principal could select an ill-suited agent (adverse selection), which causes problems with project implementation.
- The private sector could be more experienced and have superior knowledge of terms and conditions from previous projects (knowledge asymmetry), compared to the government entity, which has limited PPP experience. This asymmetry could result in reduced access to information as the private sector's engagement in project delivery and operations grows.

Therefore, mitigating against such outcomes in order to enhance congruency of goals involves the publication of best practices guidelines and manuals, making use of knowledgeable transaction advisors and ensuring that costs to the public sector are market related. Additionally, devising a robust monitoring regime can also assist in mitigating 'shirking' during the project implementation.

Some critics have also noted that there is a tendency towards over-engineered and legally complicated agreements because PPPs are risky undertakings. PPPs are thus criticised for their high transaction costs, the long-term and rigid nature of contracts, the difficulty in finding private investors to partners with, and the increased difficulty for local firms and financiers to participate in PPP projects.

Bankable Project

The investment gap in infrastructure is not the result of a shortage of capital. Real long-term interest rates are low, there is ample supply of long-term finance, interest by the private sector is high and the benefits are obvious. **The main challenge is to find bankable and investment-ready projects.” - The Business Twenty (B20) Taskforce (2017)’**

There is no universal or one size fits all definition of the term “bankable” when referring to bankability of infrastructure projects. Although projects are commonly termed “bankable” if lenders are willing to finance them, the definition can vary depending on perspective and financier.

- From a commercial lender's perspective, bankability of a project may be defined as the level of willingness of the prospective lender to finance the project, that is, what amount and under what conditions. Higher bankability means access to more funding and/or better conditions in terms of the amount of debt (leverage), the loan term and the loan costs. Lenders are concerned about the risk profiles of the project and as such, the riskiness of their investment decisions. If a prospective lender considers the project to have an unacceptable level of risk and uncertainty, they will not provide finance and the project will not be bankable.
- From the private sector perspective, bankability refers mainly to financial returns and determining whether the project will be profitable for an investor. The costs and benefits of the project, and hence the profitability and potential financial returns of the project, are key aspects of bankability for private investors. These factors, together with the potential risk-return ratio often determine private sector interest.
- From the public sector perspective, a bankable project can be one that responds to national priorities and considers citizen's needs and concerns. Emphasis may be placed on social returns, employment, developmental potential as well as financial soundness and cost-effectiveness. But the public sector also has a tendency to fund flagship high-profile projects that are used as a tool for geopolitical strategic interests by politicians.

From the donor's / development partner's perspective, emphasis is strongly placed on developmental potential as well as the social impacts and social returns of a project when considering funding. Higher weighting is placed for social considerations such as positive impact on poverty alleviation, gender equality, environmental sustainability, and perhaps alignment to development partners' objectives etc.

- **For International Finance Institutions (IFI's)**, weight is placed on social considerations and financial soundness and cost-effectiveness, but they may have other specific goals such as creating regional transport /trade corridors, opening up the skies to more air traffic, or any other specific agenda that would make them consider projects bankable.
- **From the perspective of special funds**, such as climate funds, bankability may go beyond financial returns to encompass specific criteria of the particular fund in question — that could be environmental benefits such as contribution to emissions reduction.

Main Tenets of Identifying and Developing Bankable Projects

In much the same way that the definition of bankability varies, the criteria that is used to determine bankability of a project also varies widely and is dependent on the rules, guidelines, goals, agenda and perspective of the financier. There are however some common criteria that apply to most transport projects that financiers - be they commercial lenders, private investors or international financial institutions (IFIs) - will usually look for. These can be broadly classified into two as shown below and discussed further in the following sub-sections.

1. The project country environment (these are “upstream” considerations and can include social, economic, political, and legal /regulatory environments as well as institutions); and
2. Project preparation and planning (this can include pre-feasibility / feasibility studies, financial structure, third party risk allocation and contract arrangement).

How to Develop Bankable Projects or PPP Projects

Developing bankable projects means preparing projects that meet the criteria of financiers. As was shown in the previous sections, there are a number of factors or criteria that influence bankability of a project; these can include social, economic, financial, technical, environmental, legal and administrative factors and, in most cases a combination of all the aforementioned. Project development normally involves feasibility and prefeasibility studies to assess these factors. But it is important to note that these studies need to be preceded by conceptualization, consensus building around a project's purpose and initial design, and action plans. These steps in turn, are often preceded by legal and regulatory reforms in the relevant sector and by policy reforms.

Indeed, attracting lenders or investors requires a combination of a conducive enabling environment, effective institutions and actors (public and private), providing incentives, and adequate project preparation. Whether a new infrastructure initiative is large or small, and whatever the transport sub-sector, issues around the institutional, legal, social, environmental, financial, regulatory and engineering aspects need to be fully addressed in order to take an idea from a concept to a clearly defined and fully structured project proposal, ready to be considered by potential funders.

The following sections present a basket of actions that governments / project proponents can take to develop bankable projects. These actions can be categorized into the two broad areas of focus, presented in previous sections and as follows:

1. **Creating an enabling environment** (Economic and political environment; Legal and regulatory environment) - “Upstream” preparation such as creating enabling legislation, designing investor friendly regulations, reforming project-relevant institutions, setting clear policy, building capacity to support project and building consensus around project forms an important base for attaining bankability. Even if a detailed feasibility study is available, the lack of a basic legal and regulatory enabling environment can stall project development. A weak policy environment can have similar effects because of the government's inability to identify, plan, prioritize, or conduct action planning for projects.
2. **Project preparation** (Feasibility studies together with project definition; financial structure; third party risk allocation; and contract arrangement/transaction) - It is important for governments / project proponents to prepare project specific documents and conduct evidence-based analysis which lenders/ investors can scrutinize.

The absence of any one of the above/following criteria may not hinder the prospects for project development, but the more a country/ project proponent considers and addresses these criteria, the higher their chances of securing funding for their projects.

How to Create an Enabling Environment

Infrastructure development requires an appropriate economic, political, legal, policy and regulatory environment to facilitate its development. Strong and capable institutions are critical for the creation of an enabling environment and the implementation of infrastructure projects. Project development without a well-developed legal and regulatory framework increases the level of risk to investors. It also encourages investors to rely on special situations and political relationships rather than their merits as a means for securing and implementing contracts (ADB,2000). Institutions may need to be reformed / restructured and best practice employed in order to avoid tendencies for corruption or empire building. For example, regulatory bodies separate from vested sector interests should be created.

Transport infrastructure projects in LLDCs are often of a regional nature and can often involve several countries; thus harmonization of regulatory frameworks is key to minimizing geographical disparities.

Supporting policies need to ensure investment returns as well as greater transparency in procurement and tendering processes. Political leadership and commitment are also important when developing / implementing projects. Proponents should identify project champions that are decisive and will move a project forward.

In all cases above capacity-development is key to ensure efficient project preparation and improve project bankability. The following are a number of actions that can be taken to create an enabling environment⁶ for transport infrastructure development.

Creating an Enabling Environment for Transport Infrastructure Development

Criteria	Steps that can be taken by project proponents
Economic Environment	<ul style="list-style-type: none"> • Demonstrate high existing or increasing real income levels • Demonstrate a sound macro-economy, economic growth (GDP growth) and creating increasing output. • Low and stable inflation rate. • Stabilizing the local currency. • Developing / encouraging domestic capital markets capable of providing domestic (additional) financing. • Private sector funding of infrastructure usually brings the risk of foreign currency mismatches in the financing package; income is in local currency, but the need to resort to foreign debt and equity markets means that debt service requires substantial foreign currency. The root problem is inadequate depth in capital markets in most Debt Capital Markets (DCMs) which prevents a tailoring of local currency debt to long-lived assets. The need to resort to foreign debt (and equity) creates substantial risks, • Reduction in national debt.
Political Environment	<ul style="list-style-type: none"> • Demonstrate that the political leadership is in support of the project(s). • Political stability — this could include smooth transition of power, respect for human rights, and support for democracy. • Peace and safety — show commitment to the rule of law by the executive and avoidance of conflict. • Demonstrate strong governmental support for the project. Lack of co-ordination among ministries can lead to an incoherent government approach towards individual infrastructure projects, which can discourage private investors and development partners from engaging in project preparation.
Policy	<ul style="list-style-type: none"> • Create investor friendly policies. • Show commitment to policy, and harmonize policies i.e., <i>policies should point in the same direction</i>. • Development, within government, of an effective transport strategy and project identification process.
Institutional and capacity building	<ul style="list-style-type: none"> • Institute widespread understanding, through education and application, of the different private sector participation (PSP) options which can be effective in transport development. • Identify and rectify institutional weaknesses via reforms. • Improve quality of (government) service. • Better training, professional development and advisory support in areas such as regulatory reform, concessional arrangements, procurement and negotiation would enhance capabilities. • Streamline processes and avoid red tape. • Enhance intergovernmental co-ordination and make it easier for external parties to move through the process. Standardization, paired with transparent digital platforms, would help improve scale and efficiency, as well as prevent corruption. • Establishment of a "one-stop-shop" for infrastructure projects can also be an attractive feature for private investors.

Criteria	Steps that can be taken by project proponents
	<ul style="list-style-type: none"> Particularly in terms of promoting PPPs for quality infrastructure, there is a need to train project proponents to use specialized finance techniques, such as blended finance and managing contracts. Not only do LLDCs need a larger pipeline of investable infrastructure projects, they also need the pipeline of human capital to develop PPPs. Workshop training should be combined with on-the-job internships. A database of experts in the different infrastructure fields that could serve as a marketplace platform to demand and supply African expertise could also be explored.
Public opinion	<ul style="list-style-type: none"> Obtain public sector support for the project(s).
Tax policies	<ul style="list-style-type: none"> Tax incentives for investors. Provide other suitable financial incentives.
Legal system	<ul style="list-style-type: none"> Development of acceptable PSP legal frameworks, and laws for PPP operations. Adhere to legally-binding concession agreements which set out clearly the rights and obligations of all parties, and the procedures to be followed in the case of unforeseen events. Establish means for enforcement of contracts and the resolution of disputes. Improve transparency in the project development cycle, particularly procurement. Limit nationalization and expropriation of legally developed projects. Improve government institutions by reducing the regulatory burden and improving transparency, as an overly-regulated economy often provides more incentives for corruption (IMF, 2016). In general, highly-corrupted economies discourage private investment (IMF, 2016). Corruption also weakens the enforcement of regulations. Anti-corruption strategies need to have more transparency, rule of law and economic reform policies with effective institutions (IMF, 2016).
Regulatory Framework	<ul style="list-style-type: none"> Establish autonomous and independent regulators which are also accountable. Design and implement clear and transparent procurement processes. Transparency and competition are essential in the procurement process and greater use of e-procurement procedures which could further increase transparency and possibly reduce incidences of mis-procurement and other delays. Develop adequate procedures for project development (planning consent, environmental, land acquisition etc.). Implement reforms that insulate regulators from outside influence.

Sources: Asia Development Bank (ADB) (2020); OECD/ACET (2020); Zhu and Chua (2018); Lopes and Caetano (2015); Gatti (2008); Delmon (2005).

Criteria	Steps that can be taken by project proponents
Pre-development	<ul style="list-style-type: none"> • Effective early-stage screening. • Developing SMART, compact and replicable project cycles is necessary to accelerate the planning, design and implementation of scaled-up quality projects. SMART project cycles mean infrastructure development processes that set Specific, Measurable, Attainable, Relevant and Time-bound goals. • Identify priority projects via master plans / policy documents. • The private sector is more likely to invest in existing assets with a track-record of financial viability rather than new projects laden with upfront costs and risks. • Continuous involvement of affected stakeholders and transparent two-way communication to address local demands and concern • Identify strong project sponsors and project champions can be pivotal in driving projects from concept to completion. • The African Union Development Agency (AUDA-NEPAD) designed a project screening and advisory tool called the PIDA Quality Label (PQL) as part of the Service Delivery Model (SDM) - The objective is to shorten the time needed to get from project proposals through to financial closure, with initial quick checks and the use of scoring and technical advisory systems. • Development of a common handbook on infrastructure development which states clear institutional and procedural guidelines and guidance, could reduce uncertainties and confusion regarding who needs to do what in a time-bound manner (This idea is already envisaged in PIDA 2021-30). • The African Union (AU) and AUDI-NEPAD Procurement Manual is also an additional resource that can be utilized in project preparation. • SOURCE' (undergoing testing) is an online multilateral platform for quality infrastructure led and funded by multilateral development banks (MDBs). It brings a systemic change in the way governments define, develop, and manage their infrastructure projects for both traditional procurement and public-private partnerships. It has a checklist that can be used to identify project aspects that investors are looking for. • The International Finance Corporation's Anticipated Impact Measurement and Monitoring (AIMM) system allows for estimating the expected development impact of projects, including on the wider economy. • AfDB established the Africa50 Infrastructure Fund, an investment facility that will attract funding from the private sector, governments, and DFIs to finance project preparation and finance.
Project definition	<ul style="list-style-type: none"> • A focus on viability, implementation strategy and financing. • The potential of the project to promote development, social, and environmental objectives, as well as economic efficiency, should be addressed. • Identify expected service outcomes in line with overall development priorities, project concepts, access benefits, project boundaries and scope, technical options and demand projections.
Feasibility studies	<ul style="list-style-type: none"> • A scope including all those activities which affect government's decision as to whether to go ahead (technical, economic, financial, institutional, legal, and land).

Criteria	Steps that can be taken by project proponents
	<ul style="list-style-type: none"> • Design evaluation, compliance with legal regulations, financial viability, cost-benefit analysis, socio-economic impact assessments and social and environmental impact assessments. • Robust feasibility assessments identify expected service outcomes in line with overall development priorities, project concepts, access benefits, project boundaries and scope, technical options and demand projections. • Future demand projections for ensuring long-term sustainability of infrastructure projects. • Rigorous social and environmental impact assessments, and stakeholder consultations.
Capacity of the Technology	<ul style="list-style-type: none"> • Make an assessment of various technology options. • Choose an appropriate technology for the project.
Site acquisition and Access	<ul style="list-style-type: none"> • Land acquisition and resettlement affect people's livelihoods such as the loss of assets, job security, food security and economic conditions. • During this phase, projects may experience delays largely due to weak legal frameworks in land ownerships, disagreements for resettlement and compensation with local populations, as well as political crises. • Identify Requirements and conditions for compensation depending on standards set by funding organizations. • The proactive management of land acquisition and resettlement issues in the early project stage can in fact provide significant development opportunities for affected populations and create better outcomes for displaced and host communities. • Keeping various stakeholders continuously engaged during the infrastructure development is therefore critical for building awareness and consensus for the effective and efficient implementation of projects, while mitigating potential risks of conflict throughout the infrastructure life cycle that could cause delays.
License, permits, and Authorizations	<ul style="list-style-type: none"> • Acquisition of necessary licenses, permits and authorizations required to develop the project.
Shareholders' Credibility	<ul style="list-style-type: none"> • Competent and committed project proponents / shareholders. • Creditworthy shareholders / project proponents.
Public sector's Reliability	<ul style="list-style-type: none"> • Public sector support for the projects. • Public sector track record in implementation of transport projects.
EPC contractor's Credibility	<ul style="list-style-type: none"> • Construction risk can be mitigated by a competent general contractor overseeing and implementing a management structure that enables co-ordination among sub-contractors with appropriate risk-sharing measures. • Delays can further be avoided with suitable penalty clauses. In addition, performance records of local contractors should be kept to reference for future projects. • The adoption of digital technology and innovative practices can help build better, cheaper, faster and safer infrastructure. In the long term, temporary facilities could be established to assemble parts close to construction sites, which could dramatically reduce construction time and labor costs. • In addition, innovation-friendly regulations and policies, as well as technological solutions, can reduce life cycle costs.
Financial structure	<ul style="list-style-type: none"> • Contact with potential financiers. • Establish the project financial structure. • Identify the nature and scale of all the project risks.

Criteria	Steps that can be taken by project proponents
	<ul style="list-style-type: none"> • Define the balance between government support and provisions (such as defined tariffs) to secure specific government objectives. • Allocate risks between government and the concession company. • Tariffs close to revenue-maximizing, and with an appropriate tariff escalation formula that allows potential revenues to be captured over time, for the main vehicle classes. • Projects with an existing income stream, e.g., from an existing estuarial crossing/tunnel, or an existing public sector expressway. This is hugely beneficial to financing. • A project that has been well prepared — in technical terms, in securing planning consents and in proving the feasibility of land acquisition — thereby reducing implementation risks. • A large project, which recognizes the high fixed bidding costs associated with BOT projects. • Create investor friendly policies. • Show commitment to policy, and harmonize policies i.e. policies should point in the same direction. • Development, within government, of an effective transport strategy and project identification process.
	<p>Possible strategies</p> <ul style="list-style-type: none"> • Use project finance techniques, such as special purpose vehicles and ring-fenced revenues: The best practice for the design and risk mitigation of infrastructure projects is nonrecourse project finance techniques. The annual assessment of project finance loans by Moody's Investors Service documents the superior performance of African project finance loans, with defaults of African infrastructure projects from 1983 to 2017 averaging 5.5%, a lower default rate than Latin America (12.9%), Asia (8.8%), Eastern Europe (8.6%), North America (7.6%), and Western Europe (5.9%) (Moody's Investor Service, 2019). • Provide infrastructure project sponsors with highly-specialized technical support needed to develop investable infrastructure projects: African pension funds have indicated a strong interest in investing in Africa's infrastructure, provided the projects meet their investment criteria. The most effective way to meet investor criteria is to engage experienced professional project developers. In fact, surveys of professional project developers have demonstrated their willingness to provide their services to African governments and other project sponsors, provided the project is developed in alignment with investor criteria and a market-based model is used to compensate them for their services.
Insurance arrangement	<ul style="list-style-type: none"> • The success of attracting private finance for infrastructure depends on reducing perceived risks. This can be addressed in part through donor-provided risk capital and insurance (Collier and Cust, 2015).
Concession agreement	<ul style="list-style-type: none"> • Particularly in the case of PPPs, it could support the negotiation stage by linking up with resources, such as the CONNEX Initiative, a contract negotiation support provider which was initiated in the G7 context. • Concession period. • Support agreement/guarantee. • Termination provisions. • Construction contract. • Operation and maintenance agreement. • Offtake purchase agreement. • Input supplier agreement. • Guarantee from multilateral investment agency • Direct agreement, arbitration • Catastrophic risk etc.

What is the factor which are dissuading private sector investor to invest in road projects? How to attract or solicitate private sector investment in road sector? what is to be done by Government and Private Sector.

“सार्वजनिक निजी साझेदारी: यातायात पूर्वाधारको बैकल्पिक लगानी”

बिषयप्रवेश :

देशको दीर्घकालीन सोंच “सम्बृद्ध नेपाल, सुखी नेपाली” पुरा गर्न, सन् २०३० सम्म दिगो बिकासको लक्ष्य हासिल गर्दै मध्यम आयस्तर भएको मुलुकमा स्तरोन्नति हुन् GDP को १३ देखि १५ % पूर्वाधार क्षेत्र त्यसमा पनि मुख्यतया यातायात क्षेत्रमा लगानी गर्नुपर्ने अवस्थामा लगानीको इष्टिकोणबाट सरकारको ढुकुटीमा ठुलो आर्थिक व्यभार नपर्ने “Off Balance Sheet” को रूपमा परिचित सार्वजनिक निजी साझेदारी मार्फत यातायात पूर्वाधारमा लगानी लाइ सफल कार्यान्वयन गर्नुपर्ने आवश्यता छ।

परिभाषा :

A long-term contract between a private party and a government entity, for providing a public asset or service in which the party bears, significant risk and management responsibility and remuneration is linked to performance is called private partnership.

Various Type of PPPs

There are several different types of public-private partnership contracts, depending on various aspects such as the type of project (for example, a road or an airport), level of risk transfer, investment level and the desired outcome. Some types of PPPs include:

- Build-Own-Operate (BOO): BOO projects can be likened to the actual privatization of a facility because often there is no provision of transfer of ownership to the host government. At the end of a BOO concession agreement, the original agreement may be renegotiated for a further concession period.
- Build-Operate-Transfer (BOT): The facility is paid for by the investor but is owned by the host. The investor maintains the facility and operates during the concession period.
- Build-Own-Operate-Transfer (BOOT): Ownership of the facility rests with the constructor until the end of the concession period, at which point ownership and operating rights are transferred free of charge to the host government.
- Build-Transfer-Operate (BTO): The private sector finances a facility and, upon completion, transfers legal ownership to the public sector. The agency then leases the facility back to the private sector under a long-term lease. During the lease, the private sector operates the facility.
- Design-Build-Finance-Operate (DBFO): The private sector partner finances the project and is granted a long-term right of access of about 30 years. The DBFO partner is given specified service payments during the life of the project.

PPP सम्बन्धि मौजुदा व्यवस्था

- इसंबिधान मै निजि क्षेत्रलाई सहयोगीको रूपमा चित्रण गरिएको
- राष्ट्रिय यातायात नीति २०७८ को नीति बमोजिम यातायात संरचनाको विकास तथा सेवा विस्तारमा निजी क्षेत्रलाई बढी से बढी सलंगन गराउने
- सार्वजनिक निजी साझेदारी तथा लगानी ऐन २०७५
- सार्वजनिक निजी साझेदारी नीति २०७२
- वैदेशिक लगानी तथा प्रविधि हस्तान्तरण ऐन २०७५
- Strategic plan for SRN २०७३/०७८
- पन्धौ योजनामा परम्परागत सरकारी स्रोत माथिको निर्भरता घटाई लगानीका वैकल्पिक स्रोतहरु जुटाउने
- बार्षिक बजेट तथा सरकारको नीति तथा कार्यक्रम आदि

Hinderance/Hurdles/Constraints/Dissuading in 3P for Infrastructure/Road Sector

1. Policy Constraints

- हालको सार्वजनिक निजी साझेदारी तथा लगानी ऐन २०७५ तथा नीति २०७२ भन्दा अगाडिका कानुनी व्यवस्था अन्तर्राष्ट्रिय मान्यता अनुसार PPP का प्राबधानहरु नहुनु जस्तै Viability Gap Funding, Project Development Fund आदिको , NTP २०७८ ले दिएका कर छुटका, Tax Holiday, जग्गा प्राप्ति सहजीकरण गर्ने बिषयबस्तु, International Arbitration (UNCITRAL), 3P का अन्य मोडहरु DOT,MOT, ROT, राष्ट्र बैंकको Single Borrower Limit, Bidding Document। आदि
- नदिजन्य निर्माण सामग्रीको उपलब्धता मा कठिनाई/नदीजन्य निर्माण सामग्रीको उधोग नहुनु
- जग्गा प्राप्ति र वातावरण अद्ययन सम्बन्धि झाङ्झाटिलो प्रक्रिया हुनु
- Unfair competition by GoN like काठमाण्डौ हेटौडा निजीक्षेत्रलाई दिनु तर पछि Fasttrack आफै बनाउन थाल्नु
- 3P सम्बन्धि भएको कानुनी व्यवस्थाहरु लागु गर्न उदासिता देखाउनु जस्ता Revolving Fund, सार्वजनिक साझेदारी केन्द्र आदि
- Innovative Financing बारे समयानुकूल प्रवन्धहरु नगरिनु

2. Institutional Constraints

- 3P मा सहयोग गर्न भनि स्थापना गरिनुपर्ने संरचनाहरु अझै नबन्नु जस्तै सा.सा. केन्द्र, सार्वजनिक निजी साझेदारी एकाई आदि
- भएका संस्थाहरु Global Market संग competition गर्ने नहुनु
- Project Development Fund बारे निर्णय नहुनु
- One Window प्रणाली अन्तर्गत दिनुपर्ने सेवासुविधाहरु प्रदान गर्न नसक्नु

3. कार्यगत/ Administrative Constraints

- एकल विन्दु सेवा केन्द्रमा अधिकार सम्पन्न अन्य निकायका कर्मचारी नहुनु
- खरिद प्रक्रिया संग सम्बन्धित ठेकका काजगातहरु नहुनु
- Toll सम्बन्धि व्यवस्थाहरु भविष्यमा के हुने वा सरकार पिच्छे परिवर्तन को आशंका हुनु
- VGF/Revolving Fund/Project preparation fund आदिको व्यवहारिक कार्यान्वयन नहुनु
- जोखिम व्यवस्थापन के कसरी best way बाट गर्न सकिन्छ? कार्यगत एकता कस्तो हुने आदि अन्यौल हुनु
- सडक जस्तो Linear infrastructure मा हुने uncertainties (ribbon development, जग्गा अतिक्रमण, सामाजिक पुनर्बासक मुद्दाहरु आदि) हरूको सम्बोधन नहुनु
- Lack of Sufficient Invest by Nepali Investor (just 200 Billion)
- DOT, MOT, ROT जस्ता प्राबधान लाउ गर्ने मन्त्रालय, विभाग र सडक बोर्ड जस्ता संस्थाको भूमिका प्रभावकारी बन्न नसक्नु
- बिकासका नाममा राष्ट्रियताको मुद्दाहरु उठाउनु
- पूर्वाधार अद्ययन अनुसन्धान सम्बन्धि कानुनीरूपमा व्यवस्था नहुनु आदि

4. सुधारका लागि चाल्नुपर्ने कदम

- माथि उल्लेखित विभिन्न Constraints का कारण नेपालको यातायात पूर्वाधार क्षेत्रमा 3P को अवधारणा आएको लामो समयसम्म पनि सफल भइनरहेको अवस्थामा नीति, ऐनमा भएको व्यवस्थाहरूको धेरै समस्या समाधान गरेपनि VGF, Dispute Resolution Mechanism, अधिकार सम्पन्न एकल विन्दु सेवा केन्द्र, परियोजना तयारी कोष, Revolving Fund जस्ता प्राबधानहरु लाई व्यवहारिकरूपमा कार्यान्वयन योग्य रूपमा लागू गर्न ढिलाई गर्नु हुदैन | साथै 3P को नियमावली बनाई Toll charge Regulation, Role of Doner, Risk Sharing Mechanism जस्ता सवालको उचित सम्बोधन गर्नुपर्ने देखिन्छ |
- साथै 3Pमा सलंग्न हुने जनशक्ति को क्षमता विकास, संस्थागत विकास, R and D मा सहयोगी हुने Tool Kit for Toll Road हरु समेत कार्यान्वयन गर्नुपर्ने
- 3P संग सम्बन्धित सार्वजनिक खरिद कार्यको लागि आवश्यक पर्ने कागजात/उपयुक्त विधि तथा प्राविधिक निर्देशिकाहरु तयार गरिनुपर्ने

5. नेपालमा 3P का लागि सम्भावनायुक्त सडकहरू

- काठमाण्डौ बाहिरी चक्रपथ
- काठमाण्डौ हेटौडा सडक
- सीतापाइला धार्के सडक
- Tunnel Construction at Daanunne
- शहरी क्षेत्रका मुख्य सडकहरूमा RoT, जस्तै बिराटनगर धरानसडक, व्यापारिक राजमार्ग हरु आदि

नेपालमा वातावरणीय अध्ययन र प्रचलित नीति र कानूनहरू

आधार

- United Nations Conference on Human Environment, 1972 (5-16, June) called Stockholm's Convention
- Convention on Environmental Impact Assessment in a Transboundary Context, 1991 (Espoo, Finland)
- United Nations Conference on Economic Development (UNCED)
- वातावरण प्रभाव मूल्यांकन सन् १९७० को दशक देखि नै वातावरण चेतना वृद्धिको एक भागको रूपमा विश्वव्यापीरूपमा प्रचारप्रसार भएको
- अमेरिका मा सन् १९६९ देखि EIA ले औपचारिक प्राथमिकता पाए संगै यो प्रक्रिया संसारमा प्रचलनमा आएको
- राष्ट्रिय संरक्षण नीति, २०४५
- सुर्य प्रसाद शर्मा दुङ्गेल द्वारा सर्वोच्च अदालतमा गोदावरी मार्बल सहित सरकार बिरुद्ध दायर भएको रिट (WP ३५/१९९२) मा भएको फैसला
- नेपाल वातावरणीय नीति तथा कार्ययोजना, २०५०
- राष्ट्रिय वातावरणीय प्रभाव मूल्यांकन मार्गदर्शन, २०५०
- वातावरण संरक्षण ऐन, २०५३ र नियमावली, २०५४
- राष्ट्रिय वातावरण नीति, २०७६
- वातावरण संरक्षण ऐन, २०७६ र नियमावली, २०७७
- हाल सम्म करिव ३५० देखि ४०० वटा आयोजनाको EIA र १५०० देखि २००० वटा IEE स्वीकृत भएको

राष्ट्रिय वातावरण नीति, २०७६

- नेपालको संविधानको धारा ३० ले प्रत्येक नागरिकलाई स्वच्छ वातावारमा बाँच्न पाउने मौलिक हकको व्यवस्था गरी यसको संरक्षण र व्यवस्थापनलाई राज्यको उच्च प्राथमिकतामा रहेको
- वातावरण संरक्षण बहुआयमिक राष्ट्रिय तथा अन्तरदेशीय बिषय रहेको हुँदा नेपालले वातावरण सम्बन्धि विभिन्न अन्तर्राष्ट्रिय सन्धि समझौतामा गरेको प्रतिवर्द्धता
- दिगो विकासको अवधारणा अनुरूप वर्तमान र अंतर्पुस्ता समन्यायका लागि वातावरणीय स्रोतमाथि न्यायोचित पहुँच र तिनको बुद्धिमतापूर्ण उपयोगको प्रत्याभूति गर्नु राज्यको दायित्व
- विकासका सबै आयामहरूमा वातावरणीय चासोलाई मूलप्रवाहीकरण गर्ने
- विधुतीय सवारी साधन, हाइब्रिड सवारीसाधन वा हाईड्रोजन इन्धनबाट चल्ने सवारीसाधन जस्ता नवीनतम तथा स्वच्छ ऊर्जा खपत गर्ने सवारी साधनहरूको प्रयोगलाई प्रोत्साहन गरिने
- विकास आयोजना हरूको सबै चरणमा वातावरणीय पक्षलाई आन्तारिकिकरण गरिने
- विकास आयोजना बाट वातावरण र समाजमा पर्ने प्रतिकूल प्रभावलाई न्यूनीकरण र अनुकूल प्रभावलाई विस्तार गरिने
- विकास आयोजनाबाट सृजित प्रतिकूल वातावरणीय प्रभावमा परेको समुदायलाई न्यायोचित क्षतिपूर्तिको व्यवस्था गरिने
- वन क्षेत्रमा सार्वजनिक विकास निर्माणको कार्य गर्दा वन क्षेत्र घटे वापत प्रभावित समुहलाई क्षतिपूर्तिको व्यवस्था मिलाउने
- भौतिक पूर्वाधारको निर्माण गर्दा वातावरणमैत्री संरचना निर्माण गरिने

- राष्ट्रिय प्राथमिकता प्राप्त योजनाको लागि राष्ट्रिय वन प्रयोग गर्ने सम्बन्धि मापदण्ड सहितको कार्यविधि बमोजिम विकास निर्माण कार्य गरिने
- Payment for Ecosystem and Polluter pay Principle लाई आत्मसात गरिने

Environmental Impact Assessment (EIA)

- EIA can be defined as the study to predict the effect of a proposed activity/project on the environment.
- EIA is a decision-making tool, which compares various alternatives for a project and seeks to identify the one which represents the best combination of economic and environmental costs and benefits.
- EIA systematically examines both beneficial and adverse consequences of the project and ensures that these effects are taken into account during project design.
- It helps to identify possible environmental effects of the proposed project, proposes measures to mitigate adverse effects and predicts whether there will be significant adverse environmental effects, even after the mitigation is implemented.
- "It is an amalgamation of Art and Science of identifying/predicting and evaluating the results of interactions between environmental variables and human activities in nature."
- EIA as an Art or a Management Tool Reflects sensitivity towards nature
 - Carries out environmental analysis of actions
 - Ensures compliance with the policy and legal provisions
 - Influences decision-making process
- EIA as a Science deals with methodologies and techniques for identifying, predicting and evaluating the environmental impacts associated with a particular proposal.
- Systematic identification and evaluation of the impacts on the environment caused by a proposed project.
- Formal process to predict environmental consequences/impacts of a proposed plan/project.
- Done prior to the decision to move forward.
- Environmental consequences/impacts include changes in physical, ecological & socio-economic components of environment.
- Done before, during and after completing project.
- Ensures public consultation and participation of affected community.
- EIA must be made for all development projects.
- Predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers.
- Designed to be a constructive tool which ensures that the project does not give rise to problems affecting any aspect of the environment.
- Helps to ensure that development improves the way of life for the people affected, without damaging the natural surroundings.
- Helps to judge environmental performance of the proponent.
- Provides inputs into decision-making.
- By considering the environmental effects of the project and their mitigation early in the project planning cycle, environmental assessment has many benefits, such as protection of environment, optimum utilization of resources and saving of time and cost of the project.
- Benefits of integrating EIA have been observed in all stages of a project, from exploration and planning, through construction, operations, decommissioning and beyond site closure.
- Properly conducted EIA also reduces conflicts by promoting community participation, informing decision makers and helping lay the base for environmentally sound projects.
- Sometimes a degree of damage is inevitable.
- In this case an EIA should find ways of reducing or compensating for the damage (National Road Authority, 2008). This is by the use of mitigation measures.
- An application of Environmental Assessment (EA) Study is legally required prior to the implementation of the project (HMG, 1997).

Objectives of EIA

- To ensure that the environmental considerations are clearly addressed and incorporated into the development and decision-making process.
- To anticipate and avoid or minimize the adverse biophysical, social and other relevant effects of development proposals.
- To protect the productivity and capacity of natural systems and the ecological processes.
- To promote development that is sustainable and optimize resources use as well as management and opportunities.

Major Function of EIA

- Identify potential environmental impacts
- Examine the significance of the environmental impacts
- Assist whether or not the impact can be mitigated
- Recommend preventive and corrective measures.
- Assist decision makers to determine whether the particular development project should go ahead

- Provide information to decision makers and other integrated parties about environmental implications

वातावरण संरक्षण ऐन, २०७६ र नियमावली २०७७

प्रस्तावना: स्वच्छ र स्वस्थ वातावरणमा बाँचन पाउने प्रत्येक नागरिकको मौलिक अधिकारको संरक्षण गर्न, वातावरणीय प्रदूषण वा हास वाट हुने क्षति वापत पिडितलाई प्रदूषक बाट क्षतिपुर्ति उपलब्ध गराउन, वातावरण र विकासबीच समुचित सन्तुलन कायम गर्ने, प्रकृति, वातावरण र जैविक विविधतामा पर्ने प्रतिकूल वातावरणीय प्रभाव न्यूनीकरण गर्न तथा जलवायू परिवर्तनको चुनौतीलाई सामना गर्नेको लागि वातावरण संरक्षण सम्बन्धित प्रचलित कानूनलाई संशोधन र एकीकरण गर्न जरुरी भएको ।

वातावरण संरक्षण ऐन, २०७६



परिभाषा:

- **वातावरण:** प्राकृतिक, साँस्कृतिक र सामाजिक प्रणाली, आर्थिक तथा मानवीय क्रियाकलाप, यिनका अवयवहरु तथा यी अवयवहरुको वीचको अन्तरक्रिया तथा अन्तरसम्बन्ध सम्झनु पर्दछ ।
- **प्रस्ताव:** विद्यमान वातावरणीय अवस्थामा परिवर्तन ल्याउन सक्ते किसिमको विकास कार्य, भौतिक क्रियाकलाप वा भू-उपयोगको परिवर्तन गर्ने कुनै योजना, आयोजना वा कार्यक्रम संचालन गर्ने सम्बन्धमा तयार गरिएको प्रस्ताव सम्झनु पर्दछ ।
- **प्रस्तावक:** स्वीकृतिको लागि निवेदन दिने वा प्रस्ताव कार्यान्वयन गर्न स्वीकृत प्राप्त व्यक्ति वा सरकारी, अर्धसरकारी, गैरसरकारी, निकाय वा संस्था सम्झनु पर्दछ ।

संक्षिप्त वातावरणीय अध्ययन (Brief Environmental Study, BES) : कुनै प्रस्तावको कार्यान्वयन गर्दा सो प्रस्तावले वातावरणमा उल्लेखनीय प्रतिकूल प्रभाव पार्ने वा नपार्ने सम्बन्धमा यकिन गनुको साथै त्यस्तो प्रभावलाई कुनै उपाय द्वारा निराकरण वा न्यूनिकरण गर्नेका लागि अवलम्बन गरिने उपायको सम्बन्धमा संक्षिप्त रूपमा गरिने अध्ययन वा मूल्यांकन सम्झनुपर्छ ।

प्रारम्भिक वातावरणीय परिक्षण (IEE): कुनै प्रस्तावको कार्यान्वयन गर्दा सो प्रस्तावले वातावरणमा उल्लेखनीय प्रतिकूल प्रभाव पार्ने वा नपार्ने सम्बन्धमा यकिन गनुको साथै त्यस्तो प्रभावलाई कुनै उपाय द्वारा निराकरण वा न्यूनिकरण गर्नेका लागि अवलम्बन गरिने उपायको सम्बन्धमा विश्लेषणात्मक रूपमा गरिने अध्ययन वा मूल्यांकन सम्झनुपर्छ ।

वातावरणीय प्रभाव मूल्यांकन (EIA): कुनै प्रस्तावको कार्यान्वयन गर्दा सो प्रस्तावले वातावरणमा उल्लेखनीय प्रतिकूल प्रभाव पार्ने वा नपार्ने सम्बन्धमा यकिन गनुको साथै त्यस्तो प्रभावलाई कुनै उपाय द्वारा निराकरण वा न्यूनिकरण गर्नेका लागि अवलम्बन गरिने उपायको सम्बन्धमा विस्तृत रूपमा गरिने अध्ययन वा मूल्यांकन सम्झनुपर्छ ।

पुरक वातावरणीय प्रभाव मूल्यांकन : एक पटक स्वीकृत भैसकेको वातावरणीय प्रभाव मूल्यांकन सम्बन्धित प्रस्तावमा आंशिक रूपमा भौतिक पूर्वाधार, डिजाइन वा स्वरूप परिवर्तन गर्न, संरचना स्थानान्तरण वा फेरबदल गर्न, वन क्षेत्र थप गर्न वा आयोजनाको क्षमता वृद्धि गर्नेको लागि पेश भएको प्रस्ताव उपर पुनःगरिने वातावरणीय प्रभाव मूल्यांकन सम्झनु पर्दछ ।

रणनीतिक वातावरणीय विश्लेषण (SEA): परिभाषा नभएको

वातावरण संरक्षण ऐन, २०७६



- वातावरणीय अध्ययन (दफा ३-२): संघ, प्रदेश र स्थानीय तह
- सार्वजनिक सुनुवाई (दफा ३-५): वातावरणीय अध्ययन प्रतिवेदन तथार गर्दा (**BES, IEE & EIA**)
- मापदण्ड एवं गुणस्तर कायम गर्नुपर्ने (दफा ६):
 १. प्रस्तावकले यस ऐन बमोजिम वातावरणीय अध्ययन प्रतिवेदन तथार गर्दा नेपाल सरकारले निर्धारण गरेको मापदण्ड एवं गुणस्तर कायम हुनेगरी तोकिएको ढाँचामा तथार गर्नु पर्नेछ ।
 २. उपदफा १ बमोजिमको मापदण्ड वा गुणस्तर विपरित वा त्यस्तो मापदण्ड पालना नगरी प्रतिवेदन पेश भएमा त्यस्तो प्रतिवेदन तथार गर्ने परामर्शदाताले बढीमा ५ वर्ष सम्म वातावरणीय अध्ययन प्रतिवेदन तथार गर्न पाउने छैन ।
- रणनीतिक वातावरणीय विश्लेषण (दफा ९): नेपाल सरकारले नेपाल राजपत्रमा सचना प्रकाशन गरी तोकेका नीति, कार्यक्रम वा आयोजना कार्यान्वयन गर्नु अघि त्यस्तो नीति, कार्यक्रम वा आयोजनाको सम्बन्धमा रणनीतिक वातावरणीय विश्लेषण गर्नु पर्नेछ ।
- वातावरणीय व्यस्थापन योजना (दफा १०):
- परक वातावरणीय प्रभाव मूल्यांकन प्रतिवेदन (दफा ११): एक पटक स्वीकृत भैसकेको वातावरणीय प्रभाव मूल्यांकन सम्बन्धी प्रस्तावमा औंशिक रूपमा भौतिक पर्वाधार, डिजाइन वा स्वरूप परिवर्तन गर्ने, संरचना स्थानान्तरण वा फैरबदल गर्ने, वन क्षेत्र थप गर्न वा आयोजनाको क्षमता वृद्धि गर्नु परेमा त्यस्तो कार्य वातावरणमा प्रतिकुल प्रभाव पर्ने वा नपर्ने, त्यस्तो प्रभावलाई कुनै उपायद्वारा निराकरण वा न्यूनीकरण गर्न सकिने वा नसकिने सम्बन्धमा यकिन गर्न प्रस्तावकले पु.वा.प्र.मू. गर्नु पर्नेछ ।

वातावरण संरक्षण ऐन, २०७६



- वातावरणीय परीक्षण (दफा १२): मन्त्रालय वा तोकिएको निकायले यस ऐन बमोजिम वातावरणीय प्रभाव मूल्यांकन गर्नुपर्ने प्रस्तावको कार्यान्वयन सुरु गरी सेवा वा वस्तु उत्पादन वा वितरण सुरु गरेको दुई वर्ष भुक्तान भएको मितिले ६ महिना भित्र त्यस्तो प्रस्तावको कार्यान्वयनबाट वातावरणमा परेको प्रतिकुल प्रभाव, त्यस्तो प्रभावलाई कम गर्न अपनाएको उपाय तथा त्यस्तो उपायको प्रभावकारिता र न्यूनीकरण हुन नसकेको वा आकलन नै नभएको प्रतिकुल प्रभाव उत्पन्न भएकोमा सो समेतको विश्लेषण गरी वातावरणीय परीक्षण प्रतिवेदन अध्यावधिक राख्नु पर्नेछ ।

जरिवाना(दफा ३५):-

- संक्षिप्त वातावरणीय अध्ययन— पाँच लाख रुपैया सम्म ।
- प्रारम्भिक वातावरणीय परीक्षण— दश लाख रुपैया सम्म ।
- वातावरणीय प्रभाव मूल्यांकन— पचास लाख रुपैया सम्म । (स्वीकृत नगरे वा स्वीकृत प्रतिवेदनको विपरित हुनेगरी)
- सम्बन्धित निकायले प्रतिवेदन स्वीकृत गराउन वा प्रतिवेदन विपरित कार्य भएमा सुधार गर्न आदेश दिनेछ
- त्यस्तो आदेश पालना गर्नु सम्बन्धित व्यक्ति वा संस्थाको कर्तव्य हुनेछ ।
- यसरी दिएको आदेश बमोजिम कार्य नभएमा सम्बन्धित निकायले तेब्बर जरिवाना गर्ने छ ।

वातावरण संरक्षण ऐन, २०७६



- निवेदन दिन संख्ने (दफा ३६):- कसैले यस ऐन विपरित स.वा.अ., प्रा. वा.प. वा वा.प्र.मू. प्रतिवेदन स्वीकृत नगराई वा स्वीकृत प्रतिवेदन विपरित हुनेगरी प्रस्ताव कार्यान्वयन गरेमा वा गर्न लागेमा सम्बन्धित निकाय वा अधिकारी समक्ष निवेदन दिन संखनेछ ।
 - हानी नोक्सानी भएको खण्डमा प्रस्तावकबाट पीडित व्यक्ति, संस्था वा स्थानीय समुदायलाई मनाशिव क्षतिपूर्ति भराई दिनुपर्ने छ ।

- अनुगमन तथा निरीक्षण गर्ने (दफा ३९):- यस ऐन वा ऐन अन्तर्गत बनेको नियम निर्देशिका, कार्यविधि वा मापदण्डको कार्यान्वयन भए नभएको सम्बन्धमा मन्त्रालय (वन तथा वातावरण मन्त्रालय) वा विभाग (वातावरण विभाग) ले अनुगमन तथा निरीक्षण गर्नेछ ।

वातावरण संरक्षण नियमावली, २०७७

(नियम ६ को उपनियम (६) में सम्बन्धित)

સાધુવીઓ નાયારાન પરીવર્તન નામાં પાતે વિજ

- वातावरणीय अध्ययन गर्नु पर्ने (नियम ३):
 - अनुसूची-१ संक्षिप्त वातावरणीय अध्ययन {क-झ}
 - अनुसूची-२ प्रारम्भिक वातावरणीय परीक्षण {क-ठ}
 - अनुसूची-३ वातावरणीय प्रभाव मूल्याङ्कन (क-ठ)
 - क्षेत्र निर्धारण गर्नु पर्ने (नियम ४): वातावरणीय प्रभाव मूल्याङ्कन (अनुसूची ४ र ५)
 - कार्यसूची तयार गर्नु पर्ने (नियम ५):
 - (क) संक्षिप्त वातावरणीय अध्ययनसँग सम्बन्धित कार्यसूची अनुसूची-६
 - (ख) प्रारम्भिक वातावरणीय परीक्षणसँग सम्बन्धित कार्यसूची अनुसूची-७
 - (ग) वातावरणीय प्रभाव मूल्याङ्कनसँग सम्बन्धित कार्यसूची अनुसूची-८
 - सार्वजनिक सनुवाई गर्नु पर्ने (नियम ६):
 - वातावरणीय अध्ययन प्रतिवेदन तयार गर्ने(नियम ७):
 - (क) संक्षिप्त वातावरणीय अध्ययन प्रतिवेदन अनुसूची-१०
 - (ख) प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन अनुसूची-११
 - (ग) वातावरणीय प्रभाव मूल्याङ्कन प्रतिवेदन अनुसूची-१२
(अनुसूची-१३ बमोजिमका विज्ञ मार्फत तयार गर्नु पर्नेछ)

वातावरण संरक्षण नियमावली, २०७७



- वातावरणीय अध्ययन प्रतिवेदन स्वीकृतिको लागि पेश गर्नु पर्ने (नियम ८):
 - अनुसूची-१४ बमोजिमको ढाँचामा सम्बन्धित स्थानीय तह र सम्बन्धित विषयगत कार्यालयको सिफारिस
 - वातावरणीय अध्ययन प्रतिवेदन स्वीकृत गर्ने (नियम ९):
 - रणनीतिक वातावरणीय विश्लेषण (नियम १०):
 - परक वातावरणीय प्रभाव मूल्याङ्कन सम्बन्धी व्यवस्था(नियम ११):

परक वातावरणीय प्रभाव मल्यांकन (दफा-११)

कुनै आयोजनाको भौतिक पूर्वाधार डिजाइन वा स्वरूपमा केहि परिवर्तन गर्नु परेमा, संरचना फेरबदल वा स्थान्तरण गर्नु परेमा, बनक्षेत्र थप गर्नु परेमा वा आयोजनाको क्षमता वढ्दि गर्नु परेमा ।

स.वा.अ. र प्रा.वा.प.परिमार्जन गर्न सकिने (नियम-१२)

कुनै आयोजनाको केही भौतिक पूर्वाधार, डिजाइन, क्षमता अभिवृद्धि वा स्वरूप परिमार्जन गर्नु पर्ने वा संरचना स्थान्तरण गर्नु पर्ने भएमा वा आयोजनाको क्षमता घटेमा वा रुख संख्या थपघट गर्नु पर्ने भएमा ।

वातावरणीय व्यवस्थापन योजना (दफा-१० र नियम.११-६)

एक पटक वातावरणीय प्रभाव मूल्यांकन स्वीकृत भैसकेको आयोजनामा केही भौतिक पूर्वाधार, डिजाइन वा स्वरूप परिमार्जन गर्नु पर्ने वा संरचना स्थान्तरण वा फेरवदल गर्नु पर्ने भएता पनि पूरक वातावरणीय प्रभाव मूल्यांकन गर्नु पर्ने अवस्था नदेखिएमा वा आयोजनाको क्षमता घटेमा वा रुख कठान संख्यामा थपथट गर्नु पर्ने भएमा सञ्चालित निकायले वातावरणीय प्रभाव मूल्यांकन प्रतिवेदनमा रहेको वातावरणीय व्यवस्थापन योजना परिमार्जन गर्न स्विकृती दिन सम्मेलने ।



वातावरण संरक्षण नियमावली, २०७७



- संक्षिप्त वातावरणीय अध्ययन प्रतिवेदन वा प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन परिमार्जन गर्न सकिने(नियम १२):
 - क्षर्तिंपूर्ति भराउने (नियम ४१): ऐन को दफा ३५ बमोजिम
 - अनगमन तथा निरीक्षण(नियम ८):

- (१) प्रस्तावकले प्रस्तावको निर्माण तथा सञ्चालन गर्ने चरणमा सोबाट वातावरणमा परेको प्रभावको विषयमा प्रत्येक छ महिनामा स्वःअनुगमन गरी सोको प्रतिवेदन सम्बन्धित निकाय वा विभागमा पेश गर्नु पर्नेछ ।
 - (२) ऐनको दफा ३९ ब्लेजिम मन्त्रालय वा विभागले कुनै आयोजनाको अनुगमन तथा निरीक्षण गर्दा प्रस्ताव स्वीकृत हुँदाका बखतको वातावरणीय अध्ययन प्रतिवेदनमा उल्लिखित सीमाभन्दा बढी प्रभाव परेको देखिएमा त्यस्ता प्रभाव हटाउन वा हटाउने उपाय अवलम्बन गर्न सो आयोजनाको प्रस्तावकलाई निर्देशन दिनेछ र त्यस्तो निर्देशनको पालना गर्न सम्बन्धित प्रस्तावको कर्तव्य हनेछ ।

वातावरण संरक्षण नियमावली, २०७७



- नेपाली भाषामा प्रतिवेदन गर्नु पर्ने (अन्तर्राष्ट्रिय दाताको लागि अंग्रेजीमा)
 - सार्वजनिक सूचना, सिफारिस पत्र, क्षेत्र निर्धारण प्रतिवेदन, कार्यसूची प्रतिवेदन, सबै अन्य प्रतिवेदनका ढाँचा संलग्न
 - समय सीमा निर्धारण:
 - कार्यसूची/ र क्षेत्र निर्धारण: १५ दिन भित्र
 - स.वा.अ.र.प्रा.वा.प.: १५ दिन भित्र
 - वा.प्र.मू: ३५ दिन भित्र
 - कार्यसूची र क्षेत्र निर्धारण भएको २ बर्ष भित्र वातावरणीय अध्ययन गरीसक्नु पर्ने
 - कुनै कारणबस २ बर्ष भित्र गर्न नसकिए थप १ वर्ष म्याद थप हुनसक्ने
 - एकिकृत प्रतिवेदन समेत तयार गर्न सकिने: एक भन्दा वढी सरोकार हुँदा
 - प्रतिवेदन स्वीकृत भएको ३ वर्ष भित्र प्रस्ताव कार्यान्वन सुह गर्नु पर्ने: निर्धारित समयमा क सह गर्न नसकिए सम्बन्धित निकायले बढीमा २ वर्ष अवधि थप गर्न सक्ने

अनुमती-४

.....गोपीनाथको गायार्दली इत्तम् मधुमति विनाशक उत्तमो तस्मै त्रिंशिंशिरेण दद्महती	
	विनाशक त्रिंशिंशिरे
	उत्तम विनि
.....इति..... किना..... नारायणिका..... याऽनिकाया..... एन्द्रवक्त्रको नाम	
उत्तम विनि.....	युग्म विनि वारीवक्त्रको नाम इन्द्रवक्त्रम् यत्तु लोकान् वृ
एन्द्रवक्त्रको वाच र होराप	लापि..... (होराप)..... (होराप)..... (ज्ञान)
एन्द्रवक्त्रो विनाशक	ब्राह्मिकानो ब्रह्म विनाशक उत्तम विनि
पद्मवत् अन्त विनाशक	किना..... न.पापा आ..... ब्रह्म
विनाशक त्रिंशिंशिरा इ	

अनुसूची १ :BES, अनुसूची २:IEE, अनुसूची ३: EIA, अनुसूची ४: SEA

For Road related

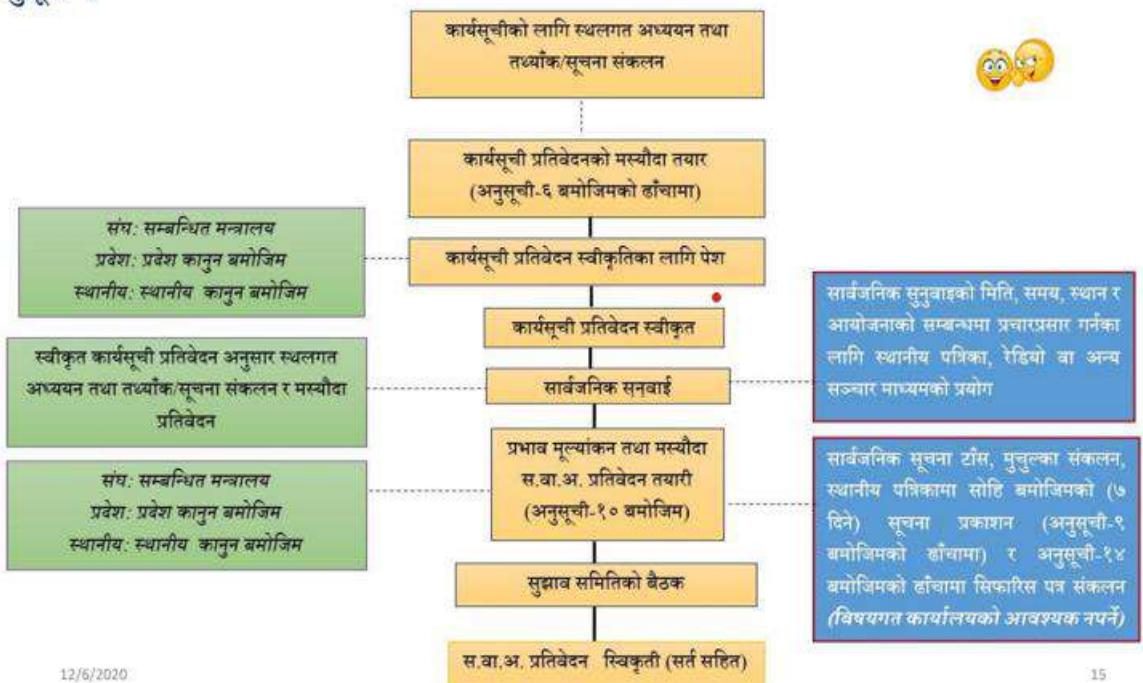
For BES: Up to 250 m bridge and local roads

For IEE

- i) Construction of bridge more than 250 m
 - ii) All New Road construction up to 25 km except local road.
 - iii) Construction of 5~50 km long ropeways,
 - iv) Construction of 1~5 km long cable car routes,
 - v) Construction of tunnel up to 3 km
 - vi) Fly over and monorail route
 - vii) 10 to 50 km National Highway for upgrading/width increasing /reconstruction etc.
 - viii) National/internal water way route

Proposal requiring ELA: All which are more than the limit of IEE stated above.

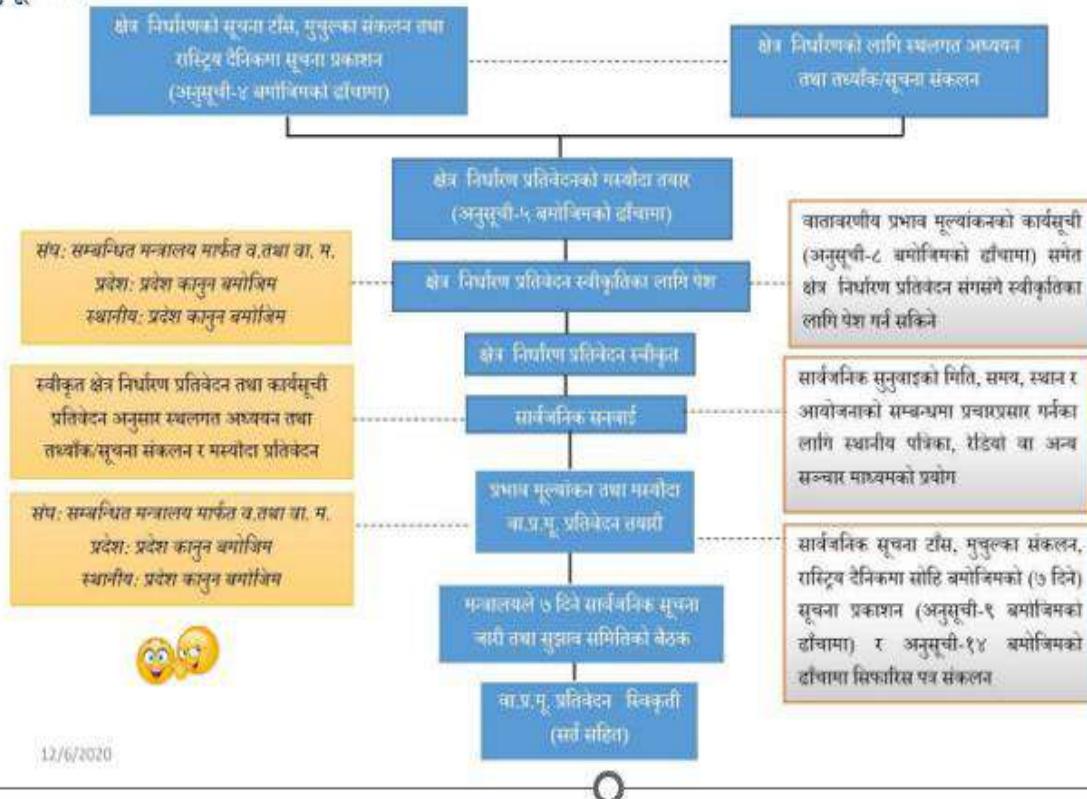
अनुसूची-१



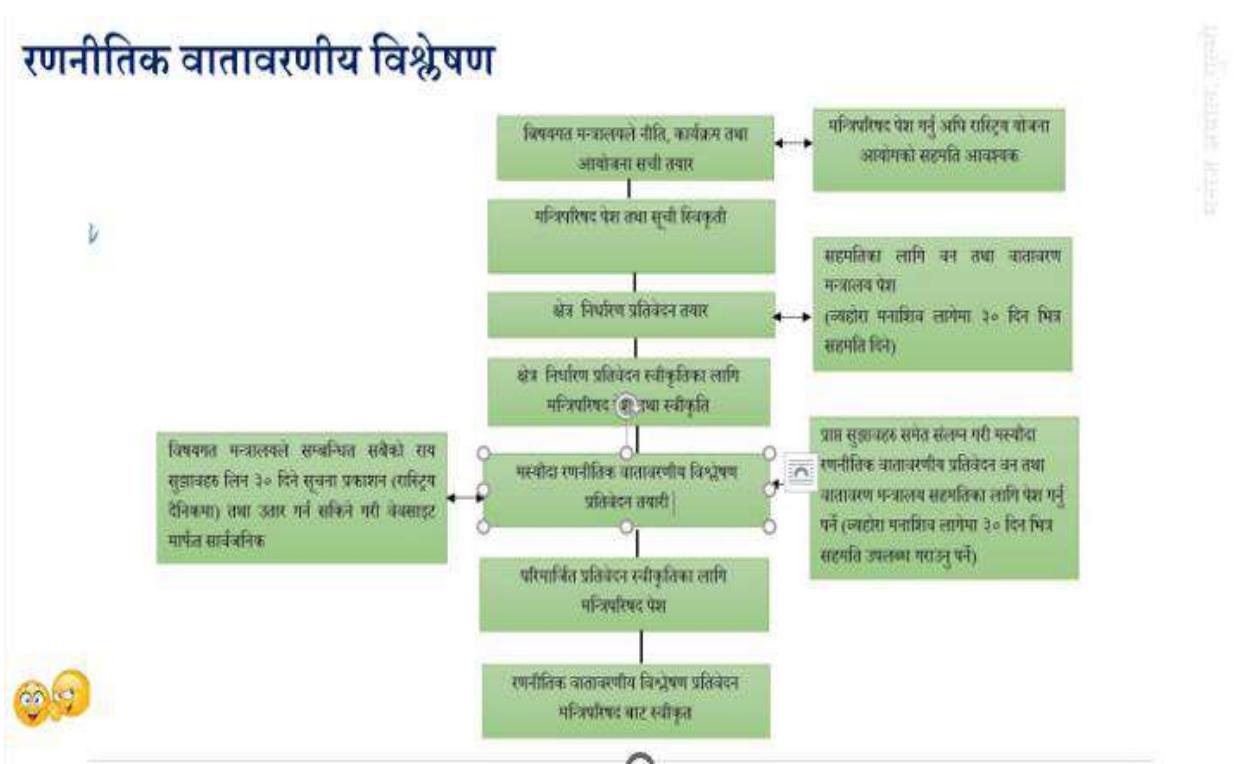
अनुसूची-२



अनुसूची-३



रणनीतिक वातावरणीय विश्लेषण



वातावरणीय अध्ययन/मूल्यांकनको उद्देश्यहरू/महत्वहरू

- प्रस्ताव भएका र हुने परियोजनाहरू वातावरणीय, सामाजिक, आर्थिक, सांस्कृतिक दृष्टिकोणबाट ठिक छ छैन यकिन गरी दिगो बिकासमा टेवा पुर्याउन
- निर्णयकर्ताहरूलाई योजनामा पर्न सक्ने वातावरणीय तथा सामाजिक जोखिम बारे जानकारी गराउन
- निर्णय प्रक्रियामा निर्णयकर्ता, सम्बन्धित सरोकारवालाको सक्रिय सहभागिता र पारदर्शिता बढाउन

- नेपालको संविधानको धारा ३० ले प्रत्येक नागरिकलाई स्वच्छ वातावारमा बाँच्न पाउने मौलिक हकको को संरक्षण गर्न
- दिगो विकासको अवधारणा अनुरूप वर्तमान र भावीपुस्ताको समन्यायका लागि वातावरणीय स्रोतमाथि न्यायोचित पहुँच, वितरण र तिनको बुद्धिमत्तापूर्ण उपयोगको प्रत्याभूति गर्न
- विकास आयोजना हरुको सबै चरणमा वातावरणीय पक्षलाई आन्तारिकिकरण गर्न
- विकास आयोजनाबाट सृजित प्रतिकूल वातावरणीय प्रभावमा परेको समुदायलाई न्यायोचित क्षतिपूर्तिको व्यवस्था गर्न
- भौतिक पूर्वाधारको निर्माण गर्दा वातावरणमैत्री संरचना निर्माण गर्न, प्रतिकूल प्रभाव निराकरण गर्ने र अनुकूल प्रभाव वृद्धि गर्न साथै कुनै उपाय द्वारा जोखिमको न्यूनीकरण गर्न नसक्ने परियोजनालाई कार्यान्वयनमा रोक लगाउन
- परियोजनाबाट सामाजिक तथा आर्थिक अवसरहरु सिर्जना गर्दै सरोकारवालाको निर्णय प्रक्रियामा सहभागी गराउने र उनीहरुको क्षमता विकास गर्न
- Payment for Ecosystem and Polluter pay Principle लाई आत्मसात गर्न
- महत्वपूर्ण व्यवस्थापकीय tool (cost less than 0.1% of project cost) जसले परियोजनाको दिगोपनमा सहयोग गर्ने
- विकास प्रक्रियामा हुने अवरोध हटाई सम्बन्धित पक्षमा अपनत्व ग्रहण गराउन आदि

BES or IEE को प्रतिवेदनमा हुने वातावरणीय योजनाको खाँका वा EIA मा हुने Environmental Management Plan (EMP) को खाँका

विषयगत क्षेत्र	सकारात्मक प्रभावको बढोतरी	के गर्ने	के गर्ने	कहाँ गर्ने	कसरी गर्ने	कहिले गर्ने	कसले गर्ने	अनुमानित स्रोतसाधन जनशक्ति	M and E	कैफियत
भौतिक										
जैविक										
समाजिक										
सांस्कृतिक										
अन्य										
नकरात्मक प्रभावको न्यूनीकरण गर्ने क्रियाकलाप										
भौतिक										
.....										
अन्य										

वातावरणमा पर्ने प्रतिकूल प्रभावलाई हटाउने वा न्यून गर्ने उपायहरु

- क्षतिपूर्तिका उपाय (Compensatory Measures): जस्तै क्षतिग्रस्त प्राकृतिक स्रोतको पुनर्स्थापना, हटाउने बस्तीको पुनर्बास, प्रभावितलाई क्षतिपूर्ति आदि
- सुधारात्मक उपाय (Corrective Measures): जस्तै प्रदुषण नियन्त्रण उपकरणको जडान, प्रदुषित पानीको उपचार गर्ने संयन्त्र निर्माण, बाँध तथा तटबन्धमा Fish Ladder निर्माण आदि

- प्रतिरोधात्मक उपाय (Preventive Measures): स्वास्थ्य शिक्षा कार्यक्रमको कार्यान्वयन, जनचेतनाको कार्यक्रम थालनी, समाजिक सहयोग जस्ता कार्य

माथि उल्लेखित संरक्षणक उपायहरु मौलिक, जैविक, समाजिक आर्थिक तथा सांस्कृतिक वातावरण क क्षेत्रमा प्रस्तावको निर्माण तथा संचालन अवस्थाको लागि भनी बर्गिकरण गर्नुपर्ने

अनुगमनका प्रकार

- प्रारम्भिक अवस्थाको अनुगमन (Base Line Monitoring): प्रस्ताव कार्यान्वयन गर्नुभन्दा अगावै सो क्षेत्रको वरपरका आधारभूत वातावरणीय पक्षको survey |
- प्रभाव अनुगमन (Impact Monitoring): प्रस्ताव कार्यान्वयनबाट भएका वातावरणीय परिवर्तन पता लगाउन आयोजन निर्माण र संचालनका क्रममा त्यस क्षेत्रको जनस्वास्थ लगायत पर्यावरणीय /सामाजिक/आर्थिक अवस्थाको सूचकको मूल्यांकन गर्नुपर्ने कार्य |
- नियमपालन अनुगमन (Compliance Monitoring): वातावरण संरक्षण सम्बन्धि निर्धारित मापदण्ड पालना गरेको छ भन्ने कुरा सुनिश्चित गर्ने वातावरणीय गुणस्तरका विशेष सूचक वा प्रदुशको अवस्था बारेमा आवधिक वा लगाताररूपमा गरिने अनुगमन |

Identification of Environmental Impacts

Bio-Physical Impacts

Impacts in this category relate to effects on biological resources such as vegetation, Wildlife, crops, and aquatic life. Impacts affecting soil and land forms, or creation of a propensity for soil erosion, floods and sedimentation, would be considered as physical impacts. Chemical impacts relate to project activities that cause a chemical change in air/water/soil quality. Smoke emitted from a brick factory, for example, may change the amount of Sulphur dioxide (SOA) content of ambient air, while untreated effluent discharged directly into a river by a paper factory may change the chemical characteristics of the river.

The biological component covers all elements, including different forms of plant life, structures, functions and their interaction with other components of an ecosystem. Another component of a biological system is the animal life, which ranges from microscopic protozoans to large animals such as elephants occupying different niches in trophic-dynamic systems.

In the conclusion, in the process of planning of a economic development project, the consideration of following four major points should be made to avoid or minimize the adverse impacts of biophysical components;

- the project activities, which may affect the bio-physical component of the project area, should be carefully analyzed and the measures to be adopted to avoid any adverse impacts, should be implemented,
- the composition, structure, and abundances of flora, is the habitat for keystone animals, may also contain economic plants, endangered, rare, endemic and threatened species. It may also constitute a primary component of biodiversity, which should be protected and conserved from the damage likely to take place in the implementation of project activities,
- keystone animals constitute unimportant role in food-chain, and may be endangered, rare, threatened, and endemic species, which form an important component of biodiversity, should not be affected by the project activities. Measures to protect such animals and their habitat from any adverse impacts should be included in the development activity package, and
- any activities, which affects bio/geo-chemical cycle within an ecosystem should be carefully analyzed and efforts should be made to minimize the impacts through the implementation of appropriate measures.

Social Impact

A study of socio-economic impacts would examine project action that alters the existing social condition of communities within or around the project location. Socio-economic impacts may prove either adverse or beneficial.

Social impacts can be subdivided into the following:

- demographic impacts - such as displacement and relocation effects; and changes in population characteristics,
- socio-economic impacts - including income and income multiplier effects, employment rates and patterns, prices of local goods and services, and taxation effects,
- cultural impacts - traditional patterns of life and work, family structures and authority, religious and tribal factors, archaeological features, social networks and community cohesion,
- institutional impacts - including demands on the government and social service, NGOs housing, schools, criminal justice, health, welfare and recreation, and
- gender impacts - the implications of development projects on the roles of women in society, income-generating opportunities, access to resources, employment opportunities and equity.

The first step in social impact analysis is the identification of social communities such as:

- ethnic/tribal group,
- occupational groups,
- socio-economic status, and
- age and gender.

The analysis also includes the refinement of the actual capacity of the people, to make the major decision, regarding the uses of biophysical resources, upon which they depend for livelihood. The distribution of production is also another important aspect to be analyzed. Identification and analysis has to be made on:

- the existing local institutions and their systems of operation, for bio-physical resource utilization
- conflict resolutions,
- authority and leadership structures,
- representation of social communities,
- dominance, and
- their capability of handling the issues.

Information on resource availability and utilization, impact of inadequate compensation, and traditional system of resource use if disrupted, then the process of EIA is extremely useful for formulating environmental mitigation strategy.

Two important aspects have been recommended while considering social aspects in EIA:

- it is always advisable to avoid involuntary resettlement, mostly in cases where vulnerable groups of people are involved, and
- in cases, where projects require land acquisition from indigenous territories, the people affected should be compensated adequately so that their standard of living is improved or, at the least, is at the similar level.

Cultural Impact

Cultural resources refer to archaeological, historical, religious, cultural and aesthetic values. Cultural resources are part of the resource base, it is therefore important that the development

options, under consideration are screened for potential impact on cultural properties. In the process of conducting EIA, it is essential; to check; whether or not the area contains UNESCO World Heritage Sites, which now number over 300 sites recognized as having outstanding universal value. The national inventories of cultural resources, which can provide important data along with the agencies like museums, universities, departments of archaeology, and other relevant agencies should be consulted.

If in the project site, there are some buried materials of archaeological/ historical value, discovered within three meters under the earth's surface, they are called "Archaeological Chance Finds", and the construction contractor should comply with the following rules and national archaeological laws:

- notify relevant departments of such findings,
- request a site inspection,
- completely halt work until inspection results are received, and
- decide whether or not to proceed with further work.

Health Impact

Traditionally, health issues have been given little attention in EIAs. Even when social impacts were being investigated, the effects of a proposal on individual mental and physiological well-being (health status and trends) were often omitted or treated in an unsatisfactory manner. The World Health Organization (WHO) defines health as a state of social and individual well-being and not just the absence of disease. If this view is accepted, then the links between health and social impacts are apparent. Often, not always, health impacts depend on environmental impacts, such change in habitat causing increased in vector or the likelihood of contact between the vectors and humans. The direct relationship between biophysical change, and incidence of disease may be one of the important reasons. A common example is an increased incidence of sexually transmitted disease resulting from the influx of a large construction labor force.

The following are reasons why the consideration of health impact assessment, should be integrated into the EIA process.

- prevention is better than cure, as with other forms of assessment,
- it is specified in many forms of impact assessment legislation,
- environmental degradation is linked with health impacts,
- environmental, social and health outcomes can be improved,
- systematic consideration of health issues improves the legitimacy of the decisions made and the process through they are taken, and
- human health issues often prompt a public response and their involvement.

Economic Impact

The focus in economic impact assessment is the estimation of the change in economic variable caused by:

- project construction and operation
- workforce requirement and the income earned by workers,
- materials and other inputs for the project, and
- capital investment.

It is essential to estimate the size of labor force, skilled manpower requirement and the duration of their involvement. Requirement of manpower varies at different stages of project implementation; for example, the need for labor peaks at the midpoint of construction and then declines gradually. An estimation of capital expenditure on local materials, and services is also required for economic evaluation.

A thorough analysis of the labor force and the local economy requires information on:

- the categories of labor available,
- the categories of labor that are highly demanded and employed, not employed and partly employed,
- estimation of unemployed labor; proportion of female looking for employment, and
- the number and type of employment likely to be generated by project implementation.

These data can be manipulated for analyzing and predicting economic impacts. The money, that comes into the area in the form of wages is the Initial Income Injection (III) into the local economy. Some part of such money will be spent on buying goods and services, helping to improve the economy of those who sell goods and services. In this way a flow of money in the project area is being maintained with certain changes in the economy at each stage. Thus, the value of economic multiplier will be high. In some cases, the income earned by labors will be remitted outside the project area to their families; in such cases, the value of multiplier would be low. This is the reason why the emphasis on the employment of local people is desirable rather than employing people from outside of the project area.

Categorization of the Impacts

- a. Direct Impacts: direct impact refers to an alteration of the existing environmental condition as a direct consequence of project activity. Construction of an irrigation diversion weir on a stream bank, for example, may have a direct impact on the aquatic ecosystem and stream valley vegetation and also directly cause erosion,
- b. Indirect Impacts: indirect impact results when one component of the environment produces repercussions for other related components. A direct impact can have far reaching effects, producing numerous indirect impacts, depending on the structure and function of the system which is being stressed by development activities, and
- c. Cumulative Impacts: while an environmental impact produced by a single activity may not be significant, a series of types of impacts created by more than one project, or by the combined effects of several impacts from the same project, may be cumulative. Consequently, an ecosystem may be dramatically affected through cumulative impacts. It is necessary to consider the cumulative impact of all projects that share mutual resources or affect the same area (Annex 5).

Environmental Auditing

The terms "audit" is usually associated with the finance and accounting. Auditing refers to the examination and assessment of a certain type of performance. In the case of an EIA, an audit assesses the actual environmental impact, the accuracy of prediction, the effectiveness of environmental impact mitigation and enhancement measures, and the functioning of monitoring mechanisms. The audit should be undertaken upon a project run in operation, for some time, and is usually performed once or twice in the entire project cycle.

EIA process:

Decision Point Audit; examines the effectiveness of EIA as a decision-making tool,

Implementation Audit; ensures that approved conditions have been met,

Performance Audit; examines the responses of agencies concerned with project management,

Project Impact Audit; examines environmental changes arising from project implementation,

Predictive Technique Audit; examines the accuracy and utility of predictive techniques by comparing actual against predicted environmental effects, and

EIA Procedures Audit; critically examines the methods and approach adopted during the EIA study.

Not all the audit types mentioned above are required to be implemented in EIA process. However, at the project approval stage, both project proponent and authorizing agency should consider whether an application of a particular audit technique is likely to result in new

information or an improvement in management practices. Particular attention should be given to project cost-effectiveness of any proposed audit and to technical difficulties likely to be encountered.

Since the EIA concept is a relatively recent, the use of environmental audits will play a significant role in evolving a systematic approach of the application of EIA. Environmental auditing should compare monitoring results with information generated during the pre-project period. Comparisons can be made with similar projects or against standard norms. Relating actual impacts with predicted impacts, help in evaluating the accuracy and adequacy of EIA predictions.

Time frame for the application of Audit

The audit should be carried out by the agency, which approves the project, with assistance from other relevant organizations, if required. The auditing should be scheduled immediately after completion of project construction or when considered necessary. In Nepal the responsibility of audit goes to Ministry of Forest and Environment (MOFE), however, in collaboration with concerned agencies and project proponent. The audit is a crucial stages of project implementation, that may indicate the need to improve the project implementation in order to reduce or prevent the unwanted consequences.

Environmental Auditing Plan

Environmental Audit should be carried out upon the completion of project construction and after 2 years of project operation in order to obtain information on:

- the condition of natural/social/economical resources prior to project implementation after the project construction is completed,
 - whether or not, all the mitigation measures implemented are effective to control adverse impact, or enhance beneficial impacts,
 - whether or not mitigation measures implemented are effective to control adverse impact, or enhance beneficial impact,
 - whether or not all degraded landscape due to project implementation have been restored into original condition,
 - what are the impacts of boom-bust scenario among the workforce involved in project implementation and the local economy, and
 - the effect on the local economy of project implementation.

Project Cycle and Relevant EIA Activities

Stages in Project Cycle	Recommended EIA Activities
1. PROJECT CONCEPT /IDENTIFICATION <ul style="list-style-type: none"> • identification of project • detail design not available • basic nature of project known 	Screening - to decide what sort of environment study is necessary; full EIA, IEE Approve, and Reject. (sensitive area, threshold, size criteria) <ul style="list-style-type: none"> • choose environmental viable alternatives • indications of key impacts for further study.
2. PRE-FEASIBILITY <ul style="list-style-type: none"> • preliminary comparison of alternatives and selection of viable ones for future investigation/ evaluation 	Scoping - identification of issues/impacts for investigation, formulation of TOR for EIA, decision is made on, <ul style="list-style-type: none"> • impacts to be investigated • EIA work schedules • consultation to be undertaken • methods/techniques to be used • form/content of EIA report
s. FEASIBILITY STUDY <ul style="list-style-type: none"> • economic and technical comparison of the alternatives • detail engineering design and construction details of the selected alternative 	Majority of EIA study work <ul style="list-style-type: none"> • identification, prediction and assessment of impacts and their significance • identification and design of mitigation measures • development of monitoring plan
4. Project Appraisal and decision before implementation of a project, it is reviewed in light of the feasibility study and EIA study findings. Decision is to be made as to whether the project be implemented (go-ahead).	
5. PROJECT IMPLEMENTATION PLAN <ul style="list-style-type: none"> • consultant • contractor, finance and reporting and evaluation 	Preparation of Environmental Management Action Plan (EMAP)
s. ENGTNEERTNG DESIGN, COST ESTIMATE, CONTACT PACKAGE AND BIDDING DOCUMENT	Integration EMAP requirement in <ul style="list-style-type: none"> (i) design (ii) cost estimate (iii) contractor package (iv) BOO (v) tender document
MONITORING AND AUDITING	EMAP Compliance

EMAP Implementation and Monitoring

Specified project staffs for Monitoring of EMAP implementation should be made available. During project design, Construction and operation, the monitoring of EMAP implementation should be carried in order to assess, whether or not;

- the conditions required by EMAP have been integrated into engineering design and specification,

- the cost estimated to implement EMAP has been included in engineering cost estimate,
- all the items of Environment and Social enhancement and protection activities as presented in EMAP have been included in BOO,
- all the specified items of EMAP are integrated into contract package and bidding document,
- the project contractor has complied the EMAP requirements,
- some new environmental and social impacts have emerged in the process of project implementation, and
- EMAP are adequate to control the impacts.

EMP मा भएको प्रावधान लागू भए/नभएको अवस्थाको विश्लेषण

- शतप्रतिशत लागू वा प्रयोग नभएपनि आयोजना पहिचानको बेला नै MTEF, नतिजामूलक खाँकाको प्रावधान तयार गरिएको तर field मा लागू गर्ने कठिन ।
- जब सम्म नतिजामूलक अनुगमन हुदैन तब सम्म Implementation गर्ने कठिन ।
- जरिवाना वा कारवाहीक प्रावधानहरु पनि अनुगमन कै आधारमा हुने तर अनुगमनको अवस्था नाजुक भएकोले वास्तविकरूपमा कार्यान्वयन पक्ष कमजोर रहेको तर केहि विषयहरु जस्तै
 - दुंगा गिट्टी उत्खनन्,
 - रुख काट्ने,
 - बन क्षेत्रको जग्गा प्रयोग,
 - प्रभावित समुहलाई रोजगारमूलक तालिम
 - पुनः रुख बिरुवा रोप्नुपर्ने जस्ता प्रावधानहरु लागू भैरहेको
- ठेक्का शर्तहरुमा EMP का प्रावधानहरु राखेर लागू गर्ने प्रयास
- BoQ मा वातावरणीय बिषयबस्तुलाई समाबेश गरी लागू गरिएको/ Bio Engineering लाई प्राथमिकताक साथ लागू गरेको आदि

तसर्थ EMP क क्षमता प्रावधानहरु कार्यान्वयन हुदै आएको छ भने क्षमता प्रावधानहरु कार्यान्वयन गराउन नसकेको वर्तमान अवस्थामा यसका कमीकमजोरीलाई निराकरण गर्दै SDG लक्ष्यलाई हासिल गर्नुपर्ने देखिन्छ ।

EPR and EPR विकास निर्माणमा Hurdles गरेको छ त? सुधारात्मक प्रयत्नहरु के के हुन् सक्छन ?

- EPR and EPR विकास निर्माणमा आफैमा hurdles होइन तर ऐन र नियमावलीमा भएका क्षमता प्रावधानहरु प्रशासनिक र बैज्ञानिक बस्तुगत document भएपनि कार्यान्वयनक चरणमा त्यसका प्रक्रियाहरु जस्ता सूचना प्रकाशन, मुचुल्का उठाउने, राय सुझाव लिने जस्ता काम tedious भएको
- बन तथा वातावरण सम्बन्धि निकायले Empire Building युक्त मनोभावना ले व्यवहारिक पक्ष कमजोर देखिएको
- SDG मा वनक्षेत्र ४८.२ प्रतिशत बनले ढाकेको क्षेत्र पुर्याउने उल्लेख भएकोमा सार्वजनिक निर्माण गर्दा मुआब्जा नदिने/जग्गा अधिग्रहण नगरी निर्माण गर्दा सार्वजनिक निकायले सकेसम्म व्यक्तिको सम्पति/जग्गा छल्ने मनसायले बनक्षेत्र भित्र लाने खोज्ने तर बन क्षेत्र प्रयोगको लागि IEE/EIA, रुख कटानको लागि मन्त्रिपरिषद्को सहमति लिनुपर्ने, पुनः 1:25 Compensatory रुख रोप्नुपर्ने, सो को लागि जग्गाको रकम, हुक्काउन लाग्ने रकम सबै परियोजना कार्यालयले नै व्यहोर्नु पर्ने जस्ता कार्य साथै बनमन्त्रालयले आफ्नो मातहतका कार्यालयमा प्रतिवेदन पुनः पठाई सिफारिस माग्ने, सिफारिश नदिए प्रोजेक्ट नै धरापमा पर्ने जस्ता कठिनाई ले हामो वातावरणीय मुद्दा

Green Tapism त होइन भन्ने भान हुने गर्दछ तर SDG को एक पिलर वातावरण नै भएकोले यसको अभावमा SDG को लक्ष्य हासिल हुन सक्दैन त्यसैले वातावारणमैत्री पूर्वाधार र दिगो बिकासको अवधारणालाई आत्मसात गर्न जमीन, जमिनमुनि र जमिनमाथीको वातावरण र जीवनचक्रलाई व्यवस्थित बनाउन EPR/EPA को भूमिका महत्वपूर्ण भएकोले प्रक्रियागत सहजीकरण मार्फत यसको प्रयोग गर्नुपर्ने अनिवार्यता रहेको छ ।

EPA र EPR मा सुधार गर्नुपर्ने केहि बिषयबस्तु

- अनुगमन प्रस्तावकले गर्ने : सैदान्तिक रूपमा बिकसित मुलुकमा यसको प्रयोग ठोस रूपमा भए पनि हाम्रो जस्तो विकाशशिल देशमा पूर्वाधारमा लगानी बढाउनु पर्ने र निर्माण क्षेत्रमा तिब्रता दिनुपर्ने अवस्थामा सोतसाधनको कमिले प्रभावकारी रूपमा लागू गर्न कठिनाई ।
- Green Tapism मा सुधार र अन्तर निकाय समन्वयमा जोड
- प्रक्रियागत कतिपय प्राबधानहरूमा सुधार गर्नुपर्ने जस्तै EIA मा ४ पटक सूचना /सार्वाजनिक सुनुवाई
- राष्ट्रिय प्राथमिकता प्राप्त आयोजनाको लागि राष्ट्रिय बनक्षेत्र प्रयोग गर्ने मापदण्ड सहितको कार्यविधिमा IEE/EIA स्वीकृत गर्नभन्दा अगाडी बन मन्त्रलयको सहमति लिनुपर्ने जुन irrelevant छ किनकि सामुदायिक बन क्षेत्र/राष्ट्रिय बन हरु प्रदेशमा गएको अवस्थामा झन्झटिलो प्रक्रिया र अन्त्यनै लामो प्रक्रिया ।
- राय सुझाव सार्वजनिक सूचना बाट माग गरिसकेपछि बन मन्त्रलयले कुनै particular project को लागि छुटै आफै राय सुझाव दिन सक्दैन र उसले आफ्नो मतहातको कार्यालयमा पठाउदा लामो समय लाग्ने वा आयोजना नै ढिला वा implementation गर्न नमिल्ने सुझाव आउन सक्ने र आयोजना Cancel हुने ।
- कतिपय अवस्थामा जस्तै design and Built Bridges हरूमा पुल निर्माण सम्पन्न भै सकेपछि पनि वातावरणीय अद्ययन नसकेको अवस्थालाई सुधार गरी कुन चरणमा के काम गर्ने हो परियोजनाको कार्य संग Tie up हुनुपर्ने ।
- स्थानीय तहमा IEE/BES मा आफै प्रस्तावक, आफै Monitoring, approval र implementation कर्ता अनि ढुगा गिटीको निकासीको लागि IEE आफै गर्ने/ अनि ठेक्का लागउने प्राबधानमा सुधार हुनुपर्ने
- दक्ष जनशक्ति को अभाव, देश भर २ दर्जन भन्दा कम स्थायी वातावरण निरिक्षक
- कुनै परियोजनाको वातावरणीय प्रतिवेदन राजनीतिक दवावले रातारात हुने गरेको अवस्थामा सुधार हुनुपर्ने जस्तै पर्साको प्रस्तावित चिडियाखाना
- EMP का प्राबधानहरु अनिवार्य लागू गराउनुपर्ने सुनिश्चितता हुनुपर्ने
- Environmental Monitoring मा बन तथा वातावरणको अधिकार नै नहुनु, नतिजामूलक अनुगमन नहुनु, अनुगमनको नाममा कर्मकाण्डी/तीर्थाटन हुने अवस्थामा सुधार हुनुपर्ने
- जरिवानाको प्राबधानले पैसा तिरेर वातावरणीय अद्ययन ढिला गर्दा /वा पेलेर जान सकिने मनसाय जस्तै चन्द्रागिरी रिसोर्ट काठमाण्डौ मा सुधार हुनुपर्ने आदि

वातावरण मैत्री सवारीसाधन सम्बन्धि हालको व्यवस्था चर्चा गर्दै यसलाई प्रभावकारीरूपमा लागू गर्न के कस्तो कार्यनीति/सुधार आवश्यक छ ?

उत्तर:

नेपाल सरकारले तोकेको प्रदुषण मापदण्ड भन्दा न्यून प्रदुषण गर्ने बैकल्पिक वा नवकरणीय उर्जाबाट जस्तै विधुतबाट, सार्य उर्जाबाट, बायु उर्जाबाट, बयोमास उर्जा आदि बाट संचालन हुने सवारीसाधनलाई वातावरणमैत्री सवारीसाधन भनिन्छ । यस प्रकारका सवारीसाधनको विकास भएमा यसले राष्ट्रको आर्थिक, सामाजिक तथा वातावरणीय क्षेत्रमा समृद्धि हासिल गर्न मद्दत गर्दछन् ।

खनिज इन्धनबाट संचालन हुने सवारीसाधनलाई वातावरणमैत्री सवारीसाधन तथा यातायातका साधनका रूपमा रूपान्तरण गर्न निजि क्षेत्रको प्रयासलाई समयानुकूल प्रोत्साहन तथा प्राथमिकतामा पुर्याउन नसक्नु, सरकारी क्षेत्रबाट पनि प्रर्याप्त ध्यान पुग्न नसक्नु, सम्बद्ध पक्षहरु बीच साजेदरिको कमि रहनु, विधुतीय सवारी महँगो हुनु, सबै स्थानमा विधुतीय सवारीको लागि आवश्यक संरचना/चर्जिंग स्टेसन स्थापना नहुनु लगायतका नीतिगत/कानुनी पक्षको कमीकमजोरीले गर्दा बि.स. २०७७ साल सम्म देशभरी कम्तिमा २०% सवारीसाधन वातावरणमैत्री सवारीसाधनको रूपमा रूपान्तरण गर्ने सरकारी लक्ष्य पुरा हुन् नसकेको अवस्था रहेको छ।

बिगतका प्रयास/नीतिगत तथा कानुनी व्यवस्था

- राष्ट्रिय नीति तथा कानुनी व्यवस्थामा विधुतीय यातायातको चिक्स, प्रवर्द्धन तथा सम्वर्धन गर्ने उल्लेख भएपनि स्पस्थ रूपमा व्यवस्था नभएको
- छैठौ, सातौ, र आठौ योजनामा ट्रिलिबस र विधुतीय रेलको बिकासमा जोड
- नवौ योजनामा २० बर्षीय यातायात विकासको दुरव्यष्टि कार्यक्रमका साथै काठमाण्डौमा वातावरण प्रदुषण कम गर्ने ट्रिलिबस विस्तार गर्ने र ब्याट्री बाट सवारीसाधनलाई प्रोत्साहन गर्ने उल्लेख
- दसौ योजनामा विधुतीय सवारीसाधन र अन्य स्वच्छ उर्जाबाट संचालित सवारीसाधनलाई व्यापक रूपमा विस्तार गर्ने नीति
- राष्ट्रिय यातायात नीति २०५८ को प्रस्तावना माझ वातावरणमैत्री सवारीसाधन/यातायात प्रणालीको विकास गर्ने उल्लेख गर्दै सौर्य तथा विधुतीय यातायातको साधनहुको उपयोग देशभर विस्तार गर्ने, प्रशुसन रहित सवारीसाधनलाई प्रोत्साहन गर्ने भन्सारमा छुट दिने नीति
- यातायात क्षेत्रको Strategic Plan २०७३/७८ मा २०७७ सालसम्म कम्तिमा २०% सवारीसाधन लाझ वातावरण मैत्री बनाउने उल्लेख
- राष्ट्रिय वातावरण नीति, वातावरण ऐनमा समेत विधुतीय सवारीसाधन, हाइब्रिड सवारीसाधन, नविनतम तथा स्वच्छ उर्जा बाट संचालन हुने सवारीसाधन लाझ प्रोत्साहन/सुविधा दिने उल्लेख
- संविधानको धारा ३० मा स्वच्छ वातावरणमा बाँच्न पाउने मौलिक अधिकार
- पन्धौं योजनाको सोंच नै प्रतिष्पर्धा, सर्वसुलभ, सुरक्षित, र वातावरणमैत्री यातायात प्रणालीको विकास गर्ने नीति/रणनीति रहेको
- बार्षिक बजेटमा समेत वातावरण मैत्री सवारीसाधन हरूमा विभिन्न प्रकारको छुटको व्यवस्था दिने उल्लेख

समस्या र चुनौतिहरू

- वातावरणमैत्री सवारीसाधनको लागि आवश्यक पुर्वाधारहरु जस्तै चार्जिंग स्टेशन, विधुत नियमितरूपमा आपूर्ति आदि प्रभावकारी नहुनु
- रज्जुमार्ग /ट्रली बस /केवलकार सम्बन्धि नीतिगत/कानुनी व्यवस्था समयानुकूल नहुनु
- सरकारले बार्षिक विकास कार्यक्रममा बैकल्पिक उर्जा बाट संचालन हुने सवारीसाधनको सम्बन्धमा करछुट/ सहुलियत जस्ता प्रावधानहरूमा सरकार पिच्छेका निर्णयले आयातकर्ता/उपभोक्ता अन्यौलता
- ब्याट्री, चार्जर, पार्टपुर्जा र सवारी आयातमा कार्टलिङ्ग हुनु
- प्रदुषण जाचपांस, फिटनेस सेन्टर प्रभावकारी नहुनु
- बैकल्पिक उर्जा बाट संचालन हुने सवारीसाधनका लागि आवश्यक पर्ने दक्ष जनशक्तिको अभाव
- वातावरणमैत्री सवारीसाधन संचालनको लागि काठमाण्डौ उपत्यका जस्ता शहरी क्षेत्रमा छुटै रुट, बर्गिकरण, मापदण्डहरु लागू नहुनु

- वातावरणमैत्री सवारीसाधन तुलनात्मकरूपमा महँगो हुनु आदि

सुधारात्मक पहलहरू

- माथि उल्लेखित समस्याहरूको समाधान गर्नुपर्ने
- स्वदेशमै विधुतीय सवारीसाधनको उत्पादन/पार्टपुर्जा हरूको उत्पादनको लागि सरकारले सम्बन्धित कानूनी व्यवस्थामा समयानुकूल सुधार गर्दै निजि क्षेत्रलाई प्रोत्साहन गर्ने नीति ल्याउनुपर्ने
- बैकल्पिकउर्जा बाहेकको सवारीसाधनको भन्सार/कर/Renewal आदिमा कडाईगर्ने
- पुराना तथा परम्परागत फ्युल बाट संचालन हुने सवारीसाधनलाई बैकल्पिक उर्जाबाट संचालन गर्न सहजरूपमा रुपान्तरण गर्ने व्यवस्था तत्काल लागू हुनुपर्ने
- सरकारीस्तरबाट फिल्डमा खटिने जनशक्तिलाई बाहेकका सवारीसाधनहरू बैकल्पिक उर्जाबाट संचालन हुने सवारीको प्रयोगमा अनिवार्यता गरिनुपर्ने
- बजारक्षेत्रको कोरक्षेत्रमा परम्परागत फ्युल बाट संचालन हुने सवारीसाधनलाई रोक लगाउने
- बैकल्पिक उर्जा बाट संचालन गरिने सवारीसाधनको बारे अनुसन्धानको लागि सरकारी तथा निजि क्षेत्रसंग सहकार्य गर्ने जस्तै राष्ट्रिय अनुसन्धान केन्द्र
- केन्द्रिय वातावरणमैत्री सवारीसाधन तथा यातायात संचालन समितिको भूमिका प्रभावकारी बनाउने, अन्तर निकाय समन्वयमा जोड दिने
- सूचकको आधारमा प्रभावकारी अनुगमन तथा मूल्यांकन मार्फत पृष्ठपोषण/दण्ड/पुरस्कार को व्यबस्था व्यबहारमा लागू गर्ने

काठमाण्डौ उपत्यकाको वातावरणीय प्रदूषणलाई सडक यातयात क्षेत्रमा कसरी न्यूनीकरण गर्न सकिन्छ ?Short term, Mid-term, Long term Action Plan बुँदागत रूपमा लेख्नुहोस् ।

Urban road infrastructure and transport system are the Major cause of dust and air pollution in Kathmandu Valley. Identify the problems in this context, describe the current GoN Policies and Laws. Recommend your suggestion to solve these problems and propose a sound and practical implementation strategy ?

“प्रदूषण संघीय राजधानी नेपालको चिनारी”

विषयप्रवेश:

बढ्दो शहरीकरण, देशको संघीय राजधानी तथा प्रशासनिक केन्द्र, सेवा, सुविधा र अवसरको कारण सबैको प्रमुख गन्तव्य, करिव ५० लाख जनसंख्या, १५ लाख सवारी साधन तर कमजोर सडक संजाल (६०० कि.मी.), कचौरा आकारको काठमाण्डौमा बढ्दै गएको वायूप्रदूषण लगायतका अन्य प्रदूषणका कारण संबिधानत् स्वच्छ वातावरणमा बाच्न पाउने मौलिक हकबाट उपत्यकाबासीहरू विमुख भैरहेकोले यसको दिगो समाधानको आगी सबै सरोकारवालाको प्रभावकारी भूमिकाको खाँचो छ ।

परिभाषा :

नेपाल सरकारद्वारा तोकिएको प्रदूषण मापदण्ड भन्दा बढी मानव स्वास्थ, जीवजन्तु तथा वातावरणमा नकारात्मक असार पार्ने गरी वायूको गुणस्तरमा आउने प्रत्यक्ष वा अप्रत्यक्ष परिवर्तनलाई वायू प्रदूषण भनिन्छ | WHO क अनुसार संसारमा करिव ७० आख र नेपालमा करिव १४ हजार मध्ये १० हजार काठमाण्डौमा मानिसको मृत्यु बर्षी वायू प्रदूषणक कारणले हुने गर्दछ | विगतका केहि बर्षमा संसारको सबैभन्दा वायूप्रदूषण भएको सहरमा काठमाण्डौ एक नम्बरमा दरिन पुगेको तितो यथार्थ हामीसंग छ ।

नकारात्मक असरहरु

- निरन्तर प्रयासका वाबजुद उपत्यकाको प्रदूषण नियन्त्रणमा आउन नसकेको
- नेपाल संसारकै बढी वायूप्रदूषण भएको पाँचौ देशमा PM 2.5 को आधारमा र विगतका केहि बर्षमा संसारको सबैभन्दा वायूप्रदूषण भएको सहरमा काठमाण्डौ एक नम्बरमा PM 2.5 को value 500umg/m3.
- वातावरणीय दृष्टिकोण बाट मानवीय बसोबासको लागि अनुपयुक्त हुदै गएको
- उपत्यकाको सौन्दर्य, सफाई र शान्ति न्यून स्तरको हुदै जानु
- प्रदूषणका कारण रक्त संचार, मुटु, आँखा, मानसिक तनाव जस्ता रोगीहरुको संख्यामा निरन्तर वृद्धि हुदै जानु

विद्यमान कानूनी व्यवस्थाहरु

- संविधानको मौलिक हक: स्वच्छ वातावरणमा बाँच्न पाउने अधिकार
- राष्ट्रिय वातावरण नीति २०७६, वातावरण संरक्षण ऐन २०७६ र नियमावली २०७७
- सवारी तथा यातायात व्यवस्था ऐन २०४९ मा अत्यावश्यक बाहेक हर्न निषेध, प्रदूषणको मापदण्ड तोकिएको भन्दा बढी हुन नहुने, दमकल, एम्बुलेन्स र VIP को सवारीसाधनमा मात्र साइरन बजाउन मिल्ने व्यवस्था
- पन्धौ योजनाले समेत वातावरणलाई महत्व दिएको
- SDG को एक Pillar वातावरण नै रहेको
- वातावरणमैत्री सवारी साधन नीति २०७९
- NTP २०५८, २० बर्षीय यातायात योजनामा समेत वातावरण संरक्षणको बुद्धाहरु उल्लेख
- बार्षिक विकास तथा बजेटमा वातावरण संरक्षणलाई महत्वकासाथ बजेट बिनियोजन आदि

समस्या सिर्जना हुनका कारणहरु

1. कार्यगत समस्याहरु

- निर्माणाधीन भौतिक संरचनाहरु बाट निस्कने धुलो/प्रदूषण नियन्त्रण प्रभावकारी नहुनु
- यातायातका भौतिक संरचना वातावारणमैत्री (without flyover, underpass, tunnel etc) नहुनु
- निर्माण सामग्रीको ओसारपसार तथा स्टोर खुला रूपमा गरिनु
- शहरिक्षेत्रमै क्रषर उद्योग, Asphalt Plant, इंटाभट्टा निर्वाधरूपमा संचालन हुनु
- २० बर्ष भन्दा पुरानो/थोत्रो सवारीसाधनहरु सडकबाट हटाउन नसक्नु
- वैज्ञानिकरूपमा फोहर व्यवस्थापन नहुँदा, सडकलाई फोहोर थुपार्ने स्थालको रूपमा प्रयोग गर्नु
- अनावश्यक रूपमा हर्न, स्पीडमा सवारीसाधन संचालन हुनु

2. नीतिगत समस्याहरु

- विधुतीय सवारीसाधन लगायत वैकल्पिक ऊर्जावात संचालन हुने (Hydrojan, CNG, LPG, सौर्य ऊर्जा आदि) सवारीसाधनको प्रवर्धनमा राज्यपक्ष कमजोर हुनु
- Mass Transport जस्तै BRT, Monorail, Metro लगायतको यातायात प्रणाली नहुनु
- यातायातका सबै क्षेत्र समैट्ने Integrated Umbrella Act वा नीतिगत व्यवस्था नहुनु
- सार्वजनिक यातायातलाई प्रवर्धन गर्ने प्रभावकारी नीति र कार्यान्वयन पक्ष कमजोर हुनु

3. संस्थागत समस्याहरु

- यातायात विभाग/वातावरण विभाग लगायतका निकायहरुमा अन्तर निकाय समन्वय प्रभावकारी नहुनु
- काठमाण्डौ उपत्यका भित्रिने नाकामा Vehicle Washing System स्थापना नहुनु
- दक्ष जनशक्तिको संख्या (वातावरण निरिक्षक देश भरि १६ जना) र कार्ययोजना नहुनु

- सम्बन्धित निकायले वातावरण प्रदूषण संग सम्बन्धित कार्य हरुलाई गोण रूपमा वा थप कार्य जस्तो बुझ्नु
- VFTC को प्रभावकरी संचालन नहुनु

4. शासकीय समस्याहरु

- हरियो स्टिकर प्रणालीलाई कानुनी दायरामा ल्याउन नसक्नु
- कर्मचारीको नैतिकता र सदाचार मा कमि हुनु
- ठुलाठुला कल कारखाना जस्ता बालाजु औद्योगिक /पाटन औद्योगिक क्षेत्र सहरको बिचमा हुनु र त्यसले गर्ने प्रदूषण बारे मौन बस्नु

5. काठमाण्डौको अवस्थितिगत समस्या

- कचौरा आकारको उपत्यकामा वायु प्रदूषण गराउने कणहरु लामो समयसम्म रहनु
- छेउका/नजिकका अन्य जिल्लाका शहरी क्षेत्रको विकास नहुनु

समाधानका उपायहरु

संघिय राजधानी सहित देशलाई प्रदूषण मुक्त स्वच्छ, वातावारणमैत्री मुलुक बनाउन नेपालले अन्तर्राष्ट्रिय जगत संग गरेका प्रतिवर्द्धता र हाल अंतरिकिकरण गरिरहेका सदृग, Bali Declaration of Vision three Zero (Zero Congestion/Emission/Accident) र ASI Framework (Avoid, Shift, Improve), पेरिस घोषणापत्र , Syndai घोषणापत्रहरु बमोजिम देश सुहाउदो निम्न रणनीतिहरु अपनाउन सकिन्छ ।

1. वातावरण र समाजिक सुरक्षा सम्बन्धि रणनीति

- Emission Standard/Fuel Standard हरुलाई Update गर्ने र सोहीअनुसार अनिवार्यताका साथ कार्यान्वयन गर्ने
- विधुतीय सवारीसाधन सहित अन्य बैकल्पिक उर्जा बाट संचालन हुने सवारीसाधनहरुको प्रयोगतथा प्रवर्धनमा जोड दिने
- Polluter Pay अवधारणा कडाईक साथ लागू गर्ने

Crusher/Asphalt Plant/Brick Factoryलाई शहरीक्षेत्र बाट हटाई उपयुक्त स्थानमा स्थापना एवं संचालन गर्ने

- निर्माणसंग सम्बन्धित ठेक्कामा वातावरण प्रदूषण लगायतका अन्य प्रदूषणहरुको न्यूनीकरण गर्ने गरी कार्य गर्ने
- हरियो स्टिकर/२० बर्षे पुरानो सवारी हटाउने जस्ता कार्यको कार्यान्वयन पक्षमा सुधार गर्ने

2. मानिस र वातावरण सुहाउदो पूर्वाधार निर्माण गर्ने

- Traffic जाम घटाउन उपयुक्त सडक संरचनाहरु , flyover, underpass आदि सहितको सडक संजालको विकास गर्ने
- प्रभावकारी ITS/ ट्राफिक व्यवस्थापन गर्ने
- नदी किनारका करिडोर सडकहरु तत्काल निर्माण सम्पन्न गरी संचालनमा ल्याउने
- निर्माणकार्यहरु एकिकृत रूपमा कार्ययोजना बनाई बन्ने र भूत्काउने परिपाटीको अन्त्य गर्ने

3. एकिकृत यातायात प्राव=प्रणालीको विकास र विस्तार गर्ने

- MRT/BRT/Monorail/Metrorail आदि सहित सार्वजनिक यातायातको विकास गर्ने
- Cycle, फुटपाथ जस्ता NMTलाई प्रवर्धन र विकास गर्ने
- Road Congestion/Parking Pricing जस्ता सडक करहरुलाई कडाई क साथ लागू गर्ने

4. Supply and Demand बिचको तारतम्य मिलाउने

- Travel Demand घटाउने
- Mode of transportation जस्तै सार्वजनिक यातायात प्रणालीको विकास र विस्तार गरी यथाशिष्ठ लागू गर्ने
- Tele Commuting/Online Shopping प्रवर्धन गर्ने
- खोला किनारा तथा सार्वजनिक स्थलमा हरियाली प्रवर्धन गर्ने
- निजी सवारीसाधनको संख्या निश्चित गरी व्यबहारमा कार्यान्वयन गर्ने
- Flexi Working time/School time आदिको प्रभावकारी व्यवस्थापन गर्ने

निष्कर्ष : प्रदुषणको स्तर मापदण्ड भन्दा बढी पुगिसकेको काठमाण्डौमा सो को नियंत्रका लागि माथि उल्लेख गरिएका सुझावहरूलाई कार्ययोजना बनाई short term/Mid term र long term क कार्यक्रमहरूको कार्यान्वयन गरी स्वच्छ, सुन्दर, हराभरा, वातावरण मैत्री संघिय राजधानी बनाउन सबै सरोकारवालाको भूमिका प्रभावकारी हुनुपर्ने आजको आवश्यकता रहेको देखिन्छ ।

DoR Strategy, 1995 (Summary of Strategy)

In 1991/92 during the preparation of the 8th National Plan, the Department identified an End Goal which is:

“the reduction of total road transport costs”.

Total road transport costs are the sum of the interdependent costs of road construction, road maintenance and the direct costs to road users (vehicle operating costs). This goal satisfies the requirements for providing a service to the public and was included in the 8th Plan. The goal is therefore fully supported by central government and is in accordance with the Government's policy for the roads subsector.

Having established a goal, the next step was to develop a strategy for achieving it. This has been accomplished by DOR with the assistance of the IVIRCU. The strategy was developed using the principles of Policy Action Planning and is made-up of the following components.

- **6 OBJECTIVES** - forming a combination of interrelated targets which taken together should enable the Department to realise the end goal.
- **9 POLICY OPTIONS** - representing a range of viable policies through which the Objectives can be achieved.
- **51 KEY MEASURES** - comprising a series of activities designed to translate the Policy Options into practice and hence generate the conditions necessary for realising the Objectives.

The Objectives, Policy Options and Key Measures are listed in Annex I and together comprise the

DOR Strategy.

STRATEGY DETAILS

Taking account of the factors noted in sections 1 and 2, the Strategy has been designed by the Department to:

- introduce Network Planning (global level decision making) as the basis for allocating resources to the Strategic Network and to make the best use of the resources available;
- support and promote the use of local expertise and materials for road construction;
- maximize the benefits of these resources through the use of stage construction for new roads (design for present needs and upgrade only when justified by actual demand);
- put the present roads in the Strategic Network into a maintainable condition through a programme of reconstruction, rehabilitation and backlog maintenance (some 1,138 km or 40% of the bitumen roads in the Network are presently in a poor and therefore unmaintainable condition);
- execute *planned maintenance* comprising a programme of integrated routine, recurrent and periodic activities on those roads which are in a maintainable condition;
- initiate the development of National Standards for road construction and maintenance to achieve greater uniformity and hence improved use of available resources and better quality of the finished product;
- put the DOR Heavy Equipment Divisions on more commercial lines by restricting the fleet to appropriate items for use by DOR and local contractors, introducing improved management of the fleet and invoicing users of the fleet.

By these means, realize the end goal of reducing total road transport costs on the Network. The six objectives given in Annex 1 are largely self-explanatory and have been shown diagrammatically in order to emphasize their interdependence. As a result of this interdependence, it is not possible to achieve any one objective alone; all the objectives must be addressed together. It would appear from the diagram that Network Planning has no dependency, however, it is clear that any global investment plan produced must have the approval of central government. An implied dependency therefore exists between Network Planning and Policy Level Awareness. The importance of Objective 111, Donor Direction, cannot be overstressed. Some 80 % of the roads sub-sector budget is donor financed, if the maximum benefit is to be obtained from this valuable resource and overlap and competing interests avoided, the Department must provide clear direction to and firm management of its donors.

A brief description is given below of the nine policy options initially selected to realise the objectives, together with a summary of the key measures.

1.0 Decentralise Network Administration

The main priority for DOR should be the development and maintenance of a strategic network of main roads. The Department has identified such a network comprising some 5,340 km of National Highways and Feeder Roads of which 2,694 km are bitumen surfaced. This network

is now the main responsibility of DOR. The detailed composition of the network is given in the Departmental Document: Statistical Data of the Strategic Network.

The remaining Urban, District and Village Roads totaling some 4,194 km are the responsibility of the Municipalities, District Development Committees and Village Development Committees respectively. However, it will take time to establish the necessary technical and administrative capability in these authorities. The DOR will therefore have to play a supporting role, albeit a declining one, in the management of these roads for some time to come. This is especially the case with respect to urban roads.

2.0 Establish a Network Planning/Monitoring Capability in DOR

The basic requirement for network planning is reliable, relevant and accessible information on the road network to support informed decision making. The Department fully recognises this need and has established a dedicated Planning Branch in DOR Headquarters which is progressively developing and introducing a **Highway Management Information System** (HMIS) for the Strategic Network. The HMIS will operate at two levels: **Network Level** and **Operations Level** and, as a first step, DOR has divided the roads in the Strategic Network into links with lengths varying from 140 m to 59 km. Each link has clearly defined nodes and has been given a unique reference number.

Network Level data covering road/bridge inventory, pavement condition (roughness and SDI), traffic, construction and maintenance costs, and road closure risk is being collected and stored in a dedicated database on a microcomputer in the Planning Branch. This data will be processed to provide management information for the preparation of 3 year and 5 year rolling programmes of periodic maintenance (cyclic resealing), rehabilitation and reconstruction. Statistics indicating road serviceability and the performance of DOR in managing the roads should also be available by early 1996. Annual comparisons can then be made of the statistical information.

Operations Level data will be kept by the Divisions using paper-based systems and by the Regions using paper-based or computer-based systems as appropriate. This data can be utilised for day-to-day management of the roads and will, in general, be more detailed than at network level. The data will be processed to provide information on road inventory, pavement condition (SDI), traffic, unit costs and operations performance, and for building up a historical record of road treatments.

Although the HMIS is divided into two levels, both levels are interdependent. The Regions and Divisions will need to supply data to the Planning Branch and, in return, the Planning Branch will provide management information to the Regions and Divisions.

3.0 Establish a Self-Sustaining Fund for Road Maintenance

It is essential that the Regions and Divisions have ready access to an adequate level of funding to cover their overheads and to carry out a programme of routine, recurrent and emergency maintenance on the roads. A mechanism for such a fund has been agreed with government and should be sanctioned by Parliament early in 1995. The fund will be held and administered by MOWT/DOR and will accrue revenue initially from tolls and, eventually, from a

modest percentage of indirect road user taxes on fuel and vehicle registration. It is anticipated that toll revenue alone could cover the costs of planned routine/recurrent maintenance activities on the Strategic Network.

However, it is most unlikely that there will be sufficient funds to meet all the maintenance needs of the network. Prioritisation in the use of funds will therefore be required and it is most important that such funds as are available are used efficiently. The best way of ensuring this is to adopt the policy of **Planned Maintenance** noted at the beginning of section 3.

4.0 Improve Maintenance Operations in the Divisions

Planned maintenance activities on a road are designed to defer the need for the much more costly operations of repairs such as rehabilitation and reconstruction. In this context, rehabilitation and reconstruction are not part of the planned maintenance. As previously, noted, planned maintenance comprises routine, recurrent and periodic activities of which the programming and implementation of routine and recurrent maintenance is the direct responsibility of the Divisions (the definitions of the various activities have been agreed within the Department and are contained in the Departmental Policy Document: Definition of Maintenance and Maintenance Activities, November 1994).

Improved routine/recurrent operations are being introduced by the Department through the Strengthened Maintenance Division (SMD) programme. This programme, which covers a minimum period of two years for each Division, involves the selection of a division having a reasonable length of road in a maintainable condition (SDI 0-3.0). The first year is spent on putting the Division into a "working" condition, introducing management systems and preparing a work programme and a related needs based budget for the second year. The work programme involves cyclic planning of activities covering the whole of the fiscal year with additional responsive measures added during the monsoon period.

The second year comprises the implementation of the Planned Maintenance Programme utilizing various methods of undertaking routine and recurrent maintenance operations. Methods being tested are lengthman and gang systems executed by DLO (Direct Labor Organization), petty contract and local contractors. The Department intends to review progress on these methods as the basis for a National Road Maintenance Strategy which will be set-out in a Departmental Working Paper to be published in 1996. The Work Programme and the method of implementation constitute the **Maintenance Management System** for the Division.

The SIVID programme is a process and not a project. It receives limited financial and technical support from SDC; the MRCU also provides technical support through a local consultant Maintenance Adviser. The aim is to build-up in each Division a capability for undertaking routine and recurrent maintenance activities as part of a Planned Maintenance Programme while working under normal government regulations and constraints. The annual maintenance budget comprising of regular (for routine/recurrent) and development (for other developmental activities and periodic) has also to be applied for using government procedures. Once the RMF (Policy Option 3.0) has been established, the SMDs, especially the better performing SMDs, will be

given priority from this fund. In fact, the RMF funding levels will be closely tied to the SIVID programme, The SMD programme is being developed in stages until all 25 Divisions are incorporated. Two Divisions, Harihar Bhawan and Bharatpur, were designated SMDs in 1993; four Divisions, Pokhara, Butwal, Nepalganj and Lahan, have been made SMDs in 1994.

5.0 Improve Periodic Maintenance of the Strategic Network

Periodic maintenance is an essential element of Planned Maintenance and comprises regravelling of gravel roads and cyclic resealing of bitumen roads. In particular, cyclic resealing is considered to be the single most cost effective operation to improve the serviceability of bitumen roads in Nepal. It involves applying a seal to all roads in a maintainable condition at a fixed interval of 5-8 years depending on environment and traffic. All resealing has a high economic rate of return; the principal of **cyclic resealing** is therefore to reseal 12 months early rather than 1 day late. With the present road network and traffic levels, the **intervention approach** using economic models such as HDM III is not appropriate for developing a resealing programme for Nepal and could be counter-productive. For the time being, prioritizing in the selection of the roads (or resealing will be limited to the consideration of the 4 parameters namely road age, visual survey ratings, traffic and strategic importance.

The aim of the DOR Strategy in adopting cyclic resealing is to build-up a programme of 400 km to 500 km of resealing annually which can be undertaken as a straightforward management exercise and with predictable funding needs. Such a programme will, in addition, provide an on-going source of work for local contractors and thereby materially assist the development of the local contracting industry. Resealing is non-structural, it slows down the rate of deterioration by renewing the waterproofing properties of the pavement. Types of resealing include double and single seal surface dressing, slurry seals and cape seals using straight-run bitumen or bitumen emulsion.

Initially, the cyclic resealing programme will be prepared centrally by the Planning Branch and the regravelling programme by the Regions. Once the resealing programme has become established, responsibility for it will be transferred fully to the Regions. Execution of the resealing and regravelling programmes will be carried out through the Regions and the Divisions.

6.0 Improve Bridge Maintenance on the Strategic Network

As part of the new organisational structure for DOR a dedicated Bridge Unit has been established in the Design Branch with overall responsibility for bridges on the Strategic Network of which there are at present some 800 in total. The task of the Bridge Unit is firstly to prepare a comprehensive inventory of these bridges followed by a detailed condition survey. The condition survey should lead to a programme of rehabilitation designed to put all bridges into a serviceable and hence maintainable condition. At the same time, planned maintenance involving principal inspections at 6-10 year intervals and regular routine inspections will be progressively introduced. The principal inspections will remain the responsibility of the Bridge Unit but routine inspections should be undertaken by the Divisions as part of their normal maintenance activities, The Bridge Unit will initiate and advise on any major bridge repair work which will be executed through the Regions and Divisions.

7.0 Improve Roadside Support Maintenance

Roadside support maintenance is concerned with slope stability and measures to reduce the risk of slope failure above the road and supporting the road. Preserving slope stability is a major problem in Nepal especially, but not exclusively, in the hills. From a practical point of view, it is almost impossible to reduce the risk of failure entirely. The question is thus to determine what level of risk is acceptable for a particular road on economic and social grounds and then to provide appropriate risk reduction measures.

Given the development level of Nepal and the relatively low traffic on most of the roads, it is not economically viable at the present time to implement high cost measures designed to provide a low risk of failure. In most cases what is needed are low cost measures utilising local skills and resources, backed-up by frequent inspection of the road environs and timely maintenance. Maintenance in this context comprises not only repairs but also modification to existing slope stability measures including extending retaining walls and adapting drainage to suit the changing environment. These works are never completed in the hill areas of Nepal and are on-going for the life of the road. An appropriate annual budget should be provided for them. In high risk areas, slips will continue to occur and responsive maintenance activities must be organized to clear them.

Slope stability measures will be a combination of normal geotechnical engineering and bio-engineering techniques appropriate to the site. To assist in the development and implementation of these techniques, DOR has established a Geo-Environmental Unit in the Planning Branch. The Unit will provide advice to the Regions and Divisions who will be responsible for implementation. However, it is most important in dealing with slope stability for the Divisional Engineer and especially the overseers to get to know their roads and the high risk sections on them. This can only be achieved by regular inspection of the roads leading to timely and cost effective roadside support maintenance. The Unit is also concerned with developing the capability of local consultants and contractors in designing and executing bio-engineering techniques

8.0 Establish the Concept of National Standards

National Standards for road construction and maintenance broadly comprises of norms, contracts, specifications, detail drawings, codes of practice and other guidelines. They are important for:

- maximising the use of local resources in a manner appropriate to the development stage of the Country and to meet local needs;
- providing a common base for evaluating the performance of the standards and progressively improving them to suit local conditions;
- providing a degree of uniformity to assist contractor bidding and the development of local contractors while improving quality control;
- enabling timely changes in construction and maintenance practices to respond to changing circumstances within the Country.

There are some road-related standards in Nepal but they are generally outdated and rarely used in practice. A strategy for the development of Nepal specific standards in the roads sub-sector is therefore needed. In this respect, a Discussion Paper was issued by DOR/MRCU in May 1994 and a seminar will be held in March/April 1995 to obtain a consensus on the key issues. The development of National Standards is a major long-term undertaking. The suggested approach is therefore to carry out a review of present standards and select a set of existing standards which have been prepared for conditions similar to Nepal. These ***interim*** standards will then be progressively refined and developed to form National Standards. This process is already underway. A Steering Committee has been established in MOWT/DOR together with a Working Group which is reviewing contract documents.

Feeder Road geometric and construction standards based on stage construction have also been prepared by DOR/MRCU and approved by government, Changes in existing standards and the preparation of new standards will be initiated by DOR Headquarters. However, the Regions and the Divisions have a lot to contribute in this respect and must be fully involved in the work. This will be achieved through joint review and development of new standards and, especially, by providing essential feedback from the field on the performance of the standards.

9.0 Improve DOR Plant Management and Utilization

Of necessity, DOR will continue to be the main provider of plant and equipment to the roads sub-sector in the medium term. It is therefore important that the HEDs are able to provide adequate, reliable, cost effective and appropriate plant for DOR and local contractor use in road construction and maintenance over this period. Three main issues need to be addressed:

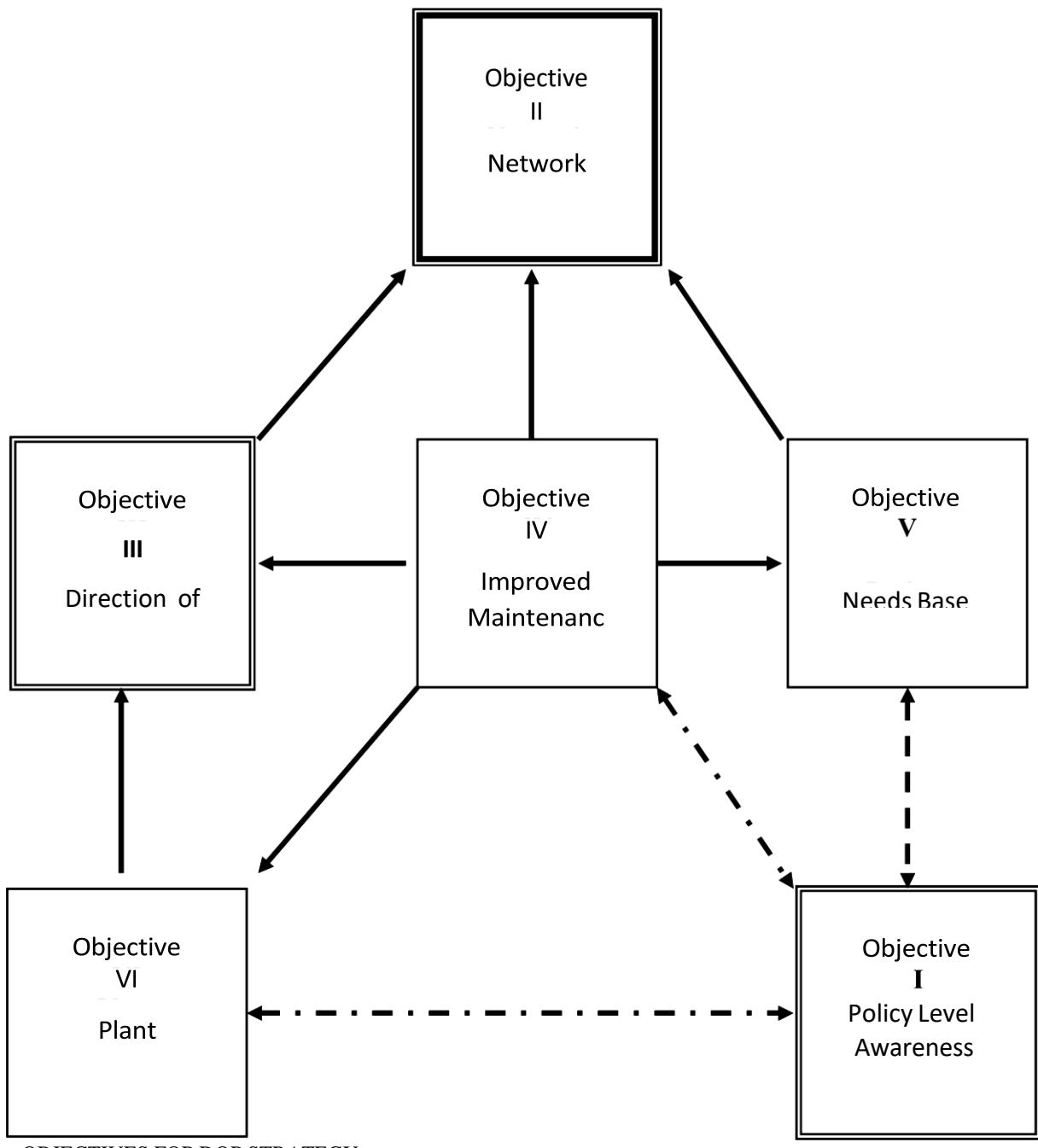
- the replacement of old, non-standard and inappropriate plant and equipment (the retention of any item which is not being utilised for more than 600 hours/year should be seriously questioned);
- the introduction of standard management systems into the HEDs;
- underfunding and overstaffing.

The DOR is a government agency whose main purpose is to translate government policies for the roads sub-sector into the provision of a service to the travelling public. This service comprises a road network meeting the needs of government and the general public which is maintained in a serviceable condition at all times. The DOR is therefore a ***service*** orientated institution.

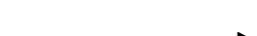
In order to meet it's obligations, the DOR needs a clearly defined End Goal and a Strategy for achieving the goal. These provide an essential framework for subsequent action. An End Goal - the reduction of total road transport costs - has been identified and is included in the 8th National Plan. DOR has also developed a Strategy for achieving it and has negotiated substantial donor support for the Strategy. The Strategy concurrently addresses policy, management and operations issues and is appropriate to the present development stage of Nepal. It is also sufficiently flexible to respond to changing circumstances in government and the Country as a whole.

However, the Strategy is complex and has numerous donor components. While these components provide essential support for the Strategy, they can also embody differing

approaches and interests. For success, the Strategy must therefore be firmly directed, managed and controlled by the Department itself. This will require acceptance of ownership of the Strategy and a strong commitment to the Strategy by each and every member of the Department.



Legend



Solid line arrows indicate dependency



Broken line arrows indicate interdependency

Policy level objectives



Operations level objectives

नेपालमा केहि बर्षयता सडक दुर्घटनामा अत्याधिक वृद्धि भइ धनजनको ठुलो क्षति भैरहेको छ । यस्तो दुर्घटनाको फरक तत्वहरु के के हुन्? सडक दुर्घटनालाई न्यूनीकरण गर्न तपाईंक सुझावहरु के के हुन्?

“समृद्ध नेपाल, सुखी नेपालीको आधार: सुरक्षित यातायात पूर्वाधार “

विषयप्रवेश

बढ्दो सहरीकरण तथा सवारीसाधनको चापका कारण आ.व. २०७७/०७८ सम्म करिव ४० लाख सवारीसाधन (दुई पांगेको संख्या ८० प्रतिशत), लाखौंको रोजगारी, अर्बौंको लगानी (निजिक्षेत्रको ६ अर्व), सडक एवं त्यसमा गुड्ने सवारीमा रहेका जसले जीवनलाई जीवन्त गराउने, अर्थतन्त्रलाई चलाएमान गराउने, आर्थिक सम्बूद्धिमा टेवा दिने, संकटकालिन अवस्थाको निकास र एकअर्काको विच सम्बन्ध बढाउने माध्यम भएकोले सडक सुरक्षित हुनुपर्ने विश्वव्यापी मान्यता विपरित नेपालमा दैनिक ८ जना र बर्षेनी सरदार ३००० मानिसको मृत्यु (WHO को अनुसार नेपालमा ९ प्रतिशत मानिस सडक दुर्घटनामा मृत्यु हुने गरेको जुन एकै कारण बढी मानिसको मृत्यु हुने rank सातौ)भैरहेको अवस्थामा सो घटाउन नेपालले UNO को सहकार्यमा सडक सुरक्षा कार्ययोजना २०११ -०२० लागू गरेको भए पनि अपेक्षित नतिजा प्राप्त हुन् सकेको छैन ।

ट्राफिक जाम, सडक दुर्घटना, व्यबहार भै syndicate नहट्नु, यात्रु प्रतिको दुर्व्यवहार, बन्द हड्ताल, बिमाको प्रभावकारी कार्यान्वयन नहुनु जस्ता समस्याक साथै कमजोर यातायात प्रशासन अन्तर निकाय समन्वयको अभाव, एकिकृत यातायात नीति प्रणालीको अभाव, वातावरण मैत्री दिगो पूर्वाधार आदि यस क्षेत्रको चुनौतिहरु परास्त गर्दै सार्वजनिक यात्यात्लाई यात्रुमैत्री, सुरक्षित, भरपर्दा र दिगो बनाउनुपर्ने देखिन्छ ।

दुर्घटनाको कारण:

1. चालकको लापरवाही (६७ प्रतिशत)

- तिब्र गतिमा सवारीसाधन चलाउने
- जोखिम मोलेर उप्तेरो बाटोमा सवारी चलाउने
- कम उमेरमा Heavy Vehicle चलाउने, मा.प. से. गरी सवारी चलाउने
- Overtake गर्ने, overconfidence देखाउनाले
- लामो दुरीमा सवारी चालक परिवर्तन नगर्ने, गाडीको front सिसामा स्टिकर टास्नु
- ट्राफिक नियम उलंघन गर्दा रमाउने प्रवृत्ति
- छिटो गन्तव्यमा पुग्ने चाहना, घरायसी तनाब
- दुर्घटना भवितव्य (Act of God) सोच्नु
- सडक र सवारी बारे प्रर्याप्त जानको कमि

2. सवारीको अवस्था

- चलाउन अयोग्य सवारी चलाउने/धेरै पुराना सवारी वा समयमा मर्मेत, प्राविधिकरूपमा चलाउन नमिल्ने सवारी चलाउने

- क्षमता भन्दा बढी यात्रु/समान बोक्नु
- यान्त्रिक गडबडी

3. सडकको अवस्था

- Defective in geometric design, improper lighting, inadequate provision for pedestrian, insufficient skid coefficient, high grade, broken back curve etc.
- Bad condition of road, only 50 % NH are Black top in which only 19% of NH are in good and fair condition measured by IRI.
- Single lane road, or single lane bridge in double lane road
- Insufficient road maintenance and rehabilitation
- Haphazardly opened link road
- Road operation without Road safety Audit.

4. Mistake by Road User

- Road rule violation, carelessness
- Lack of traffic light and lack of use of Traffic light/Zebra crossing
- गलत ठाउमा गाडी रोक्नु/ओर्लन दवाव दिनु
- यात्रुमा चेतनाको अभाव

5. यातायातीय कारण : सडकको अवस्था Misty, Foggy, Snowfall, Heavy rainfall, poor visibility

6. अन्य कारण : सडक मिचेर संरचना बनाउनु, road ribbon development etc.

विद्यमान व्यवस्थाहरू

यातायात व्यवस्थापनलाई प्रभावकारी बनाउदै सघन, सन्तुलित, सुलभ र सुरक्षित एवं गुणस्तरीय तथा दिगो यातायात सेवा मार्फत SDGको लक्ष्य बमोजिम हालको दैनिक मृत्यु दर ८ जना बाट ३.२ मा झार्ने अभिष्टका साथ गरिएका नीतिगत तथा संस्थागत व्यवस्थाहरू निम्नलिखित छन्।

नीतिगत व्यवस्था

- संबिधान बमोजिम बाँच्न पाउने हक
- नागरिकको जीउधनको संरक्षण गरिने निर्देशक सिद्धान्त
- सवारी तथा यातायात व्यवस्था ऐन, २०४९ र नियमावली २०७४ : सडक दुर्घटना रोकथाम गर्न, पिडित पक्षलाई क्षतिपुर्ति दिलाउन, सुरक्षित र भरपर्दा यातयात सेवा दिन
- पन्धौ योजनाको आधारमा सघन, सन्तुलित, सुलभ र सुरक्षित एवं गुणस्तरीय तथा दिगो यातायात सेवा दिन
- बार्षिक बजेट तथा कार्यक्रम
- सडक बोर्ड ऐन, राष्ट्रिय यातायात नीति २०७८, नेपाल सडक मापदण्ड २०७०, NRSAP २०११/०२० आदि

संस्थागत व्यवस्था

- संघ र प्रदेशमा रहेका भौतिक पूर्वाधार तथा यातायात सम्बद्ध मन्त्रालयDoR, DoTM and their offices
- VFTC
- Nepal Police/Traffic Police
- यातायात व्यवस्थापन समितिहरू

- विभिन्न संघ/संस्थाहरु आदि

दुर्घटना न्यूनीकरणका लागि चाल्नुपर्ने कदम /Measures to internalize road safety

प्रभावकारी यातायात व्यवस्थापन तथा सवारी दुर्घटना न्युनिकरणको लागि सलंगन मुख्य निकायहरु MOPIT, DOTM,Nepal Police/Traffic Police, DOR भएपनि यी मध्ये कुनै निकायको मुख्य जिम्मेवारी सडक सुरक्षा नरहेको हुँदा राष्ट्रिय सडक सुरक्षा बोर्ड वा NRSC स्थापना गरी हालै संसोधन गरिएको NRSAP २०२०-२०३० मै केन्द्रित रहेर त्यसका पाँच पिलरहरु Road safety management, safer road and mobility, safe Vehicle, safer road user, post-crash management मा आधारित रही निम्न Measure हरु लागु गर्नुपर्ने देखिन्छ ।

1. सडक सुरक्षा व्यवस्था (Road safety management)

- NRSC को स्थापना
- RTA को बैज्ञानिक database, analysis, and publication
- अन्तर्राष्ट्रिय स्तरमा भएको एक्यबधता बमोजिम VTMA २०४९, VTMR २०७४ मा समय सापेक्ष सुधार
- VFTC कम्तिमा मुख्य राजमार्ग हरुमा २०/३० वटा सम्म स्थापना गरी संचालनमा ल्याउने
- यातायात भलाई कोषको स्थापना गरी सडक सुरक्षामा समेत परिचालन गर्ने
- बिमा रकम, गम्भीर प्रकृतिका दुर्घटना (Head injurie)मा बिमा भुक्तानीको व्यवस्था
- एकिकृत सवारी नीति बनाई अधिकतम सवारी संख्या तोक्ने र निश्चित आयु पश्चात स्वतः सडकबाट हट्ने व्यवस्था गिलाउने
- काठमाण्डौ उपत्यकाबाट पुरानो सवारीसाधन ग्रामीणक्षेत्रमा संचालन गर्नदिने अदूरदर्शी निर्णय तत्काल खारेज गरी देशको कुनै पनि सडकमा त्यस्ता सवारीसाधन संचालनमा रोक लगाउने

2. सुरक्षित सडक र Mobility

- Road को डिजाइन देखि O and M सम्म RSA हुनुपर्ने व्यवस्थालाई व्यबहारमा लागू गर्ने
- वैज्ञानिक ITS क साथै Integrated Zebra crossing लागू गर्ने
- Encouraging proper speed and behavior by design and construction.
- Creating forgiving road
- Minimum conflict zone
- Designing for all road users
- Road design in urban area must have footpath, avoid high grade/sharp curve/saw curve and surprising elements and integrated horizontal and vertical Coordinate of Road alignment
- Allocation of Road safety Budget upto 10 % minimum
- Effective M and E

3. Safe vehicle

- Establish VFTC in all major road
- Establish Weighing bridge/ axle load control in major roads
- Erect public vehicle by GPS, radio mobile apps etc
- Driver training and testing
- Implement Safer vehicle guideline in all vehicle
- Route approval or new route implementation only based on Road worthiness
- Providing minimum training for general maintenance of vehicle to all concern person like driver, conductor etc

4. Safer road user

- ऐन, नियमावली र मापदण्ड हरुका प्राबधानहरुलाई कार्यान्वयन गर्ने
- सबै नागरिकमा सडक सचेतना कार्यक्रम लागू गर्ने. तालिम दिने, Campaign आदि गर्ने
- विद्यालय देखि उच्च शिक्षा सम्म सडक सुरक्षाको कार्यक्रम पाठ्यक्रममा समावेश गर्ने
- सडक सम्पतिको संरक्षणमा सबैले सहयोग गर्ने
- ट्राफिक बती/जेबा क्रोसिंग को प्रयोग गर्ने आदि

५. Post-Crash Management

- Toll free number and telephone
- Ambulances
- Revolving fund
- Trauma center in all major road
- Payment of insurance in time
- भलाई कोषको स्थापना गर्ने आदि

यसका साथै नेपाल सरकारले तत्काल RS act पारित गरी लागू गर्ने र प्रभावकारी NRSC बनाउने, अन्तर्राष्ट्रिय निकायबाट सङ्क सिर्मांगमा बजेट दिए नै सङ्क सुरक्षाको प्रवन्धहरू बारे नेपाल सरकार स्पष्ट गर्ने, यातायात व्यवसायी हरु पनि सुरक्षित सवारी, राम्रो सङ्क संस्कृतिको बिकासमा सहयोग गरी सामाजिक उत्तरदायित्व बहन गर्ने र सर्वसाधारणले सङ्क सुरक्षालाई जीवनको अनिवार्य अंगको रूपमा पालन गर्ने ।

निष्कर्ष :

विकासको प्रत्याभूति सङ्क संजालको लम्बाई र सवारीको संख्या मात्र हुन् नसक्ने यथार्थ पछिल्लो समयमा भएको बढ्दो सङ्क दुर्घटना र यसका असरहरूले पुष्टि गरिसकेको अवस्थामा सङ्क दुर्घटनालाई शुन्यमा ल्याउन नसकिने भएपनि यसको न्यूनीकरणका लागि माथि उल्लेखित उपायहरूलाई व्यवहारमा लागू गरी दिगो विकासले राखेको लक्ष्य बमोजिम २०३० सम्म ८ बाट ३.२ जना प्रत्येक दिनको मृत्यु र करोडौको क्षतिलाई घटाउन सकिने हुँदा सबै शासकीय पात्रहरूको एकिकृत प्रतिवद्धता र समन्वयात्मक प्रयास जरुरी देखिन्छ ।

10 tips for preventing Road Accident

- Developing the right attitude and driving
- Get as much surprised practice driving as possible
- Always wear helmet/safety belts
- Underage drinking and drug use is illegal
- Limit your passengers
- Limit your night driving
- Keep it slow and safe for starters
- Train for poor weather conditions
- Cell phones are for emergency use only on the road
- Drive a safe vehicle

Some Road Accident Related Database

- संसारमा 1.2 Billion vehicle, and upto 2 Billion सन् २०३५ सम्म पुग्ने अनुमान
- WTO अनुसार १३.५ लाख मानिस को मृत्यु प्रत्येक बर्ष सङ्क दुर्घटनाबाट हुने गरेको
- ९० प्रतिशत मध्यम/निम्न आय स्तर भएको मुलुकमा जहाँ मात्र ५४ % सवारीसाधन रहेको
- सबैभन्दा बढी सङ्क दुर्घटना बाट मृत्यु हुने देशमा क्रमशः चीन, भारत, अमेरिका रहेको

Define roughness and state its relation with VOC. Suggest the pavement management approach suitable in context of Nepal.

Definition

- As per ASTME 867/87 Road roughness is defined as “the deviation of the pavement surface from a true planner surface with characteristics dimension that affect vehicle dynamics, riding quality, speed, travel time, VOC, maintenance cost and structural life, dynamics pavement loads and pavement drainage”. Road roughness can be classified as longitudinal distortion (due to rough surface texture cause noise) and transverse distortion (due to ruts and will cause discomfort).
- Roughness increases the wear on vehicle parts and rolling resistance and has an appreciable impact on vehicle operating costs, safety, comfort and speed of travel.
- The World Bank found that road roughness to be primary factor in the analysis and trade off involving road quality user cost. The WB developed IRI in 1980s.
- It is measured by “Bump Integrator” in terms vertical undulations per unit length of road. For high-speed highway and road having speed more than 100kmph are 150 cm/KM (preferable) and 250cm/KM (satisfactory)respectively and value of 350cm/KM (unsatisfactory).

Causes of unevenness/undulations

- Inadequate or improper compaction of either the fill, subgrade etc
- Use of improper construction materials and machinery
- Improper surface/sub surface drainage system
- Poor maintenance practices
- Localized failures due to combination of different causes
- Improper selection of pavement type, design of pavement
- Repetition of axle load more than design axle load

Importance to measure Roughness

1. Condition survey
 - Determination the condition of pavement
 - Find reason for condition
 - Qualitative in nature
 - Does not predict the type of maintenance to be carried
2. Evaluation survey
 - Carried out to determine structural adequacy of the pavement
 - Reason for condition of pavement
 - Consider the factors like pavement type, pavement surface, quality of paving material

Pavement Management Approaches /policy document

- Road pavement management,1995 (Discussion paper)
- Road maintenance policy
- Road Board Act for maintenance of Road
- Road and Bridges Standard
- Annual Budget and Strategic plan for SRN 2073/078

Pavement Management Approaches

There are two basic approaches when applying a pavement management strategy comprising planned maintenance.

1. Cyclic approach
 - Pavement actions are undertaken at fixed intervals on any particular stretch of road.
 - Usually, 4/5 years in hill and 6/7 years in terai
 - Comprises a relatively straight forward management exercise with predictable work load and funding but often produces a less than optimal (but still economic)
 - It is therefore better suited to roads where the principal agent of deterioration are climate and environment rather than traffic
2. Intervention Approach
 - Where pavement actions are taken, as far as possible in direct response to present level of pavement deterioration.
 - This intervention approach is a difficult management exercise and produces a variable annual work load, and consequently variable resources and funds.
 - Data collection and pavement evaluation, application of DHM, economic Analysis, priority ranking are done in this approach.
 - For effective planning, comprehensive database is required for determining historical trends.
 - Optional results can be obtained in terms of road serviceability and cost savings specially in high traffic level generally more than 5000 ADT.

Contextual suggestion

Context

- Traffic level of almost highway and feeder roads are very low except Thankot-Naubise and East west highway section. 50% of road network having traffic 50 to 100 VPD.
- Very poor database system, HMIS being practiced few year back only.
- Weak or incapable organizational capacity/fund allocation and management process inflexible, so that varying work load resulting varying resources and fund management is difficult.

Suggestion

The cyclic approach is preferable to planned maintenance of Nepal at present time. In applying this approach, the principle to be adopted is that maintenance actions implemented a few months early are still economic while those applied half a day late are ineffective and therefore a poor use of funds.

What are the various types of failure in flexible pavement? What is the purpose of pavement evaluation? Explain in details, various approaches and method of pavement evaluation in Nepal.

Definition

- Flexible Pavement: Pavement which transmit wheel load stresses to the lower layer by grain-to-grain transfer through the points of contact in the granular structures.
- Only the commercial vehicle having gross vehicle wt. of 30KN or more and their axle loading is considered in design.
- Design life minimum 15 year for NH, 20 year for expressway and urban roads.
- If MSA (Million Standard Axle) less than $12.48 + 6.05 \text{ CBR}$, flexible pavement may be economical.
- Design depends upon design wheel load, subgrade soil, climatic factors, design life, pavement material and environmental factors etc.

Distress in flexible pavement

1. Surface defects: faulty surfaces, smooth surface, hungry surface.
2. Cracks: hair line, alligators, long edge/shrinkage/reflection cracks.
3. Deformation: slippage, rutting, corrugation, shoving, shallow depression, settlement etc.
4. Disintegration: stripping, loss of aggregate, raveling, pot hole, edge cracking etc.

Due to these distresses, ultimately pavement become premature failure in the following types.

1. Structural failure: breakdown one or more pavement component may result due to overload including excessive gross loads, repetition loads.
2. Failure due to climatic condition: environmental factors may cause surface, irregularities and structural failure to develop i.e., frost heaving, volume change, freezing and thawing etc.
3. Failure due to disintegration of pavement materials: due to weathering i.e., wetting and drying or freezing and thawing.

Stability of flexible pavement depends and quality of every layer, function of road drainage etc.

Pavement Evaluation:

It is the through study of various factors of pavement such as subgrade support, pavement composition and its thickness, traffic loading, environmental factor and surface condition of pavement.

Purpose

- To know the condition of pavement for setting up design criteria.
- Checking the adequacy of existing pavement for increased design load.
- Working suitable overlay design to restore or enhance their structural capacity.
- Establishing maintenance and priority programs in appropriate time.
- Quantity defects and familiarize with the type of distress, with condition indicators.

Approaches of Pavement Evaluation

1. Structural evaluation of pavement: for determination of structural adequacy.
 - It is quantitative in nature.
 - It helps to determine the type of maintenance to be carried out.
 - Consider the factor like pavement type, pavement thickness, quality of paving materials.
 - It may be destructive and non-destructive test.
 - Non-destructive test is done by Benkelman Beam, creep load, plate bearing test etc. for determination the deflection.
 - Destructive test is done by after confirming highest deflection from non-destructive structural test, by using pitting (1m*1m) for field density, sieve analysis, specific gravity and water absorption test, Atterberg's limit, CBR etc.
2. Functional evaluation of pavement surface: to evaluate the condition, pavement unevenness, patches and cracks of the pavement at any given time.
 - It does not qualitative in nature.
 - It is only qualitative in nature.
 - It is used to setting up need's studies priority rating and maintenance program.
 - It is done by various methods such as surface roughness, surface distressed, pavement texture etc.
 - Surface roughness: by Vehicle Mounted Bump Integrator or IRI by Merlin Cycle, profilograph, profile meter or roughness etc. Bump Integrator (BI) = $(IRI)^{1.12} * 630mm$

Road roughness is defined as "the deviation of the pavement surface from a true planner surface with characteristics dimension that affect vehicle dynamics, riding quality, speed, travel time, VOC, maintenance cost and structural life, dynamics pavement loads and pavement drainage". For high-speed highway and road having speed more than 100kmph are 150 cm/KM (preferable) and 250cm/KM (satisfactory)respectively and value of 350cm/KM (unsatisfactory).

- Surface distressed: by visual examination by walk surveying, need simple tools or present serviceability index (developed by AASHTO for development of rating system involving the measurement of permanent deformation, riding quality and extend of cracking and patching. The rating is called PSI, widely used for both types of pavements) or surface distress index rating by drive and walk survey or visual assessment using 20% sampling procedure by rating system 0 to 5. For good, fair and poor condition are indicated by the value of range 0 to 1.7, 1.8 to 3 and 3 to 5 respectively.
- Pavement texture: it is concerned with safety i.e., skid resistance, visibility at night and measured by sensor texture depth (SMTD)

Nepal conditions

Department of Roads, HMIS branch is generally to measure the condition of roads by using IRI and SDI annually. As per the data 2020/021 out of 6510.48 km, and 73.19 km SURN the conditions are as below.

NH	6510.48	IRI	SDI	73.19km	IRI	SDI	Remarks
----	---------	-----	-----	---------	-----	-----	---------

km			SURN			
Good	5 %	13%	good	5%	21%	DoR aims to maintain more SRN good and fair condition.
Fair	14%	65%	fair	64%	47%	
Poor	22%	22%	poor	24%	32%	
Bad	59%	-	bad	7%	-	

Which shows that most of the pavement condition of NH is bad (59%) and only 5% is in good condition.

Conclusion

DoR's major goal is to reduce the cost of road construction, maintenance and VOC. For that department is working rigorously to upgrade SRN to bring it to maintainable condition by carrying out planned maintenance and necessary rehabilitation with optimum utilization of limited resources. Therefore, the up to date and accurate data for pavement evaluation of NH shall be base for future planning and proper maintenance management for DoR. Thus, it is very important for evaluation of pavement.

What is the value management and how can you effectively use it in Nepalese context for better utilization of resources?

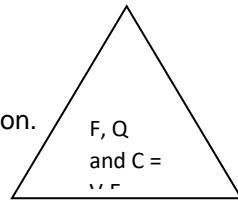
What are the elements of value engineering? Are these examples of Value engineering application in Nepal? Discuss its possible application in Nepal.

Definition

"Systematic application of recognized techniques, knowledge and skills to identify the function of a project, service or a process to improve performance, quality and or life cycle cost there by establishing a "true worth" for that function.

Components

- An organized review to improve value by using cross functional team.
- A functional oriented approach to identify and analyze the essential function.
- Creative thinking using recognized techniques to explore alternative.
- Judgement thinking finally to arrive at final decision.



Thus,

- Value engineering is a discipline comprising a series of techniques aimed at an organized, systematic efforts directed at analyzing functions of items, products, equipment, process and procedures for the purpose of accomplishing all the required functions at the lowest total cost.
- Unnecessary cost built in design will have to be cut. Value can be increased either by increasing the function or reducing the cost.
- Functional balance between cost, performance and reliability by VE review.
- The goal of VE is to ensure a design that meets the owner's required function at the most reasonable life cycle cost.
- All designs have unnecessary costs - project is usually formed and designed under pressure of meeting with the deadlines the designer will not be able to review it for unnecessary cost.
- The designer must understand that unnecessary cost in a design are not a reflection on his abilities as a professionals, but rather a management problems that needs to be addressed.
- Poor and wrong decisions can be made under the competing pressures of time, budget and quality. As a result all projects are likely to include unnecessary costs.

The reason for poor value occurs:

The challenge is to cut unnecessary costs or to keep at minimum level. Endless reasons for poor value in designs.

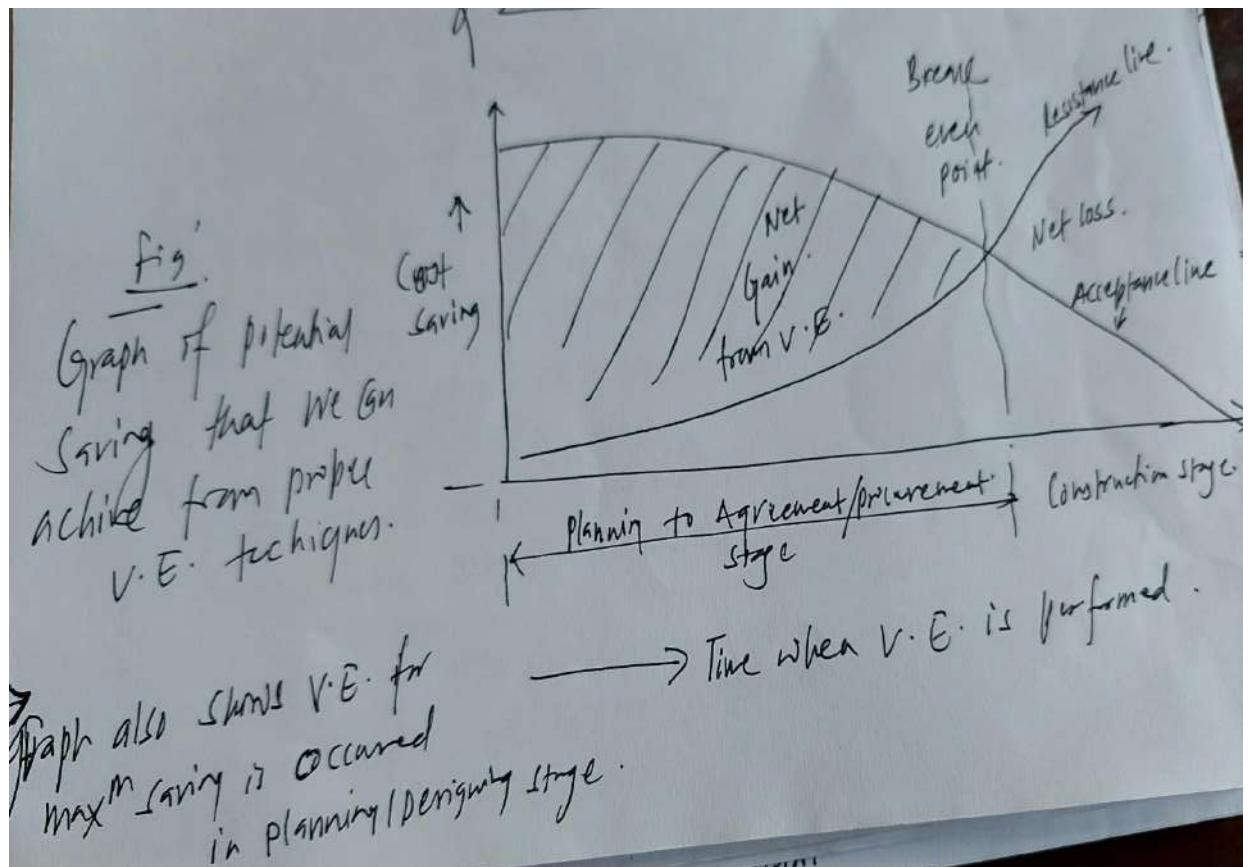
Approach/Method of value increasing

- Improve utility with no change in cost.
- Retain the same utility from less cost.
- Combine improve utility and less cost.

Importance/Benefit of V.E. and effect

VE is best utilised as a team approach to provide the optimum value on a project. This means that the whole project team should be involved, from the client right through to the supply chain. In the value engineering,

the project is split into its elemental function and alternative methods of accomplishing each function are developed. Each method is carefully evaluated and refined until a workable low-cost method of accomplishing each function is found. Eventually a final course of action is selected that would achieve the best possible solution for the entire project.



- Investing time and money in early stage, planning and designing of project is a key source in project delivery. Bringing together, cross functional teams from the government and contractor early strategic planning can avoid the alteration that leads to 60% of project delays.
- An efficient delivery can create a saving of much as 25% of the new project or 15% saving on total infrastructure and very fruitful for Nepal because various infrastructure project including roads and bridges have been suffering from implementation delay. GoN has to adopt sophisticated procurement, streamline permit approvals and land acquisition, lean construction model to reduce the clogs and bottlenecks and achieve the unprecedented saving.
- Typically, V.E. study may generate recommendation to cut 10 to 30% project construction costs. The designer usually accepts about half of these recommendation provide saving at least 5% project cost. The cost of value engineering effort including any redesign is usually less than 10% of total saving.
- VE can also be associated with maximising value, not just reducing costs (cutting upfront project costs is not VE!). VE examines key solutions to extract any unwanted waste, such as water, energy, time, maintenance etc. and reduce life cycle costs whilst providing better function, quality and sustainability.

Value engineering application in Nepal

The use of value engineering in the public sector of construction has been fostered by legislation and regulation, but the approach has not been widely adopted in the private sector of construction. In public sector the fee for desired design services is tightly monitored against the "market price" or may even be based on the lowest bid for service. Such a practice in the setting professional's fees encourages the design professionals to adopt known and tried designs and construction technologies without giving much tough to alternatives that are innovative but risky.

- Design and Built contract for construction of bridges in department of roads in various location in the country.
- Design and Built contract for construction of Airport like Gautam buddha airport.
- Design and supervision consultant by various agencies like DoR, DWRI, CAN etc. in which owner check the value engineering by various alternative.
- EPC contract for construction of Tunnel like Sidhababa tunnel and tunnel in fast track.
- Various standard design guideline/manual which various department such as PDSP manual for irrigation.
- Standard design/drawing of road elements/traffic sign manual/super structure bridge design

- drawing/multicell culvert etc.
- Provision for field visit before submission of bid in bidding document or RFP to contractor or consultant.
- Provision for pre bidding meeting in contract administration etc.
- Provision for variations and claims.
- Provision for dispute resolution in contract clauses.

These all are directly or indirectly help us in various steps from project planning to hand over but due to various roadblocks/reason our infrastructure field can not able to use optimum level of value engineering. These are

- Lack of information, usually caused by shortage of time. Too many decisions are based on feelings rather than facts.
- Wrong beliefs, insensitivity to public needs or unfortunate experiences with products or process used is unrelated prior application.
- Habitual thinking, rigid application of standards, customs and tradition without consideration of changing function technology and value.
- Risk of personnel loss. The ease and safety experiences in adherence to established procedure and policy.
- Reluctance to see advice, failure to admit ignorance of certain specialized aspects of project development.
- Unwilling to lose high opportunity through variation and claims.
- Negative attitude, failure to recognize creativity or innovation.
- Over specifying in document.
- Outdated standard/norms and technology
- Lack of professional expert team in the project.
- Poor human relation, lack of good communication, misunderstanding etc.

Value engineering is a process that establishes specific engineering objectives to maximize the efficiency of design and cost reduction. Generally, value engineering focuses on the best design from among available options. It is tactical tool.

त्यसैले पूर्वाधार क्षेत्रमा मुलुकको कुल बजेटको करिव एक तिहाई बजेट बिनियोजन (विदेशी सहयोग/ऋण को अंश थेरै हुने) हुने र यसको प्रभावकारी तथा किफायती परिचालन बाट नै देशको दीर्घकालीन लक्ष्य, SDG का लक्ष्यहरु हासिल गर्नुपर्ने भएकोले स्रोतसाधनको कमि भएको हाम्रो जस्तो मुलुकमा value Engineering को महत्वलाई सम्पूर्ण सरोकारवालाले बुझ्नुपर्ने देखिन्छ ।

Technique used in Value engineering for cost reduction.

- Selection of project
- Investigate the project/information gathering
- Creative thinking in alternative.
- Cost analysis
- Pareto rule/analysis i.e., specifies 80% of consequences come from 20% of the causes.
- Basic and secondary functions.
- Cost and worth
- Functional analysis
- Creating thinking through brain storming in various alternative
- Life cycle costing
- Criteria weighting
- Analysis and ranking of alternative values free
- Weighted value tree etc.
- Identify the most valuable one
- Agree a plan for continuity for development, construction etc.

Value engineering by contractor

- Study the project before bidding and determine the effect on topography, geology, climatic, labor supply etc.
- Careful review of bidding document/design drawing/BoQ/specification and contract clause etc.
- Active participation in pre bidding meeting.
- Use of substitute cost reduction.
- Payment of bonus to key personnel for better production
- Use of radio as the means of communication.
- Adoption of realistic, safety, healthy practice in project.
- Practice to holding periodic conference/meeting/workshop etc.
- Desirability of improving shop and servicing facilities for maintenance of costly equipment.
- Desirability of appropriate sub-contracting.
- Use of appropriate technology and local resources in efficient manner.

- Mobilization of appropriate project management team/cross functional team.

Value management

- Value management is a process that uses consensus driven, collaborative decision making to achieve optimal design while controlling the development of a project in accordance with all stakeholders' needs.
- Provides a structured framework in which requirements are evaluated against the means of achieving them as the project develops thereby insuring that money and effort is spent where it is most needed and best value for money is achieved.
- VM is primarily about enhancing value and not cutting cost, cost is reduced as a by-product of VM.
- VM embraces the whole value process and includes value planning, value engineering and value reviewing and includes; determining the functional requirements of the project or its parts, identifying alternatives and examining cost and value of each alternative to enable the best value selection.
- Value management should occur before definite design is in place.
- It is essentially a strategic tool.
- It is multidisciplinary structural framework which focused on value rather than cost, seeking to achieve an optional balance between time, cost and quality.
- It embraces value engineering, value analysis and value reviewing.

VM and cost reduction

- VM is positive, focused on value rather than cost, seeking to achieve an optimal balance between time, cost and quality.
- VM is structured, auditable and accountable
- VM is multi-disciplinary, seeking to maximize the creative potential working together.

Life cycle costing (capital costs, operating costs includes staffing, energy consumption, maintenance, cleaning, insurance etc and disposal cost) is a vital element when seeking to optimize value for money.

VM aims to eradicate the need for late changes, VM should not encourage them.

The first review of VM should include - list of objectives identified, objective hierarchy by ranking, feasibility of options and valuable option and selection of most promising option.

Second review should include - review of validity of the objectives, evaluate feasibility of options, examine most promising option, develop a project brief based on most promising option, program for developing the project.

Third review could be during design development (30-40% of design complete) and that include - review project requirements and objectives, check key design decisions taken are relevant, review key decisions against project brief, evaluate options, identify and develop the most valuable one to enhance value, agree a plan for the continued development of the design.

Who to involve:

- The value manager - client's professional advisor, project manager, construction manager
- The project team
- An external team

Differences between Value Engineering and Value Management

Characteristics	Distinguishing between Value Engineering and Value Management *	
	Value Engineering	Value Management
	Value Engineering	Value Management

Typical objectives	<p>Reducing capital costs without compromising quality or performance.</p> <p>Selecting the best option (satisfying all requirements at lowest cost) from a range of options.</p> <p>Choosing between component types such as structural steel or reinforced concrete.</p>	<p>Developing guiding principles (including principles to achieve best value for money) for planning and design at the briefing stage of projects.</p> <p>Selecting the best concept design options from a range of options.</p> <p>Developing proposals to enhance value for money at concept or detailed design stage.</p> <p>Resolving planning and design issues.</p>
Typical focus	"Hard" – technical focus – physical building or component parts.	"Soft" – concepts, "people-activities", preferences.
Stage of project development	<p>There is likely to be at least a concept design, and more likely, some detailed design work. In some cases, design work may be complete or nearly complete.</p> <p>Many Value Engineering studies are undertaken during construction stage, especially when projects are running over time and over budget.</p>	Most likely to be at the early stages of project development, even before a project brief has been prepared.
Participants	Strong technical focus.	Broad participation by stakeholders from management, strategic planning to operational.
Number of participants	Normally tighter in numbers, 8 to 15.	Typically 15 to 25 but sometimes up to 40 or 50 people.
Function analysis	Conventional function analysis of individual components.	<p>Primary purposes; beneficial outcomes, important characteristics that must be achieved – at the "whole entity" level.</p> <p>More detailed function analysis where required.</p>
Cost comparisons	Can generally be more precise in terms of capital and recurrent costing and models.	<p>Possibly indicative, generally comparative (greater than/less than) if costs are even conceivable – eg 50% more than this one.</p> <p>There might not even be a budget at the early stages. The Value Management workshop can provide the basis for establishing one.</p>

This table presents examples that are sometimes used to distinguish Value Engineering from Value Management in the Singapore construction industry. It is important, in reading the table, to recognize that there is no universally agreed distinction between Value Engineering and Value Management, neither in the international literature, nor in international practice and many practitioners and authors use the terms Value Engineering and Value Management interchangeably and synonymously. However, if there is to be difference in use, then the above examples might be helpful in making the distinction.

Value Analysis (VA)

It describes a value study of a project that is already built or designed and analyzes the project to see it can be improved. The purpose of VA is to give a second look to the design of product with the aim to reduce cost without reducing its value. VA is applied after all aspects of design is ready or project completed by a separate team not involved in the design or implementation of a project.

Value analysis involves the implementation of a set of techniques relating to cost reduction and cost prevention to the existing product to improve its value. On the other hand, **Value Engineering (VE)** is the implementation of a similar set of techniques relating to a new product at the time of its design. Difference of VA and VE are given below.

BASIS FOR COMPARISON	VALUE ANALYSIS	VALUE ENGINEERING
Meaning	Value Analysis is a cost reduction technique applied to the existing product with the aim of enhancing its worth.	Value Engineering is a technique used before the product gets approval for fabrication.
Nature of Process	Remedial Process	Preventive Process
Applied when	After the product is introduced.	At the design stage
Objective	To get better optimized commercial output.	To get better engineering results.
Worked Out	With the help of knowledge and experience.	With the help of specific technical knowledge.
Ensures	Elimination of unnecessary cost	Prevention of unnecessary cost
Change	May change the existing stage of the product or operation	Changes made by value engineering are implemented at initial stages only.

Approaches (positive and negative) of Value engineering/management to Client/Designer (Consultant) and Contractor.

Party	Positive benefit/Pros	Negative /Pons
Client/Owner/Promotor	<ul style="list-style-type: none"> ➢ Improvement in value, risk reduction ➢ Reduction in capital, o and m cost ➢ Improvement in delivery dates. 	<ul style="list-style-type: none"> ➢ Already included in service contract. ➢ Uncertain about process ➢ Thinking of increased risk

		through innovation.
Designer/Consultant	<ul style="list-style-type: none"> ➤ Reduction of risk exposures ➤ Innovation and better design ➤ Integration of design with construction and safety ➤ Financial gains through additional fees ➤ Marketing benefits for new methods/techniques 	<ul style="list-style-type: none"> ➤ May owner criticizing in design capacity ➤ May reduce high quality of element ➤ May be expensive ➤ Risk may increase through innovation
Contractor	<ul style="list-style-type: none"> ➤ Incentive/bonus through sharing of savings ➤ Improved relations ➤ Improved buildability and safety ➤ Expansion of experience ➤ Reduction of contract period/overhead ➤ Marketing benefits for new methods and techniques ➤ Increasing company "Goodwill" 	<ul style="list-style-type: none"> ➤ Increase risk with new design ➤ Process may delay ➤ Unwilling to loose high opportunity through variations and claims.

Road Asset Management System in Nepal

Er. Prem Prakash Khatri, SE. FRSMO, Damak

8.1 Introduction

An asset refers to the resource with economic value to a person or an organization. An asset is something that provides beneficial returns. Asset possesses either service value or financial value or both. The asset provides service to users, owners and communities and possesses service value. If an asset requires money to acquire, it possesses financial value. Road infrastructure delivers public service, requires finance to acquire that comes from taxpayers and reduces transportation cost. Thus, Road is a Public Asset. A typical double lane hill road in Nepal costs around Nrs. 50 to 60 million per km to acquire based upon the current cost estimates of Mid-hill and Madan Bhandari Road Projects. The intermediate lane BP highway nearly cost NRs. 200 million per km length. The current 4 lane under-construction projects along Mahendra highway are going to cost around 150 millions per km. The average unit cost in plain areas or Terai of Nepal for similar standards is similar as well. The basic components of hill road are Earthworks, drainage structures, retaining structures, pavement structure and road furniture. The cost of acquisition depends on choice of design and available resources. This article briefly introduces the Road Asset Management System, its important components and its present status in Nepal.

8.2 Approaches to Road Asset Valuation

There are basically two approaches on Road Asset Valuation i.e., Depreciated book value method and Replacement cost method. The first method considers the original asset cost reducing it by the value that is depreciated over the economic life of the asset. The latter one considers the estimated cost to replace the asset with one that meets current codes and standards. In 2000 AD, the Road Asset value of Nepal was estimated to be around NRs. 85 billion (source: www.rbn.org.np). Currently, the total road length of national highways is 11,178 kms. This excludes planned and underconstruction highway of around 3,000 kms. Around 7,000 kms or more than 60% of it is blacktopped. More than 1,000 kms or around 10% of total road length is gravel standard and remaining 3,178 kms or around 30% is earthen. (Source: http://ssrn.aviyaan.com/road_network) Based upon the replacement cost method, the national highway asset value could be estimated to be roughly NRs. 500 billion excluding bridges considering the above mentioned unit costs. Referring to Bridge Management System (BMS) available in DoR website (source: http://bms.softavi.com/dashboard/guest_report_bi/), the total number of bridges along Highways and Feeder roads (previously known as SRN) is 2022, their total length being 94,722 meters. Assuming per meter cost of a double lane bridge as NRs. 2 million, the replacement cost of 2022 bridges would be close to NRs. 200 billion. Thus, the total highway asset would sum up to be approximately NRs. 700 billion. It should be noted that such approximations shall not undermine the fact that the calculations based on rigorously identified road inventory using appropriate economic/financial models are needed.

8.3 Road Asset Management System (RAMS)

Road Asset management refers to the coordinated series of activities that monitor and maintain road asset. The effective road asset management realizes the value of road asset over the design life span. It demands increased attention, commitment and resources. In simple words, Road Asset Management is about knowing road asset value, their specific location, their present condition or health, the trend of deterioration, processing these information in order to estimate the approximate cost of maintenance,

prioritize the schedule of maintenance, identify the right time to maintain and implement timely maintenance works for continuous service delivery to road users. The application of latest modern technology such as Geographic Information System (GIS), Global Positioning System (GPS), smart phones, drones, softwares etc. for increasing effectiveness and efficiency of Road Asset Management could establish a robust Road Asset Management System (RAMS).

8.4 Prerequisites of effective RAMS

Basically, there are two prerequisites for effective Road Asset Management. Firstly, the relevant legislation provisions are necessary. Realizing the significance of Road Asset preservation for saving imminent reconstruction costs and catching the train of sustainable development, there should be appropriate

Road Asset Management Policy and legal provisions for institutionalization of RAMS. Secondly, the quality management and assurance in Road Projects is must. If the quality of design, construction and maintenance are up to the mark, the acquired road asset is easier to manage and maintain until the design life span or beyond.

8.5 Components of RAMS

The several components of RAMS are presented as follows:

1. Road Asset Inventory System

The details of road elements such as spatial location, dimensions, age of maintenance or acquisition, material types or qualities etc. are recorded. The latest technology using GIS software, GPS technologies, mobile applications etc. are used for efficiency in data management. The continuous updating system makes the inventory system really effective and useful. The user-friendly web based information system with GIS interface that is accessible to concerned planners and policy makers helps in qualitative and informed decision making.

2. Condition Monitoring System

This involves the periodic monitoring of health of road asset elements. The data history regarding condition or health of road elements are useful for planning right treatment options. It is also useful for performance rating and modeling. The condition monitoring of roads could be done in several ways. The road pavement condition could be monitored by visual inspection for SDI or with the help of modern equipment for measurement of IRI or Pavement Distress Index (PDI), advanced equipment like Falling Weight Deflectometer (FWD) for pavement evaluation etc. The other road elements could be monitored by visual inspection or using technological tools like drones, mobile applications, leveling equipment for measuring levels, sensors for measuring vibrations of structures, bridge inspection vehicles for bridge monitoring etc.

3. Performance Modeling

Performance modeling is done for nothing but to project or forecast the condition or health of road elements in due course of time utilizing the historic data of the same. It utilizes mathematical tools such as polynomial equations of favorable degrees in order to project the performance of road elements.

4. Economic Models

Economic models are required for valuation of road assets or estimation of cost of road maintenance and reconstruction or rehabilitation. The use of software like the HDM- series is common by transportation economists.

5. Road Maintenance Planning

This involves the prioritization of road sections for maintenance or repair or rehabilitation. This also involves the allocation of available budget after rational prioritization. The rational prioritization is done with the help of data and information available from inventory system, condition monitoring system and performance modeling. The quality of prioritization decision is the function of quality of data acquired in above mentioned systems.

6. Institution for timely maintenance or quick response

The Pavement deterioration curve (Fig 8.1) implies that ‘Stitch in time saves NINE’. The relevant research publications highlight that the timely maintenance of road could result in savings up to 20 times. Realizing the importance of quick response and timely maintenance, the procurement system needs to be specific with quicker processes than the one for asset building

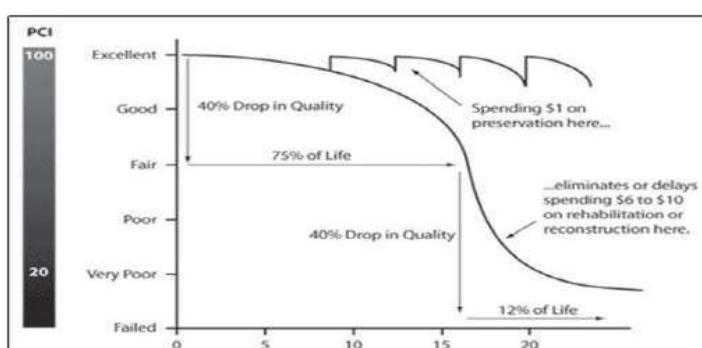


Fig.8.1 Pavement Deterioration curve (source: internet)

purposes. The international best practices could be followed for institutionalizing the system for timely maintenance. This is one of the most important components of RAMS since the effectiveness of the whole system is realized if implementation is sound and effective.

7. Climate resiliency, Risk analysis

The effective road asset management will require the provisions for ability to rebound from the impacts of natural disasters. The probable associated risks such as slope instability and probability of failures, flooding etc. need to be assessed and analyzed well along the road. The disaster preparedness is needed in order to respond quickly after the disaster and recover quickly.

8. Monitoring & Evaluation

This is the inseparable part of RAMS where the implementation process is closely monitored either live participation in the field or with the help of advanced information systems. At the end of implementation, the overall process is evaluated to find out the outcome or impact of implementation. This helps to measure the overall effectiveness of the system.

9. Road Users Satisfaction Survey, GRM etc.

It is the responsibility of government road agency to satisfy the road users. Road users are the ones who collectively put their contributions for investment in road infrastructure through the government. Road users deserve to demand the level of service they desire to experience. The road users' satisfaction survey could be done in multiple ways using live primary surveying or with the use of social media or online Grievance Redress Mechanism or use of mobile applications etc.

8.6 Road Maintenance cost

The road maintenance activities are categorized into Routine, Recurrent, Periodic, Specific and Emergency maintenance. Rehabilitation or Reconstruction are opted if the maintenance activities are not enough to manage the road operation. The cost

of these road maintenance activities are presented in table 8.1 below. These figures are average figures of actual expenditure by DoR in recent fiscal years.

S.No	Type of Maintenance	Approximate Cost, NRs. (per km per year)	Remarks
1	Routine	1 lakhs	2 lane
2	Recurrent	2 lakhs	2 lane
3	Periodic	6 lakhs	Nrs. 36 lakhs in every 6 years
4	Specific	Variable, ~ 1 lakhs	Specific locations
5	Emergency	20 thousands	
Total		~ 10 lakhs	

Construction Cost approximately NRs. 50 – 60 million/ km for 2 lane hill road

Table 8.1: Road Maintenance cost

Assuming the road design life of 15 years, the total maintenance cost will be NRs. 15 million in 15 years constituting around 30% of construction cost. If maintenance options are ignored, the same road may have to be re-constructed at least thrice in 15 years incurring more than NRs. 150 to 180 million. Moreover, the additional vehicle operation cost at the time of no maintenance could be 11 to 22 times more than the unit cost expended on road maintenance. (Source: Robinson and Roberts, 1982)

8.7 Road Maintenance Vs. Road Repair

Road Maintenance and Road Repair (Table 8.2) are often misunderstood as similar things. However, they carry quite different meanings.

S.N.	Road Maintenance	Road Repair
1	Road Maintenance are routine activities meant to prevent damages and prolong the life of road infrastructure.	Road repairs are restoration works when road gets broken, damaged or stops performing desired level of service.
2	Maintenance is about making sure repair never needs to happen.	Road Repair is about minimizing Damages and returning everything to normal.
3	For example, clearing drain and culverts, crack sealing, wearing course patchworks, slurry seal, resealing etc.	For example, Major Pothole repairs along with replacement of base course, rehabilitation of sections etc.

Table 8.2: Difference between Road Maintenance and Road Repair

8.8 Road Asset Management Philosophy

For economic sustainability, the Road Asset Management cost should be covered well by the savings in vehicle operation cost raised due to Road Asset Management and maintenance works.

$$\text{RAM cost} \ll (\text{VOC1} - \text{VOC2})$$

where, VOC1 = Vehicle Operating Cost (VOC) without road maintenance works

VOC2 = VOC after road maintenance works

8.9 Status of RAMS in Nepal

The above sections already mentioned the different components

of RAMS. This section presents how Nepal is managing its highway asset referring to those components. In order to arrange and allocate funds for road maintenance, Roads Board Nepal (RBN) was established in 2059 BS followed by the enactment of Roads Board Act 2058 BS. As per clause 14 of RBN act 2058, DoR has been preparing Integrated Annual Road Maintenance Plan (IARMP) every year and RBN has been approving it to allocate maintenance budget with respect to available funds. IARMP is nothing but the integration of Annual Road Maintenance Plan (ARMP)

of highways (previously SRN) prepared by road division offices. They refer to approved norms for estimating probable cost for Routine and Recurrent Maintenance. The periodic maintenance need is rationally identified with the help of traffic volume date, age of surfacing, Surface Distress Index (SDI) and specific requirements. The International Roughness Index (IRI) is measured using bump integrators though IRI data are not utilized for planning or prioritization purposes. The road register consisting of road link information such as road link length, road width and age of construction or surfacing etc. are updated every year in the ARMP software. This is the important component i.e., Road Maintenance Planning. The modern Road Inventory Management System (RIMS) with GIS interface is recently developed by Planning Branch, MIS unit, DOR. However, some technical issues associated with it demand for its further upgradation or reconstruction. Owing to the technical issues, it hasn't been yet linked to the maintenance planning. The road register and traffic volume survey are parts of a minimum 'Road Inventory System'. The SDI and IRI measurements are parts of 'Condition Monitoring'. The rating of road links on the basis of this data is kind of 'Performance Rating'. The unit rates are calculated and entered by individual division offices. The need for maintenance volume is identified by field survey and approved norms. Thus the total cost estimate is calculated which is part of a simple 'Economic Model'. The IARMP presents the total highway maintenance budget demand for next fiscal year. RBN approves Integrated Annual Program (IAP)

and allocates the budget to DoR. The maintenance intervention works are implemented by Road Division offices throughout the country who are responsible for ‘timely maintenance or quick response’. The Heavy Equipment Divisions (HED) provide heavy equipments to Road Division offices for emergency maintenance works. The Road Division offices urgently perform minor construction works by departmental or direct contracting in emergency situations that could be called as a minimum effort towards Climate resiliency. The ‘Monitoring and Evaluation’ are done by Superintending Engineers of Federal Highway Supervision and Monitoring offices and RBN. There are online GRM provisions and RBN has developed Mero Sadak app for addressing road users’ grievances. Thus it could be inferred that the minimum concept of RAMS is being followed by DoR but that needs to be upgraded in order to preserve road asset, maximize service value of road asset and improve service delivery.

Although DoR is following minimum concepts of RAMS, the implementation part has been evaluated to be weaker in terms of both quality and quantity. There are issues reported regarding quality of materials and quality of workmanship that could be discussed in separate heading. The scenario of quantity is presented as follows. In the past 20 years, the scarcity of resources has led to low allocation of highway maintenance budget i.e., less than 40 percent of the yearly demand. The picture of demand vs allocation of maintenance budget including rehabilitation in past five years is presented in Fig. 8.2 below. As presented in fig. 8.2, the allocation in past 5 years were 30%, 33%, 34%, 32% and 44% respectively. The total allocation was 34% of total demand summed up in the past 5 years.

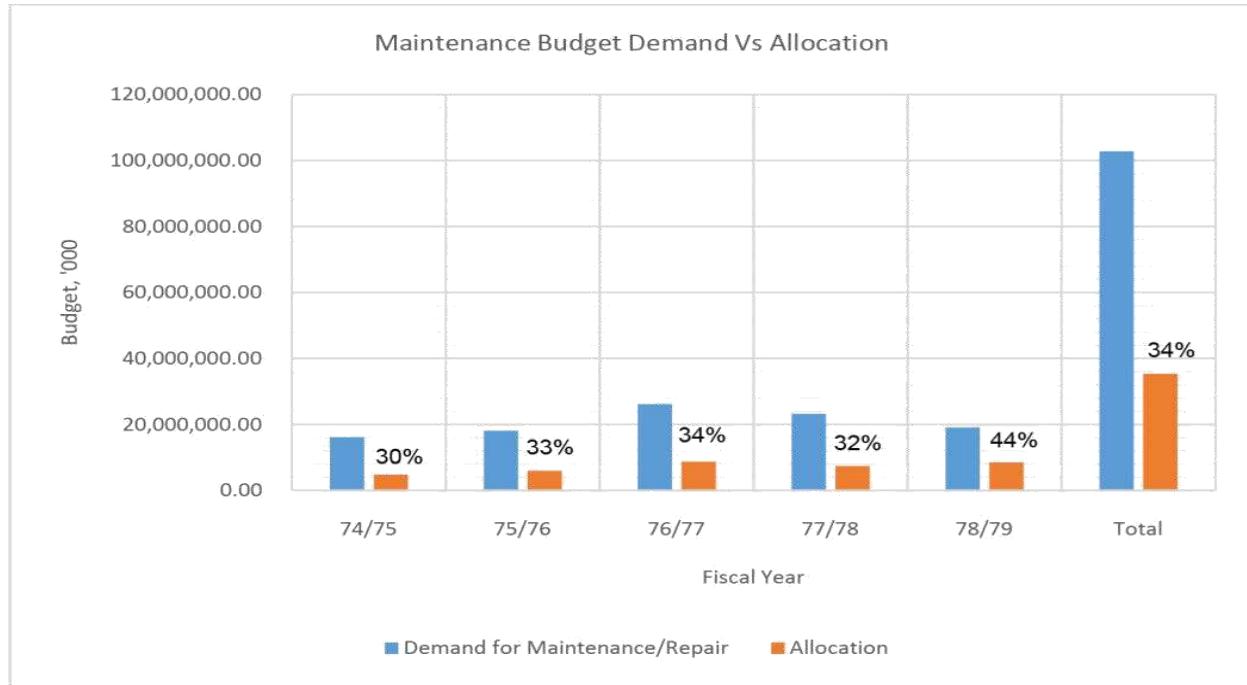


Fig. 8.2 : Scenario of demand and allocation of highway maintenance (including rehab) budget in past five years

The total figure of last five years is also presented because of the fact that the road maintenance liability is function of time and the maintenance backlog has been a serious issue in Nepal needing urgent intervention. The absorption capacity hasn't been exciting either. The scenario of allocation and expenditure of highway maintenance budget in the past five years is presented in the table below. The average figure of five years is shown deliberately instead of the total figure owing to the fact that the budget was not freezed and the liability was transferred to the next fiscal year.

S.No.	Fiscal Year	Maintenance		Absorption capacity, %
		Budget Allocation, NRs.	Expenditure, NRs.	
1	73-74 (2016/17)	7,427,898,267.00	4,278,929,614.00	57.60
2	74-75 (2017/18)	4,986,163,710.00	3,465,769,049.00	69.50
3	75-76 (2018/19)	4,731,104,145.00	3,357,922,702.00	70.97
4	76-77 (2019/20)	6,751,875,080.00	3,504,522,491.00	51.90
5	77-78 (2020/21)	13,444,669,000.00	6,687,655,215.00	49.74
Average		7,468,342,040.40	4,258,959,814.20	57.02

Table 8.3 : Budget allocation and actual expenditure

Considering the average absorption capacity (Table 8.3) of 57% and average allocation of 34% with respect to demand, the actual highway maintenance intervention is calculated to be 19.4% [hint: 57% of 34% of demand] with respect to demand presented in Integrated Annual Road Maintenance Program (IARMP) for highways. It should be noted that the allocation for routine and recurrent maintenance has been 100% of the demand for past several years and the allocation lag was confined to demands in periodic, specific maintenance and rehabilitation. It should also be noted that the expenditure in last two fiscal years was further lowered due to COVID-19 pandemic.

8.10 Conclusion and Way Forward

In brief, RAMS is needed for maximizing financial and service value of Road Asset. The main objective of RAMS is just not to protect Road Asset by repairing and rehabilitating it but to emphasize on maintaining it so that the road would sustain until the end of design service life. Although a minimum concept of RAMS is followed for planning and implementing highway maintenance works, we haven't been successful in establishing fully effective RAMS in Nepal yet. The reasons could be greater focus on road asset building, little awareness regarding significance of maintenance, legal inadequacies, allocation deficit, cumulative maintenance backlog, low absorption capacity, overloading of traffic, enforcement issues etc. In a developing country like Nepal, where demand for asset building is astronomically higher than the capacity, the establishment of robust RAMS and quick response mechanism is necessary in order to preserve expensive Road Asset, reduce cost of vehicle operation and service delivery, save financial resources for further asset building and ensure sustainable development. The political, administrative and social awareness is needed to establish a robust RAMS and strong commitment for institutionalizing it is needed to implement it.

References:

1. Managing Infrastructure Asset for Sustainable Development, UNDESA & UNCDF, 2021
2. Department of Roads, Nepal, www.dor.gov.np
3. Roads Board Nepal, www.rbn.gov.np

सडक सम्पति सम्बन्धित नीतिगत व्यवस्थाहरू

- पन्थ्यौ अध्यावधिक योजना : सडक पूर्वाधारहरूको उचित संरक्षण, मर्मत सम्भार र सडक सुरक्षा गरी सहज सवारी आवागमन सुनिश्चित गरिने |
- बार्षिक विकास कार्यक्रम
- DoR strategy
- NTP 2058
- 20-year road plan
- RBN act and regulation

DoR strategy 1995 declared following strategies about Asset Management

- Introduce network planning: on the basis for allocating resources to the SRN and make the best use of resource available.
- Put the present roads in the Strategic Network into a maintainable condition through a programme of reconstruction, rehabilitation and backlog maintenance (some 1, 138 km or 40% of the bitumen roads in the Network are presently in a poor and therefore unmaintainable condition).
- Execute planned maintenance comprising a programme of integrated routine, recurrent and periodic activities on those roads which are in a maintainable condition.

Policy

- Establish a Network Planning/Monitoring Capability in DOR: HMIS data, RI, SDI, ARMP, IARMP etc.
- Establish a Self-Sustaining Fund for Road Maintenance: Road toll, direct and indirect road user cost (Tax on petroleum product for RBN)
- Improve maintenance operation division: by planned maintenance approach
- Improve periodic maintenance in SRN: resealing of SRN bitumen road at fixed interval 5 to 8 year, considering road age, traffic, strategic importance and survey rating (SDI and IRI)
- Improve bridge maintenance on SRN: Put all bridge into serviceable and maintainable condition.

These all are considering in NTP 2058, and 20 year road plan. From the asset preservation strategy: Policy of maintaining SRN close to constructed standard as far as possible irrespective of traffic flow.

Issues and problems on Asset Management

- Inadequate maintenance fund for road only 30 to 50% of demand.
- Expenditure capacity of available budget for maintenance about 60 to 65%.

- Increasing backlog volume day by day. (MoF is not able to allocate all tax as per RBN act)
- Lack of proper data and records.
- Lack of sufficient number of length worker.
- Inadequate attention in bridge maintenance.
- Maintenance without identifying root cause of defect.
- Donors unwilling to fund for maintenance.
- Reluctance to apply new methods/technology to pavement evaluation such as infra structure, velocity machine for patch work, pavement recycling approach for maintenance etc.
- Absence of QM system, tolerance, quality control for maintenance like for new work and maintenance concreting work 10 cum, number of cube test are same.
- R and D in productivity and durability of investment to reduce overall maintenance.
- Justification of maintenance from economic consideration in secondary or sundry road.
- Justification of construction/upgrading of road more than traffic demand and economic viability etc.
- Perception of higher-level personnel (like MoF and political leadership want to new construction) about maintenance.
- Donors unwilling to fund for maintenance.
- Adoption of climate change environmental and sustainability factor while design to operation in roads mainly in hilly area.
- Right of way encroachment, RoW lease, Tree auction in RoW.
- Effective utilization of user pay principle, road toll etc.
- Maintenance practice like PBMC/RoT
- Climate change adoption of resilient infrastructure as per nature/environment.
- Land, building, vehicles, plants and machinery's asset management.
- Tentative cost of road asset in Nepal 200 billion (2011) and 800 billion (2017) without land

Conclusion

As per the WB study, boosting asset utilization/asset management, scale up demand management measure “potentially could reduce the infrastructure investment demand by 15%. Deterioration of roads in developing countries are extensive, 15 % of road are deteriorating/eroded due to lack of maintenance fund. Every 1 km new road construction 3 km of existing road become no more operation.

One unit cost of maintenance saves 3 to 4 units of VOC. But developing countries like Nepal only invest 30 to 50% fund for infrastructure maintenance (mainly road infrastructure). So, Nepal should move away from the built, neglect and rebuilt mentality for proper asset management/utilization of existing infrastructure.

Within last 10 years traffic congestion in Kathmandu valley has increased many folds. What is your opinion on this issues and mitigation measures for reviewing these problems short- and long-term basis?

“जाम मुक्त संघिय राजधानी हामो चिनारी “

बिषयप्रवेश :

बढ्दो सहरीकरण, सेवा सुविधा र अवसरको कारण सबैको प्रमुख गन्तव्य संघिय राजधानी काठमाण्डौमा करिव ५० लाख जनसंख्या, १५०० कि.मि. (SRN ६०० कि.मि. मात्र) सडकमा १५ लाख सवारीसाधन मध्ये १० लाख सवारी र २० लाख मानिसले दैनिक उपत्यकाको सडक प्रयोग गर्ने गरेको कारण हुने गरेको अत्यासलागदो ट्राफिक जाम हटाउन यहाँको भौतिक संरचना, यातयात व्यवस्थापनमा संलग्न सबै निकाय/सरोकारवालाको प्रभावकारी भूमिकाको कार्यान्वयनबाट मात्र निराकरण गर्न सक्ने अवस्था देखिन्छ ।

Introduction

Traffic congestion (Traffic snarl-up) is a condition on road networks that occurs as use increase, and is characterized by slower speed longer trip times, and increased vehicular queuing. The most common example is the physical use of roads by vehicles.

Causes

Traffic researcher still can not fully predict under which conditions a “traffic jam” may suddenly occur. It has been found that individual incidents (such as an accident or even a single car braking heavily in previously smooth flow) may cause “ripple effect” (a cascade failure) which then spread out and create a sustained traffic jam when, otherwise, normal flow might have continued for some time longer.

- Volume of traffic or modal split generate demand for space greater than available road capacity (i.e., saturation point)

- ट्राफिक लाइटको प्रभावकारी व्यवस्थापन नहुनु
- ट्राफिक नियम/पालना नहुनु
- सडक मै पार्किंग हुनु
- अनाबश्यक शाखा नहर
- वैकल्पिक सडकहरूको अभाव
- सडक पूर्वाधार जस्तै underpass/overpass/flyover/tunnel आदि को अभाव
- Maas transport like BRT/Metro सहित एकिकृत यातायातको अभाव
- सार्वजनिक यातायातको क्षमता न्यून/ निजी सवारी त्यसमा पनि दुईपांचेको सख्या ८० प्रतिशत भन्दा बढी
- Ineffective drainage/sewer system and dumping of garbage on road.
- भित्रि कोर क्षेत्र र घना बजारक्षेत्रमा NMT व्यवस्थापनमा ध्यान नदिनु
- सडकमै जात्रा, बन्द हड्डताल/नारा जुलुस/जन्ती आदि को कार्यक्रम हुनु
- वर्षों देखि योजनामा रहेका बाहिरी चक्रपथ, फास्टट्रैक, कान्तिलोकपथ, सितापाइला धार्के जस्ता सडक हरूको निर्माण सम्पन्न नहुनु आदि

Critical location for congestion: chawahlil, purano baneshwor, nayabaneshwor, saatdabato, koteshwor, lainchaur, kalimati, chakrapath, balaju, thapathali etc.

Impact of Congestion: Road congestion already costs Asian economies as estimated 2 to 5% of GDP every year due to lost of time and increase transport costs.

- High VOC, economy loss, loss of opportunity cost.
- Lengthy journey time
- Loss of time
- Health hazard, stressed and frusted motorists, encouraging road rage.
- Considerable gas emission/air pollution.
- Aesthetically not good i.e. bad appearance of city.
- More vehicle needs for meeting the demand.
- Loss of life in emergency
- In ability to forecast travel time accurately.

Existing Policy

- 20-year road plan which stated about separate master plan for town/cities, traffic management cell etc.
- Vision paper 2064 also stated for improvement of traffic management in Kathmandu valley by applying short term/mid-term and long-term action plan.
- Five-year strategic plan 2073/078 also gave emphasis for 32 junction improvement, erection of ITS, and construction of all alternative road from ktm to terai.
- DoR, DoTM, Traffic police
- का. त. न. बि प्राधिकरण
- का. त. सा.या. विकास प्राधिकरण
- या. व्य.एन र नियमावली आदि

Major issues/Problems

1. Road infrastructure
 - Only 1500 km in which 600 km SRN road network.
 - Road without grade separated intersection like overpass/under pass/flyover/tunnel.
 - Major roads are not wider than 2 to 4 lanes.
 - Road without parking facility/proper footpath
 - Lots of link road
 - Lack of ITS and proper traffic light facility.
 - Poor condition of road
 - Frequently digging and construction works are done by other agencies like Water supply, electricity etc.
2. Institutional issue
 - Kathamandu/Lalitpur etc. local authority, DOTM, DoR, RBN, Traffic police etc. Too many stakeholder but no one have main job for proper traffic management.
 - No NRSC and Road authority
 - Not efficient Traffic reporting by radio, GPS
3. Policy issue /legal issue
 - Lack of policy/law to promote public transport effectively.
 - No more flexi time for worker/market related person and market opening time or travel time

- On line shopping promotion has not yet efficient and used to all public.
- NMT promotion issues are also pending in core area of the city.
- No more incentive to the public transport.
- No any rule to limit the private and public transport/vehicle number till date.
- Lack of application of various tool such as congestion pricing, park and ride, parking restriction zone, vehicle free zone etc.
- Lack of Integrated traffic management system such as BRT, MRT, monorail, sky rail till date.
- No more urban planning for the development of alternative city near the Kathmandu
- Change the rule of traffic rule, regulation and licensing system.
- Lack of legislation for tele community

Counter measures/Available options for the improvement in traffic congestion in Kathmandu valley

One school of thought is that the level of congestion that the society tolerates is rational choice between the cost of improving the transportation system and the benefits of quicker travel. Other school of thought is to link it largely to subjective life style choices differentiating between car owning and car free households.

As the main road network in the city become saturated with traffic, by using the best option from the above two thought may be useful for remedial. They are four options are available to overcome the existing congestion problems in the Kathmandu.

1. Road infrastructure

- Junction improvement
 - grade separate by using appropriate structure such as overhead bridge/underpass/overpass/tunnel/flyover etc.
 - Ramp signaling, drip feeding, merging traffic
 - Reducing junctions/link roads by providing bypass, on ramp and off ramp zones.
- Reversible lanes: traffic management can be done by matching asymmetric demand in which road operate in opposite direction on different time of the day for adjusting/matching asymmetric demand like jatra/marriage ceremony/ VIP management etc.
- Separate lane for specific user such as HOV, BRT, MRT/NMT

2. Urban planning and design:

This method is best suitable for new city and planned city in which car free cities, eco cities and eliminate the need to travel by private vehicle.

3. Supply and demand management

- Increased supply by:
 - Adding more capacity ad bottlenecks such as adding more lanes at the expense of hard shoulder's, safety zone or by removing local obstacles like bridge supports etc.
 - Adding more lane: this has been already applied during the Kathmandu valley road extension project and no option available for that.
 - Creating more new routes like kanti lokpath, fast track, sitapaila dharke etc.
 - Strong traffic management by using ITS/rule and regulation
 - Keep the bus park area out side of the city etc.
- Reduction of demand by:
 - Parking restrictions making motor vehicle use, less attractive by increasing monetary and non-monetary costs of parking.
 - Park and ride like parking outside the ring road and then using NMT or public vehicle only.
 - Reduction of road capacity to force traffic on to travel modes.
 - Road pricing by “cap and trade”, congestion pricing etc.
 - Road space rationing by number plate restrictions based on daily or weekly permits certain type of vehicle only in certain area.
- Traffic management by:
 - Using ITS
 - Traffic reporting via radio, GPS, mobile apps etc.
 - Variable message signs
 - Parking guidance and information systems.
 - Active traffic management system by using hard shoulder as an extra traffic lane using CCTV, VMS (variable massage service) etc.
 - Enforcement of rule and regulation besides the public awareness program.

4. Policy approach by:

- Changing the mode of travel i.e., most and only one appropriate and affordable option for Kathmandu valley traffic management.
- Promotion of public transport and vehicle proving extra facility and subsidies by GoN.
- Promotion of NMT like footpath, electric cycle etc.

- Promotion of telecommuting through legislation and subsidies.
- Promotion of Online shopping
- Flexi time for school opening arrangement.
- Speed limit restriction.
- Adopting Lane splitting/filtering mechanism
- Prevention of visual barrier to driver curiosity like removing of holding board.
- Construction of appropriate road infrastructure like fly over, tunnel
- Construction of smart city and new airport near Kathmandu.

निष्कर्ष

जीवनलाई जिवन्त गराउने, अर्थतन्त्रलाई चलायमान गराउने, आर्थिक सम्बूद्धिमा टेवा दिने, संकटकालिन अवस्थाको निकास र राष्ट्रिय एकता र बिकाशको प्रतिकको रूपमा रहेको सङ्क पूर्वाधार तथा त्यसमा गुड्ने सवारीसाधनलाई चुस्त, दुरुस्त, जाममुक्त ट्राफिक व्यवस्थापन गर्न सबै सरोकारवालाको भूमिका अपरिहार्य देखिन्छ ।

What are the different topics to be covered in carrying out the feasibility study of any road projects and how these studies are conducted and used in project preparation.

“सम्भाव्यता अध्ययन: उपलब्ध बिकल्प मध्येको उत्तम विकल्पको पहिचान”

विषय प्रवेश/परिभाषा

विकास योजना भनेको उपलब्ध स्रोतसाधनहरूको प्रभावकारी उपयोग द्वारा तोकिएको निश्चित समयमित्र निर्धारित उद्देश्य हासिल गर्ने एउटा अनुशासित कार्य पद्धति भएकोले पहिचान गरिने कुनै पनि योजना समग्ररूपमा सम्भाव्य छ /छैन, विभिन्न बैकल्पिक प्रस्ताव मध्ये उत्कृष्ट प्रस्ताव छ/छैन एकिन गरी उत्तम विकल्पको पहिचान गर्नु उपयुक्त प्रकारले स्रोतसाधन परिचालन गरी तोकिएको लक्ष्य/उद्देश्य परिणाम हासिल गर्न गरिने अध्ययन नै सम्भाव्यता अध्ययन हो । आयोजना तयारीको क्रममा योजनालाई समग्ररूपले प्रभाव पार्ने तत्वहरूको सुझाम अध्ययन गरी प्रस्तावित योजना आर्थिक, सामाजिक, प्राविधिक र वातावरणीय हिसाबले अन्य बैकल्पिक प्रस्ताब भन्दा उत्तम भएको निक्यौल गरिन्छ ।

हाम्रो जस्तो विकाशउन्मुख देश जहाँ स्रोतसाधनको उपलब्धता पनि न्यून र परिचालन क्षमता पनि न्यून भएको वर्तमान अवस्थामा सम्भाव्यता अध्ययनको महत्व झनै बढी हुनुपर्नेमा कतिपय बिकासका कार्यक्रमहरू सम्भाव्य नभएपनि स्वार्थ समुहको कारण लगानीले प्रतिफल दिने संशय उत्पन्न गराएको पाइन्छ ।

Criteria for carrying out feasibility study of Highway project.

1. **सामन्य आधारहरू**
 - National development goal, regional development goal लाई आत्मसाथ गर्ने/नगर्ने
 - क्षेत्रिय सञ्चालन हुने /नहुने
 - स्थानीय वातावरण तथा सामाजिक प्रभाव मूल्यांकनको अवस्था
 - स्थानीय बाट योजनाको स्वीकार्यता छ छैन
 - सेवा/सुविधा वा अनुदान वितरणमा समानता हुने /नहुने
 - लैंगिक समानता प्रवर्धन गर्न सकिने/नसकिने आदि बिषयबस्तुहरूको सम्भाव्य विकल्पहरू सहित प्रारम्भिक अध्ययन गरिन्छ ।
2. Technical criteria: It judges the technical feasibility or viability of alternative alignment of highway with the judgement of following technical aspects and factors.
 - 2.1 Preliminary engineering
 - Review available report (pre-feasibility), data and information from secondary sources.
 - Utilize knowledge and experience of local people to address social and environmental issue.
 - Study/identified alternative approved on the basis of pre-feasibility stage with the help of arial photographs, geological maps, political maps, land use map, hazards maps etc.
 - Carryout a field survey of the alignment considering MRE approaches such as slope stability, hazard assessment, hydrological study along all alternatives.
 - Carry out field study to prepare geological, geomorphological, geotechnical and hazard map.
 - Carryout a traffic survey (traffic count and O and D study) for 20-year projection.
 - Carryout survey for infrastructure needs of the existing and future urban settlements and road side facilities like fuel station, cafeteria etc.
 - Study of availability of construction materials and possible access to quarry site.
 - Asses people participation, L-B or capital-based investment methods and appropriate construction

technology.

- Study legal aspect, need for land acquisition, displacement/resettlement issues.
- Finalize the alignment, standards, technology and risk mitigation measures.
- Prepare plan, H and V alignment, typical cross section of walls, drainages etc.

2.2 preliminary cost estimate

- Quantity of civil work based on plan, profile, cross section.
- Rate analysis, cost of civil works.
- Cost of land acquisition and construction cost with O and M tentative.
- Comparison of cost of the alternative using districts using district rate, DoR Norms/rate.

3. Economic and financial analysis

For road sector projects, the major economic and financial factors are based on the direct cost i.e., construction cost reduction of VOC by using HDM III/IV, used for upgrading road improvement, new road links etc. also), indirect benefit from road projects.

Economic analysis is normally made for 20-year road and compare the “without project” and the various “with project” alternative in term of

- Construction costs including rehabilitation in some future year.
- Maintenance costs
- VOC
- Accident costs
- Paid, travel time costs
- Indirect benefits (land use pattern, trade, industry, health education, administration facilities etc.)

Road projects invariably involve many alternative (e.g., alignment, geometric standard, surface standard), which result in various combinations of benefits, cost and net present value. The most common procedure to choose the alternative, which has the highest incremental NPV, which equal to “best value for expenditure”

4. Feasibility Drawing (by using road design software)

- General alignment 1:25000
- Plane and profile 1:5000
- Engineering geological map 1: 50,000
- Slope stability, hazard map etc.
- District demarcation map, typical structure/cross section etc. of road section.

5. Feasibility report

Which include all the finding of feasibility level activities, description of all alignment and comparison also, recommendation of best alignment for future study considering engineering economy, environment and social issue on the basis of selection criteria agreed by the employer.

सम्भाव्यता अध्ययनमा देखिएको समस्या

- राजनीतिक पहुँचमा योजनाहरु पुर्व तयारी नभई योजना छनौट नै नभई एकै चोटी कार्यान्वयनमा जाने गरी बार्षिक बजेट/विकास कार्यक्रममा समावेश हुनु
- NPC ले सम्भाव्यता अध्ययन नभएका योजनाहरु बार्षिक बजेट कार्यक्रममा पर्दा समेत मुखदर्शक बन्नु
- Feasibility/DPR Study गर्न बिज्ञ जनशक्तिको अभाव
- Feasibility अध्ययनमा प्रयोग हुने चलनचल्तीको software जस्तै HDM IV लाई आत्मसात नगर्नु
- Feasibility अध्ययनको बेला अन्य पक्षहरु जस्तै वातावारणीय/सामाजिक प्रभाव मूल्यांकन नभएको कारण स्थानीय बाट परियोजना स्वीकार्यतासमस्या हुनु
- लामो झन्डाटिलो प्रक्रियाको कारण धैरे समय लाग्ने बुझाईले सिधै कार्यान्वयनमा जाने सोंच बनाउनु आदि
- प्राविधिक/सम्बन्धित मन्त्रालय/बिभागले सम्भाव्यता अध्ययनलाई कर्मकाण्डी हो भन्ने सोंच राख्नु
- सम्बन्धित निकायले परियोजनाकोत्यारी नगर्दै ठेक्का निकाल्न हतार गर्नु आदि

सडक विभाग/नेपालमा यसको कार्यान्वयनको अवस्था

नेपाल सरकार तथा बैदेशिक अनुदान/ऋण तथा सहयोगमा संचालित विभिन्न परियोजनाहरु मध्ये बैदेशिक स्रोतको (WB, ADB, JICA, DFID, SDC) आदि का परियोजना हरूको कार्यान्वयन गर्नुभन्दा पहिले pre/feasibility देखि नै सबै पक्षहरूको गहन विश्लेषण मार्फत मात्र कार्यान्वयनमा जाने हुँदा सन्तोषजनक नै मान्न सकिन्छ तर नेपाल सरकारको आफै लगानीमा राजनैतिक आस्था र विभिन्न स्वार्थ समूहका कारण बार्षिक बजेटको करिव ३० देखि ४० प्रतिशत रकम आर्थिक हिसावले लगानी गर्न तथा सम्भाव्यता अध्ययनले समेत उपयुक्त नदेखिएका आयोजनामा बजेट बिनियोजन हुने गरेको पाइन्छ तर केहि राष्ट्रिय गैरव तथा रुपान्तरणकारी योजनाहरु यसको प्रयोग रामै भएको पाइन्छ | कतिपय आयोजना हरु सम्भाव्यता

अद्ययनको नाममा साना सडक, tunnel, पुलहरूको अद्ययन गर्ने र प्रतिवेदन थन्काउने काम समेत भएको पाइन्छ ।

निष्कर्ष

उपलब्ध सिमित स्रोतसाधनहरूलाई उचित प्रयोग गर्ने अभिप्राय र लगानीको उच्चतम प्रतिफल पाइने र दिगो बिकासका लक्ष्यहरु हासिल हुने गरी हरेक बिकाश परियोजना हरूको सम्भाव्यता अद्ययन गरी Best Alternative मध्ये “Best value for expenditure” को लागि सम्बन्धित पक्षहरु लाग्नुपर्ने देखिन्छ ।

Department of Roads is planning to go for a major transportation towards a wide and broad, computer-based management information system (MIS). What are the provisions made to adjust this planning? Write down the objective, strategies and actions set by the development to achieve the goal?

“Computer Based MIS for Network Planning”

HMIS: The system which is capable of gathering (collectively) and providing comprehensive highway data through introducing and operating a unified location/reference system in connection with existing highway and establishing a linkage between the highway digital maps and a variety of highway related data.

Objective of HMIS

- To support DoR for efficient management of SRN/NH and to act as information center on road data.

Purpose “Enhance central highway database management and information system of DoR”

Importance/benefit of HMIS

- To develop HMIS (GIS is prime tool)
- HMIS consists of several components: people, data, procedure, hardware and software.
- The core of the HMIS is data base, however data does not equal information, data is only the basis for information, therefore only selected relevant data is put into database. Another reason for being selective is that data is costly to obtain and maintain.
- In addition to the main objective of planning and programming the HMIS database will also use for R and D.
- Resource planning management/Network planning and Monitoring
- Consistency of Highway management and user convenience are guaranteed by the adoption of unified location reference system.
- More accurate data on highway is available by the provision of locational information.
- Integrated data base made it possible to share data resulting in better utilization of comprehensive data on highway.

Application of HMIS in DoR

The DoR is a governmental agency whose main purpose is to translate government policies for the roads sub sector. The service comprises a road network, meeting the needs of government and the general public which is maintained in a serviceable condition at all times.

यी उद्देश्यलाई सकारात्मक DoR को Strategy Paper 1995 को Objective नै Network planning को Policy मा “Establishment a network planning/ monitoring capability in DoR” लाई कार्यान्वयन गर्ने योजना तथा अनुगमन महाशाखा अन्तर्गत HMIS-IT HMIS for the Strategic Network (now National Highway/NH) लाई Network level र operational level मा संचालन गरिरहेको छ ।

1. Network level: Data covering of road/bridge inventory, pavement condition (IRI, SDI), traffic, construction and maintenance cost and road closure risk is collected and stored in microcomputer. Which is very useful for management information for the preparation of 3 year/5 year rolling programs of periodic maintenance (cyclic, resealing), rehabilitation and reconstruction.
 2. Operational level: Division level/provide information on road inventor, pavement condition, traffic, unit costs and operation performance and building up a historical record of road treatments.
- The successful implementation of network planning is very much dependent on the success of HMIS. Since the resources allocation for management of the SRN/NH will nearly always be less than the required, it is important that road priorities are allocated on the basis of the traffic volume and type, strategic importance and condition.
 - In context of Establishment of RBN, the role of HMIS has become more vital.

Strategy of HMIS

- Prepare, store and update network level in inventory, road condition road maps and traffic related data.
- Develop, update and maintain construction and maintenance cost of data bank.
- Install, develop and maintain analytical model (like HDM IV) for project proposals, annual and rolling periodic maintenance programs.

Status of application of HMIS in DoR

- Annual pavement condition survey on SRN/NH i.e., SDI, IRI survey
- Conduct annual traffic count survey of NH/Traffic data.

- Inventory survey of SRN/NH
- Description of links with chainage/Administrative responsibility.
- Road activity status, planned construction, rehabilitation etc.
- Road type and surface type, carriageway width and RoW width.
- RBN using SDI/IRI data for periodic maintenance by doing ARMP/IARMP annually and very useful for fund allocation for Road maintenance in each Division.
- Upgrading of various NH like East west Highway/Prithvi Highway etc. based on Traffic data/survey/traffic volume survey which is done by HMIS.
- Bridge mapping is done by using BMIS which provide useful information regarding the condition of Bridge along the SRN/NH and planning for maintenance/reconstruction etc.
- Road safety work are also based on the traffic volume and road condition which are also link to HMIS.
- HMIS is also useful for application of “Core Road Network” maintenance program on NH/SRN.

For future effectiveness of HMIS

- For an efficient HMIS, there must be integration of PMMS, BMS, Traffic MS, cut slope Stability etc.
- Incorporate the HDM IV for project planning/new project and upgrading of roads.
- DoR must be used the HDM IV and HMIS data for any budget allocation on NH either in maintenance/bridge construction/upgrading etc.
- Tie up/Link the “Mero Sadak” app of RBN to HMIS of DoR.
- HMIS also used for asset/RoW/encroachment management by DoR.

निष्कर्ष

सूचना प्रविधिको बदलिदो परिवेशमा सडक विभाग बाट संचालित हुने सम्पूर्ण कार्य हरु योजना तर्जुमा देखि सडक सम्पति संरक्षण सम्म HMIS को प्रयोग लाई समयसापेक्ष बनाउन software सहित दक्ष जनशक्ति तयार गरी कार्यान्वयन गरे मात्र सहज, सुलभ, सन्तुलित, सुरक्षित तथा भरपर्दा दिगो यातायात सडक पूर्वाधार बनाउन सकिन्छ ।

GIS Solution for Highway and Roadway Management

- Managing modern roadway is a complex business from computerized traffic control system and incident and safety management system to effective capital improvement planning and maintenance activities highway manager must draw on wide array of technologies to effectively manage today's roadways.
- Comprehensive geographic information system (GIS) le better operational efficiency and result for agency wide/wise information integration.
- Transportation planning: GIS model can inform/provide data for forecasting travel demand, plan capital improvement, to support strategic decision making and environmental evaluation etc.
- Traffic operation: GIS play central role for traffic management strategy .eg. traffic managers can visually manage bottleneck and related information to quickly respond and views can be shared with public over the web, giving driver latest information.
- Traffic safety analysis by accident information.
- Highway asset management: GIS not only facilities data collection, processing and display but also integrate asset mapping with project management and budgeting tools so that construction, operational and maintenance expense can be centrally managed and accounted for.
- Maintenance and work order management: efficient and productive use by maintenance management system.
- Construction management: GIS integrated with PM and financial software, helps us to track performance. Helps to organize all relevant project information.
- Environmental management: identify wetland, drainage, sensitive habitats and planner can understand the impact land use decisions.

It is often voiced that quality control is not up to the mark in our constructions. Explain the provisions made for quality assurance in the standard specification and conditions of contracts. Discuss why quality work is not resulting and suggest remedial measures for it.

“गुणस्तरीय पूर्वाधार: सम्बृद्धिको आधार”

Definition

Degree of goodness of fit for purpose is called quality. In quality control, operational inspection and test activities are done at different stages that used to confirm quality requirement has been met or not. Quality is pertinent issue in our construction industries specially in infrastructure project because of one third of annual budget has been allocated for that.

Nepal has taken full fledged membership of WTO which are for stringent quality control in order to compete in global market. Also, direct and very strong relationship exists between sustainability and quality. Public faith will be lost due to poor quality and also safety issue is related to quality. Hence, quality work should be up to a mark level. Quality control in construction typically involves insuring compliance with minimum standards of material and workmanship in order to insure the performance of the facility according to the design. There minimum standard is contained in the specification.

समस्याको पहिचान: “ गुणस्तरीय पूर्वाधारको लागि स्थापित राज्य संयन्त्र असफल हुदै गएको”

Legal provision and policies related to quality

- Standard specification for road and bridges works 2078
- Provision and conditions for WTO membership
- Public procurement Act and Regulation
- Governance Act, 2064
- Professional code of conduct and ethics
- Engineering council act and regulation
- National code of conduct, 2075
- Departmental different directives, guideline, standard design, drawing, methodology for various works.
- Minitrial/Departmental Level Monitoring and Evaluation Branches
- NPC, Constitutional committee etc.
- Various oversight agencies like CIAA, NVC, OPMC, Office of Auditor General etc.

The provisions made for quality assurance in the standard specification and conditions of contracts

1. Departmental strategy
 - Strengthening institutional organization of DoR
 - Establishing working procedure
 - Improving directives, guideline and etc.
 - Continuing administrative and technical backup
 - Strengthening material testing lab
 - Institutionalizing monitoring and evaluation mechanism and auditing
 - Strengthening private sector organization in quality work.
 2. Quality assurance in the standard specification
-
3. Quality assurance in the conditions of contracts

Issues of quality

- Man related: availability of professional/skilled and ethical manpower.
- Material related: duplicate/availability of substandard construction materials.
- Money related: concept of “make money any how”
- Method related: neglecting standard procedure and methodology.
- Minute related problems: no enough time for survey, design, construction, supervision and documentation.
- Other issues such as WTO membership and quality, community participation and quality, quality control in small and maintenance works, corruption and quality etc.

Problems (Reasons for not resulting Quality or Finding regarding Quality in DoR)

1. Institutional
 - The laboratory and testing facility are inadequate and poorly maintained
 - DoR work's concentration is off SRN/NH
 - No appropriate mechanism and system of quality monitoring
 - Ritual adherence for submission or compliance with QAP, work schedule
 - Dual role as site engineer and lab in charge
 - Lack of high moral in field staff.
 - Lack of appropriate capacity for public procurement and contract administration.
2. Technical
 - Absence of professional and trained manpower
 - Insufficient staff for lab work
 - No proper and well set up in lab like continuing supply of electricity, water supply, maintain temperature etc.
 - Test reports are as ritual and only for billing/payment purpose.
 - Lack of coordination with IOE/Department of measurement and quality for calibration in time.
 - No clear-cut responsibility/accountability between the lab and construction and supervision staffs.
 - Hesitation for use of new method and technology for lab and construction works.
3. Financial
 - Test reports are as ritual and only for billing/payment purpose.
 - No body have priority for well lab set up and operation.
 - Insufficient budget allocation by MoF for lab/ considering as general office but in lab there is must be continuing supply of electricity, water supply, maintain temperature etc.
 - No additional allowance for lab staffs
 - No clearcut guideline/directives for professional liability insurance as per PPA/PPR
 - Lack of management of site office/camp (all technical staffs are near offices)

- No any tie up the insurance policy with quality of works.

4. Other

हचुवाको भरमा गरिएको योजना छनौट, हतारमा गरिएको DPR, राम्रो निर्माण सामग्रीको अभाव, ब्यबस्थित प्रयोगशालाको अभाव, काम शुरू गर्ने बेला देखि नै संगठित रूपमा आउने अवरोध जस्तै खानी जन्य पदार्थको निकाशी र उपलब्धता, चन्दा आतंक, दण्डहिनता, स्थानीयबाट बिकासको काममा बिरोध गर्ने वा दलीय राजनीतिक गर्ने परिपाटी, निजी क्षेत्रमा व्यवसायिकताको अभाव आदि।

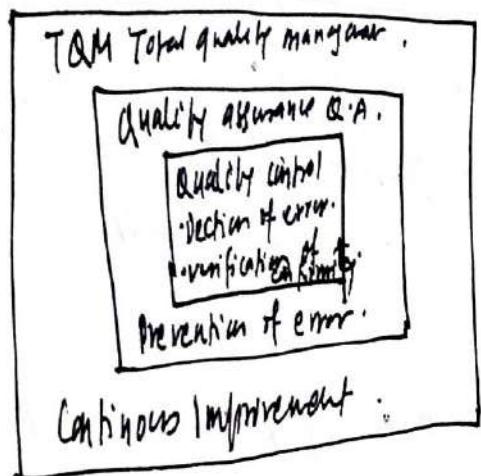


fig: Quality management,

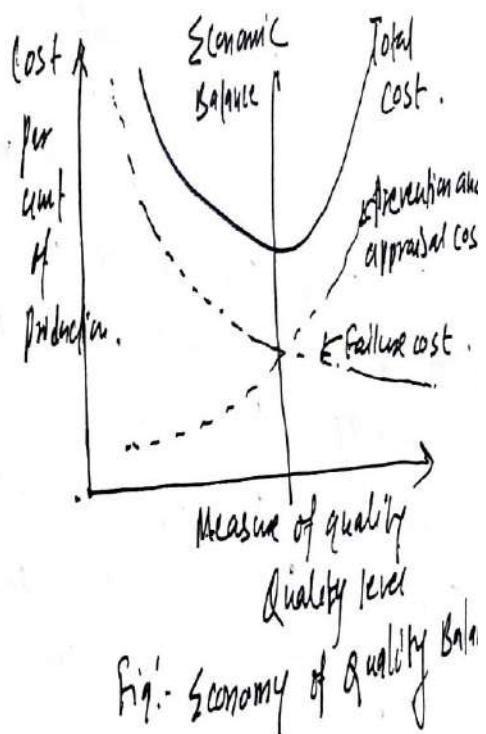


fig: Economy of Quality Bal

Suggestion for Quality Work/ Remedial Measures for Quality

“Let’s no work for petty gains and let’s work for national interest as a whole”

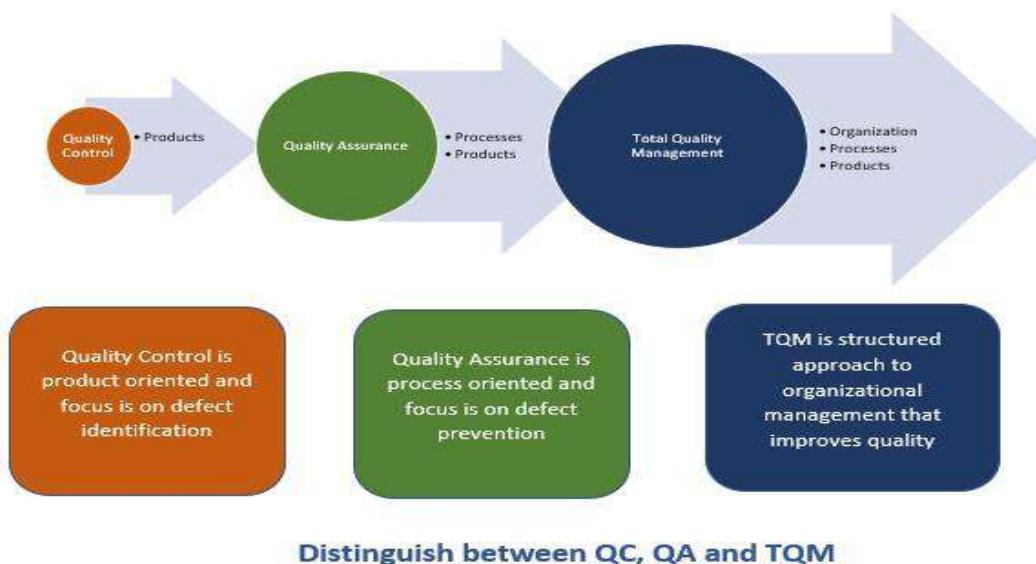
- Improve and rectify the above stated issues/problems efficiently.
- DRO labs to be upgraded with well equipped.
- CRL to be strengthened and fully staffed and establish at least 5 labs as CRL in appropriate location of the country under DoR.
- Appropriate training to the staffs about modern construction method and technology.
- Submission and compliance of QAP/work schedule mandatory.
- Proper work division and site camp/site office should be managed efficiently.
- Strictly follow the PPA/PPR/ design guideline/standard specification/norms etc.
- Update/review and prepare the appropriate guideline/technical note as per the work nature.
- Use of appropriate technology such as bio engineering/MRE approach for gully erosion/stability of slope etc.
- Application of quality and performance audit in all major part/works.
- Tie up the work performance to the reward and punishment of staffs.
- Strengthened the over sight agency like NPC/NVC with appropriate norms and guidelines.
- Clear guideline and directives for PLI
- Always be careful by all concern party and staff from the selection of the project to the operation and maintenance with respect to the sustainability and quality.
- Always careful about the quality material, skilled manpower, appropriate methodology, and modern technology for best quality.
- Promotion of modern technology such as patch master, velocity machine for patch, recycling technology for pavement overlay, x ray machine, bridge inspection vehicles, TBM for tunnel, infra doctor for pavement evaluation, RMC for concreting, trench less technology, drone supervision, precast technology, pile boring machine, failure bencher for tree cutting, Oster berg cell or Dynamic test kentledge for test of pile as per the site condition.
- Proper coordination of stakeholder and agency

- Effective monitoring and evaluation of the work and workmanship including concerns all staffs.
- Compliance the accountability and moral along with the professional code of ethics.

निष्कर्ष

गुणस्तरीय पूर्वाधार मार्फत दिगो बिकासको लक्ष्य सहित समृद्ध नेपाल र सुखी नेपाली हुने चाहनालाई सकार पार्न हामो कार्य संस्कृतिमा रहेको परम्परागत सौच, नीति, नियम, प्रक्रिया, मापदण्ड आदिमा “Paradigm shift” गर्दै समय सापेक्ष दक्ष जनशक्ति, गुणस्तरीय निर्माण सामग्रीको उत्पादन/वितरण सहित modern technology, working procedure /standard/norms आदिको प्रयोग गर्ने संस्कृतिलाई सबैले आत्मसात गर्नुपर्ने देखिन्छ ।

TQM, Quality Control and Quality Assurance



Criteria	Total Quality Management	Quality Control
Software difference	TQM focuses on continuous improvement in the processes for making the software	QC is concerned with ensuring that a product meets the prescribed technical standard of quality and meets the customer's requirements
Types of experiments performed	Causal research that analyses the effect of the independent variable on the dependent variable. It helps find the effectiveness of TQM implementation	Experiments related to inspection, review, determine where to set the inputs to get the output as desired
Design of experiments	<p>DOE that focuses on continuous improvements can be used here, e.g. Taguchi Method is a process/product optimization method that is based on 8-steps of planning, conducting, and evaluating results of matrix experiments to determine the best levels of control factors.</p> <p>The primary goal is to keep the variance in the output very low even in the presence of noise input</p>	<p>DOE that focuses on products can be used here. DOE's that deal with planning, conducting, analyzing, and interpreting controlled tests to evaluate the factors that control the value of a parameter or group of parameters. These could be related to quantitative research e.g.</p> <p>Causal-Comparative/Quasi-Experimental. It attempts to establish cause-effect relationships among the variables</p>
Statistical techniques	<p>Statistical methods for process capability analysis are used here.</p> <p>Assessment of capabilities of a process/ machine relating to expectations of a client is widely understood (a client can be the subsequent process)</p> <p>In this range, it determines the capability indices of a process/machine. Focus is to reduce variations</p>	<p>The 7 Quality Control (7-QC) Tools are used here:</p> <ul style="list-style-type: none"> - Cause-and-effect diagram (also called Ishikawa diagram or -fishbone diagram) - Check sheet - Control chart - Histogram - Pareto chart - Scatter diagram - Stratification
Department metrics	<p>The Baldrige framework was used to identify six key measures of TQM success:</p> <ul style="list-style-type: none"> - Management involvement - Strategic quality planning - Employee involvement - Training - Process capability - Customer perceptions 	Metrics are based on reduction in defects, Defect rate and Defect density in code.
Performance goals	Goals are measured based on TQM concepts, namely Customer Focus, Leadership, Teamwork, Continuous Improvement, Measurement and Benchmarking, QFD (Quality Function Deployment) to translate Customer Needs into metrics	Current defects, defect rates, and defect density is quantified. Performance goals are set up to reduce these by a certain percentage in a specified time
Certification	Total Quality Management Professional (TQMP) Lean Six-Sigma Certifications	Quality Control Certification or Quality Assurance Certification
Eligibility	There are no pre-requisites	There are no pre-requisites
Course Description	The program covers all basic TQM principles and gives the student a solid understanding of TQM and how it is implemented in a business environment. Lean Six-Sigma Certifications have different levels and can be taken up	They instruct students in quality control techniques and methods implemented in the field of industrial manufacturing. Courses are there in industrial engineering technology, manufacturing, architecture, biological sciences, etc.
Salary	Varies based on experience and industry	Varies based on experience and industry
Jobs	Manager / Sr. Manager in TQM / Assistant Manager TQM / TQM Lead	Quality Control Manager / Quality Control Engineer/Assistant Manager Control / Manager Quality Control

QUALITY CONTROL: Verifying the Quality of the Output.

- This is the process by which entities review the quality of all factors involved in the production. This covers cycles from receiving materials and manufacturing to testing, packing and shipping. So, it is product oriented and focuses on detect identification.
- Quality control is the most basic level of quality management. It includes all activities of inspecting, testing, or checking a product to ensure it meets the requirements.
- The intent of QC is to identify any issues—and either fix them or eliminate them—to make sure the end result is as expected. QC is typically conducted reactively, at the end of the process

QUALITY ASSURANCE: Managing and Planning for Quality

- Quality assurance takes your quality management process a step further. QA is focused on planning, documenting, and agreeing on the steps, rules, and guidelines that are necessary to ensuring quality. The planning happens at the beginning of a project, and the end result is a documented quality plan.
- The main purpose of QA is to prevent defects from entering into your product in the first place, so it's a proactive measure to ensure quality. Planning for quality is key to mitigating risks, but also saves you a lot of time and money.
- Contractor implements quality control in compliance with approved QAP. Engineers' approval of QAP not relieve contractor from his responsibility works to be performed as per specification.
- Engineer's approval of QAP not exempt the contractor of any procedure to inform the engineer in writing a request for engineers' approval.
- Contractor shall monitor and update QAP as per the requirement and instruction of Engineer.

Strategy of Quality assurance in Nepal.

- Introduce the rule of "do it right at first time".
- Introduce the rule to get quality at first time.
- Quality audit to enforce to performance the all-sequential activities of quality control system.
- Right at design stage, the quality assurance system needs to be considered since choice of material and workmanship lead quality achievement their availability.
- Defect liability period should be set 5 years.
- QAP should be based on detailed project programme of work.

Policy of QAP or policy for quality work in sequential order

- Use of quality material.
- Use of skilled and experienced manpower.
- Use of standard equipment and tools.
- Use of standard methodology for workers.
- Product will be within the specified quality and requirement.
- Proper monitoring and evaluation.

QAP includes

- The sequential of work step by step
- Quality control schedule *
- List of sources of material and manufactured certificate, their main characteristics etc.
- Testing, team, lab and site test plan
- List of tests and quality control procedures to be implemented by sub-contractor if any
- Organization for quality control and procedure and their man power.
- System used to M and E the aspect of project, services facility to determine of quality standard are being met.

Quality control schedule *

- Summary of test schedule and testing programme detailing list of tests for compliance, laboratory trials, construction control tests their frequencies tests for acceptance of completed works.
- Summary of list of critical acceptance testing procedure corresponding to tasks on critical path according to construction programme.
- Estimate of number of tests to be carried out at outside of lab and mention name of lab proposed to carry out tests.

TOTAL QUALITY MANAGEMENT

- It is a management approach and built with three different things like method, purpose and system. Firstly, system includes all persons of all divisions at every level, secondly, the method runs itself with the management method and analytical method. Thirdly, purpose absorbs the quality, cost, environment, delivery and safety.
- The important 6 C's of TQM are commitment, culture, continuous improvement, cooperation, customer focus, and control.
- TQM is the integration of all functions and processes within an organization in order to achieve continuous improvement of the quality of goods and services. Integrated organizational effort designed to improve quality of processes at every business level. TQM may also be defined as performance superiority in delighting customers.

Total quality management (TQM) means:

1. Satisfying customers first time, every time;
2. Enabling the employees to solve problems and eliminate wastage;
3. A style of working, a culture more than a management technique;

4. Philosophy of continuous improvement, never ending, only achievable by/or through people.

Quality management system (QMS) and Quality Management Plan (QMP)

QMS ensure that the intended degree of excellence is attained.

QMS have three elements

1. QAP
2. Quality control Process (QCP)
3. Quality Audit system (QAS): tracking and documentation of quality assurance and quality control program.

Quality management plan

Define the acceptable level of quality which is typically defined by the client and describes how the project will ensure this level of quality in its deliverables and work progress. To get quality, steps are

- Quality design
- Quality assurance plan approval and implementation
- Following the quality policy (as stated in above)
- Strong implementation of quality control system.

Elements of quality assurance system for road projects

1. Assessment of requirement of road project: design criteria/ design life minimum acceptable level of riding quality, higher the standard of road, higher will be the cost.
2. Choice of quality materials and design: evaluating pavement thickness and composition for the assessed traffic and sub grade conditions to meet the design and riding quality.
3. Development of technical specification and acceptance criteria.
4. Choice of construction method, equipment and plant must meet requirement of technical specification as demanded by design criteria.
5. Field supervision and quality control of material, construction, techniques, surface finish to desirable profiles such as
 - Inspection and testing of material, production process and the end product
 - Measuring variations from the predetermined standards
 - Taking corrective action to minimize adverse variation and
 - Accepting and rejecting the works.
6. Assessment of quality finished road.
7. Periodic inspection and maintenance measures during DLP and after that also in periodic interval as per the pavement evaluation.



	Quality Assurance	Quality Control
Definition	QA is a set of activities for ensuring quality in the processes by which products are developed.	QC is a set of activities for ensuring quality in products , focused on identifying defects in the products produced.
Focus	QA is a proactive quality process which aims to prevent defects in the process used to make the product.	QC is a reactive process to identify (and correct) defects in the finished product.
Goal	To improve development and test processes to reduce defects when the product is being developed.	To identify defects in a developed product before it's released.
How	QA establishes good quality management systems and the assessment of its adequacy and conformance audits of the system.	QC finds & eliminates sources of quality problems through tools & equipment so that customer's requirements are continually met.
What	Prevention of quality problems through planned and systematic activities including documentation.	The activities or techniques used to achieve and maintain the product quality, process and service.
Responsibility	Everyone on the team involved in developing the product is responsible for quality assurance.	Quality control is usually the responsibility of a specific team that tests the product for defects.
Example	Verification is an example of QA	Validation/Software Testing is an example of QC
Techniques	Statistical Tools & Techniques can be applied in both QA & QC. When they are applied to processes (process inputs & operational parameters), they are called Statistical Process Control (SPC); & it becomes the part of QA.	When statistical tools & techniques are applied to finished products (process outputs), they are called as Statistical Quality Control (SQC) & comes under QC
As a Tool	QA is a managerial tool	QC is a corrective tool
Orientation	QA is process oriented	QC is product oriented

Construction management (QM)

- The management of works starts much before the actual commencement of work. It includes activities such as invitation of tenders, selection of contractors, mobilization and actual execution.
- The following aspect deserve careful consideration in construction management.
 1. Management of materials.
 2. Management of labor.
 3. Management of equipment.
 4. Management of finance, fund etc.
- Efficient management of materials includes activities such as assessment of requirement, location of sources and supply and purchase, transport, storage and issue on works.
- The procurement should be so phased that works do not suffer at any stage due to lack of material and at the same time, the stock of material is not unnecessarily high.
- Ensure about the adequate supply of labor, amenities to labor such as temporary housing, medical facilities.
- Equipment management is one of prime importance because of high cost. The efficient equipment management should be done to keep in view.
 - Selecting of proper size, number and specified equipment to do the work.
 - Preparation of utilization programme.
 - Experienced operators and adequate maintenance.
 - Safety aspects.
- Financial management covers budgeting, keeping proper account ensuring adequate flow of funds and keeping watch over the financial progress.
- Construction Management plan (QMP) cover
 - Construction methodology for each item with cross reference to specification.
 - Construction schedule based on CPM and PERT method.
 - Cash flow pattern with respect to construction schedule and methodology presented in the form of S curve.
 - Quality assurance plan (as stated in above)
 - Project monitoring system: design of appropriate monitoring system, monitor construction methodology, construction schedule, cash flow pattern etc.

NEPAL'S CONNECTIVITY WITH NEIGHBOURING COUNTRIES

WHAT ARE PARAMETERS OF CONNECTIVITY

- Road/ Rail
- Waterways (including inland water)
- Air connectivity
- Transmission lines, energy grids, energy trading, energy market
- Information Highways, ICT, Optical Fiber networks
- Oil and Gas pipelines
- Soft connectivity- policies and agreements

CONNECTIVITY ALSO INCLUDES

- Economic Corridors
- Trade and investment zones
- Policy harmonization
- Regional economic integration
- People-to-people connectivity, cross-border movement, tourism

CATEGORIES OF CONNECTIVITY

- **Hard connectivity-** infrastructure (road, rail, transmission lines, optical fiber, pipelines, waterways, air connectivity etc.)
- **Soft connectivity-** agreements (e.g. trade, transit and transport agreements), policy harmonization, **customs cooperation, and other border procedure, movement of people etc., enabling institutions etc.**

IMPORTANCE OF CONNECTIVITY

- Improves economic integration
- Facilitates trade, transit and investment
- Boosts tourism
- Increases opportunities for business
- Enhances people-to-people contacts
- Enhances competitiveness in trade and investment

- Contribution to environmental, food and energy security
- Contributes to inclusive economic growth

LEVELS OF CONNECTIVITY

- Bilateral
- Sub-regional
- Regional
- Inter-regional e.g., Asia-Pacific

CONNECTIVITY WITH INDIA

- Open border, many customs points
- Integrated border check-points
- Oil and gas pipelines
- ICT connectivity (optical fiber connection)
- Transmission lines: Dhalkebar-Muzafarpur line (140 km), Butwal-Gorakhpur transmission line (135 km proposed)- under MCC
- Air connectivity
- Modi's "HIT formula"/ faded
- Proposals for railway extension to border cities/ KTM-Raxaul

CONNECTIVITY WITH CHINA

- Agreement for Trans-Himalayan Multidimensional Connectivity (road, rail, air transmission lines, optical fiber network, etc.)
- Transit Agreement and its Protocol – ports and points for transit: 6 border points , 4 sea ports (Tianjin, Shenzhen, Lianyungang and Zhanjiang) , 3 land ports (Lanzhou, Lhasa and Xigatse)
- Proposals for railway extension
- Proposal for road extension and tunnels
- Flights to and from China
- BRI- also a connectivity blueprint/ opportunity for missing links

OPPORTUNITIES AVAILABLE UNDER THE BELT AND ROAD INITIATIVE (BRI)

- BRI will "help meet infrastructure gaps, connect countries supply and value chain, increase in trade and employment and boosting economic growth"- IMF
- Fund for infrastructure projects / banks and institutions
- Opening up of markets
- Connectivity
- More investment
- Economic integration
- People-to-people contacts

FACTORS AFFECTING THE SUCCESS OF THE BRI

- Strategic objectives versus economic objectives
- Superpower rivalry/ Strategic competition
- Uncertainty of cooperative international environment
- Political controversy and backlash (e.g. Malaysia)
- Hype of the "debt trap"
- Delay in project selection / implementation

ISSUES TO BE CONSIDERED UNDER BRI PROJECTS

- Economic viability, not political preference for project selection
- Complementarity with other initiatives
- Debt sustainability
- Transparency
- Focus on missing links
- Using transformative opportunity/not fear

SAARC CONNECTIVITY

- SAFTA
- SATIS
- SAARC Investment agreement (proposed)
- SAARC Multi-modal transport study
- SAARC Regional Transport Agreement (proposed)
- SAARC Framework Agreement for Energy Cooperation (2018)
- People-to-people contacts

MULTI-MODAL TRANSPORT AND CONNECTIVITY

- SAARC Regional Multi-modal Transport Study (2006)

- 10 regional road corridors, including
- Karachi-Lahore-New Delhi-Nepalgunj-Kathmandu (3,147 km)
- Kathmandu-Kakarbhitta-Phulbari-Banglabandh-Dhaka-Chittagong or Mongla (1,442 km)
- Kathmandu-Kakarbhitta-Phuentsoling-Thimpu (1,011 km)
- Kathmandu-Birgunj-Kolkata-Haldia (1,323 km)
- Kathmandu-Bhairahawa-Sunauli Lucknow

MULTI-MODAL TRANSPORT AND CONNECTIVITY

- SAARC Regional Multi-modal Transport Study (2006)
- 5 regional rail corridors including: Birgunj-Raxaul-Kolkata-Haldia, Birgunj-Raxaul-Katihar-Rohapur-Chittagong with links to Joghani
- 2 regional inland waterway corridors
- 10 maritime gateways
- **16 aviation gateways**

REGIONAL INITIATIVES AND CONNECTIVITY NETWORKS.

- Bangladesh-China-India-Myanmar (BCIM) Corridor
- China-Pakistan Economic Corridor (CPEC)
- Bangladesh-Bhutan-India-Nepal (BBIN) –transport agreement, South Asia Sub-Regional Economic Cooperation (SASEC)
- BIMSTEC Transport Infrastructure and Logistics Study (2009)
- Asian Highway, Trans-Asian Railway, Asia-Pacific Information Super Highway (UNESCAP)

SOUTH ASIA SUB-REGIONAL ECONOMIC COOPERATION (SASEC)

- Started as South Asia Sub-Regional Cooperation, Growth Quadrangle between Nepal India Bhutan and Bangladesh under SAARC
- Political differences- changed to SASEC under ADB support Invested \$ 12.5 billion (2002-2019) in 55 projects, 17 related to Nepal
- Focus on transport connectivity, transmission master plan, trade and transit facilitation, economic corridors, investment in infrastructure, information highways, customs harmonization
- Connectivity projects including the improvement of the East-West Highway, Roads improvement to border connectivity,
- BBIN
- Bangladesh Bhutan India and Nepal sub-regional economic cooperation
- BBIN Motor Vehicles Agreement (2015)- includes passenger, personal and cargo vehicles across borders
- ADB to provide Secretariat support and help implement the MVA
- Bhutan yet to ratify
- Can boost connectivity

TRADE AND INVESTMENT ZONES

- SAFTA
- BIMSTEC free trade agreement
- SATIS (proposed)
- Regional Investment Treaty (proposed)
- Investment Zones
- Requires other forms of connectivity

ECONOMIC CORRIDORS

- Transport corridor augmented with economic infrastructure, trade and investment facilitation, integrated borders
- Strong basis for connectivity
- Infrastructure, distribution networks
- Harmonization of infrastructure (e.g. broad and narrow gauge railways)
- Enabling policy framework and policy harmonization, policy reform
- Stimulating trade (free trade zones) and investment
- Hubs for manufacturing, services etc.
- Boosting productivity and economic growth
- Economic corridors help regional economic integration (constitute building blocks of regional cooperation)

BILATERAL AND REGIONAL TRANSIT AND TRANSPORT AGREEMENTS

- Importance of smoother transit for integration of the LDCs and for better trade
- Transit as trade facilitation in the SAFTA
- Bilateral transit agreements with India, China and Bangladesh
- Need for a regional transit agreement
- Focus on regional economic integration and economic corridors
- Important for landlocked countries like Nepal
- Bilateral and regional transport agreements (BBIN, SAARC, BIMSTEC)

CONNECTIVITY: LANDLOCKED TO LAND-LINKED

- Regaining Nepal's historic significance in entrepot trade
- Inclusion in the OBOR network, missing links
- Clearer concept of transit economy
- Policy harmonization, bilateral and regional agreements
- Investment in connectivity infrastructure
- Trilateral cooperation, clearing political sensitivities
- More in-depth study, not just slogans
- More proactive diplomacy
- Implementation of agreements
- Action-plan and projects
- Utilization of windows of funds, accessing various funds (e.g., BRICS Bank, Silk Road Fund, AIIB)

PROBLEMS IN CONNECTIVITY

- Fragmented surface transport networks
- Ineffective and weak transport agreements
- Weak air connectivity
- Poor state of infrastructure
- Geographical barriers
- Political issues /lack of political consensus, linking connectivity to political issues (e.g. 5G contract)
- Absence of policy harmonization
- Weak regional cooperation/ Least integrated region
- Non-utilization of/ weak access to available funding
- Non-implementation of reports (SRMTS, Asian Highway etc.)
- Too many proposals of others, not our own, not implemented
- Strategic disorientation

Challenges in Cross Border and Transit Transport by Road

- The Bangla bandha port was formally inaugurated in May 2004 but has not been fully functional owing to the absence of a transit agreement for the use of Indian territory as a transport route for Bangladeshi, Nepalese and Bhutanese trade cargoes.
- Absence of regional transit trade
- Nepali transport trucks are not allowed entry into Bangladesh and must exchange their cargo at the "zero point" of the Indo-Bangladesh border.
- Facilitating transportation of goods in transit for intra –regional as well as extra-regional trade in keeping with the spirit of Article V of the General Agreement on Tariffs and Trade (GATT) relating to "Freedom of Transit"
- Lack of cooperation and integrated approach among border agencies
- Provision of multimodal transport facility (with rail transit, regular container train in the region)
- High trade transaction costs (transport costs slow down regional integration)
- No fast-track lane and priority of goods in transit to cross the border
- Strengthen cross-border infrastructure (move from road corridors to economic corridors)
- Import and export trade is imbalanced.
- Nepalese trade is mostly inclined with India and China

CONNECTIVITY: WAY AHEAD

- Operationalization of available connectivity and transport transit networks (e.g., ports and routes)
- A connectivity blue print for South Asia (ASEAN has its connectivity master plan)
- Implementation of transit and other agreements with China
- Regional transit and transport agreements
- Connectivity thrust on the BBIN, BIMSTEC and SAARC
- Gaining from BRI – establishing missing links, clarifying myths of debt trap, economic viability of projects, political consensus
- Connectivity-driven approach to development
- A connectivity blueprint of our own
- Partnering in initiatives with connectivity elements (BRI, MCC)
- Policy harmonization/ Soft connectivity
- Implementation of free trade agreements (SAFTA)
- Integration into the supply and value chain
- Regional investment protection treaties
- Strategic prioritization of connectivity

Strengthening connectivity of countries in South and Central Asia, particularly Landlocked and Least Developed Countries, to link with sub-regional and regional transport and trade networks.

Regional connectivity: SWOT Analysis

Strengths

Weaknesses

- Political willingness for regional collectivity
- Significant amount of transport initiatives (14 initiatives)
- IFI's involvement
- Significant amount of success stories, case studies and best practices
- Willingness for cooperation (between Central Asian countries)
- Knowledge sharing and capacity
- Trade promotion
- Existence of regional and international legal instruments

Opportunities

- Involvement of shippers and cargo movers
- Euro-Asian region: Significant amount of developing countries
- Technology and GIS applications
- New approaches from IFI's (holistic approach, i.e. not only infrastructure development but also tackling of soft barriers such as cross-border facilitation)
- Integrated services and marketing tools
- R&D and Innovation actions
- Exchange of experience between countries

- Lack of implementation mechanisms and financial resources
- Lack of preparing bankable projects
- Lack of corridor concept
- Significant amount of transport initiatives (14 initiatives)
- Political willingness
- Missing links
- Harmonization of border-crossing procedures
- Lack of attracting cargo
- Lack of awareness of business community

Threats

- Significant amount of transport initiatives (14 initiatives)
- Lack of financial resources
- Lack of innovative ways to finance projects
- Lack of capacity to prepare bankable projects
- Physical security
- No cooperation and strict initiative focus
- No political willingness
- Protracted/ unresolved conflict
- Bureaucratic processes between states
- Political preferences in the classification of project prioritization

Action Plan

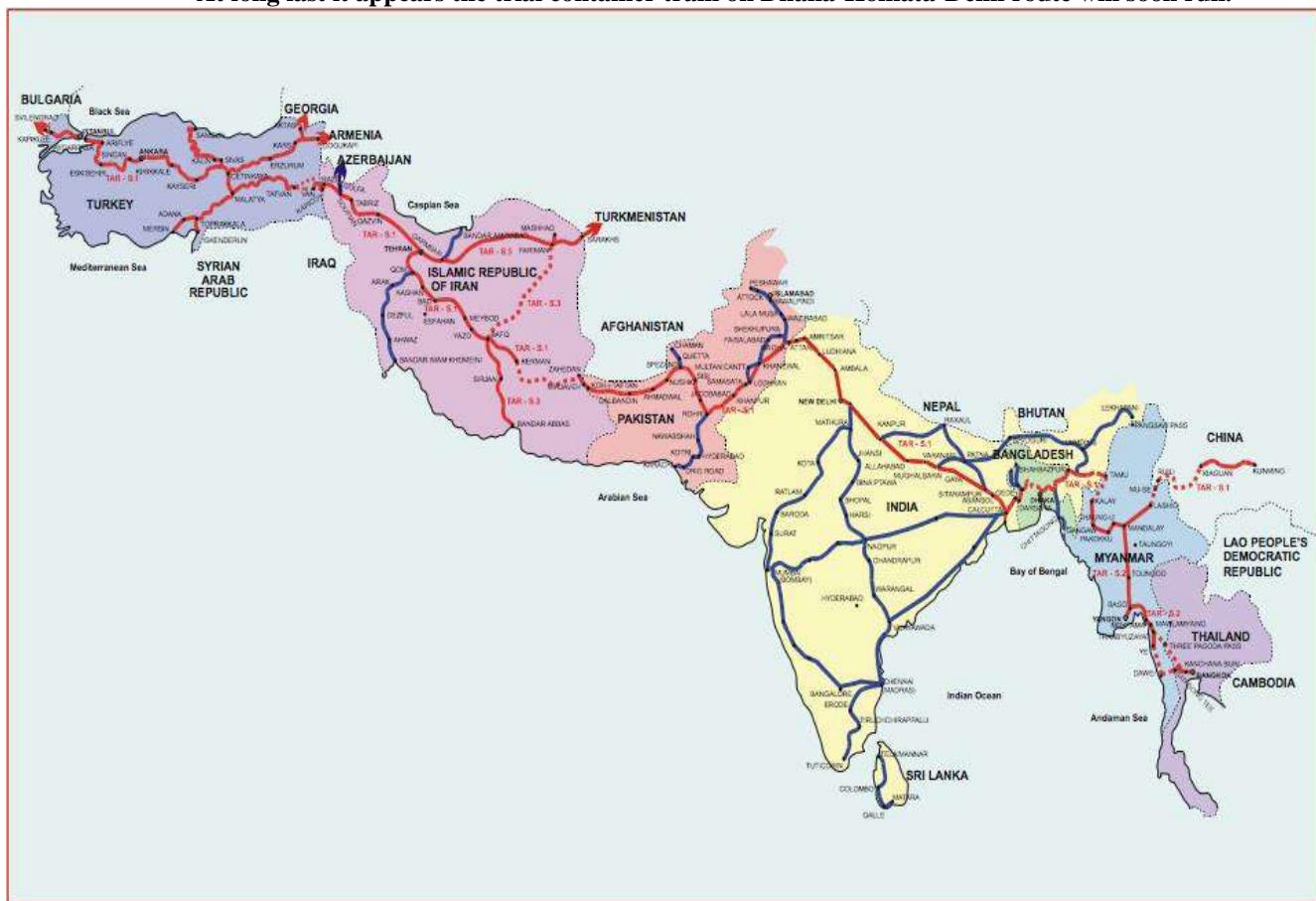
- A **detailed analysis** of current transportation needs and current/future transportation flows should be conducted.
- **Multi-modal transport solutions** (with emphasis on rail-road or RoRo-road) should be promoted.
- Local chambers of commerce and freight forwards should be actively involved in order to attract cargo.
- A **marketing plan** should be developed for promoting corridor services. Furthermore, this marketing plan that will deal with the promotion of rail freight transportation services should be disseminated via the chambers of commerce (to their members).
- Emphasis should be given to **cargo** (e.g. cotton, oil, etc.) that can be transported by rail transportation effectively (in terms of cost, damage, and loss).
- A **monitoring mechanism** should be developed for the implementation of international convention and agreements as well as for monitoring of cross-border procedures.
- UN should cooperate with regional organizations to **monitor the implementation of cross-border procedures** and the facilitation of these procedures.
- **Accessibility and road safety** are of paramount importance and should be taken into consideration for the growth of regional connectivity.
- **Regular capacity building meetings** with all relevant stakeholders should take place focusing on transport corridors' operation and further development of services provided by the corridor operators.
- **Managers from railway operators** of each corridor should meet frequently in order to align their operations and offer a single-window transportation service to local and regional companies.
- The organization of a **global conference** in order to promote the actions that have already taken place towards regional connectivity is also an action that could benefit the regional development of the countries.
- Participation in platforms such as the **International Transport Infrastructure Observatory** of UNECE should be warranted in order to ensure cooperation among the different transport development initiatives, preparation of bankable projects, promotion of integrated services.
- Last but not least, **best practices and success stories** that have already proven the merit of transport regional connectivity should be promoted and disseminated via various channels.

Trans Asian Railway

- ECAFE launched the Trans Asian Railway (TAR) project with a view to providing for a 14,000 route km rail connectivity between Singapore and Istanbul.
- The network would facilitate the huge prospective increases in international trade by providing a continuous, cost effective rail link between Asia and Europe as well as to improve the economies and accessibility of landlocked countries.
- As the concept conceived fifty years ago, somewhat amplified 25 years later, the Southern corridor would run

from Europe to Southeast Asia, connecting Turkey, Iran, Pakistan, India, Bangladesh, Myanmar, and Thailand, and, via Malaysia, to Singapore/Indonesia.

- Fifty long years have passed by – the original TAR network (Southern corridor) has been long deliberated and discussed.
 - Not even a trial train has moved.
- In the meanwhile, things have moved fast far along the north, scripting a new, bold narrative.
 - China has operated over 1,700 container carrying trains over the Northern corridor.
- The Eurasian land-bridge today pulsates with immense new possibilities and promises.
- China's Belt and Road Initiative sets a new paradigm for global logistics infrastructure and institutions.
- Pending the construction of Kunming-Myanmar, Thailand-Myanmar, Bangladesh-Myanmar, India-Myanmar missing links, Southern corridor can work from near Dhaka to Istanbul/Europe via Zehedian.
- The 8,900 km (4,070 km broad gauge or 1,676 mm, and 4,830 km standard gauge or 1,435 mm) Dhaka-Delhi-Lahore-Zahedan-Istanbul rail corridor commands a unique advantage of only one transhipment at break-of-gauge at Zahedan, and no missing link en route.
- Container carrying trains have been already running on the 6,540 km Islamabad-Tehran-Istanbul rail corridor via Zahedan
- Demonstration container trains from Dhaka to Delhi, to Lahore, to Koh-i-Taftan, to Zahedan are indeed overdue.
 - The sub-regional rail link as an important component of TAR Southern corridor includes about 4,070 km BG network (278 km Dhaka-Darsana/Gede section in Bangladesh, 1,975 km Gede-Kolkata-Delhi-Amritsar-Attari route in India, 1,730 km Wagah-Koh-i-Taftan link in Pakistan, and 92 km Mirjaveh-Zahedan link in Iran), and 4,830 km SG corridor (2,480 km Zahedan-Razi route in Iran, and 2,355 km Kapikoy-Kapikule route in Turkey).
 - **At long last it appears the trial container train on Dhaka-Kolkata-Delhi route will soon run.**



Trans Asian Railway Projects

रेशम मार्ग, ओवर (Silk Road and OBBR) र नेपाल

- इसा पूर्व १३० तिर हान् बंश शासित चीनको व्यापार अहिलेको भारत, ग्रिस हुदै अन्य युरोपेली देशसम्म फैलिएको जुन चौथौ शताब्दी सम्म चलेको इतिहासमा उल्लेख भएको पाइन्छ।
- सन् १४११ मा चिनिया नौसेना अध्यक्ष चैंग हे ले श्रीलंकाको समुद्रीतटीय सहारा गालेमा एक भाषणमा पर्सियाली र चिनिया भाषामा व्यापारका मध्यम बाट शान्तिपूर्ण विश्व बनाउन हिन्दू देवता संग आशिर्बाद मागेको र व्यापारमा

प्रयोग गर्ने बाटो नै पछि रेशम मार्ग भएको ।

- अंग्रेजी भाषामा सिल्क रोड, इकोनोमिक बेल्ट, ट्वेन्टी फस्ट सेन्चुरी मेरीटाइम, सिल्क रोड, द बेल्ट एंड रोड, बान बेल्ट वान रोड, बेल्ट and रोड इनिसियेटिभ जस्ता धैरे अवधारणा प्राचीनकालदेखि सिल्करोड वा रेशम मार्गमा आधारित छ ।
- रेशम मार्ग प्राचीन तथा मध्यकालीन व्यापारिक मार्गहरुको संजाल हो । यो मार्गको बिस्तार पूर्वी एसिया देखि मध्य एसिया हुडौ भूमध्य सागर सम्म फैलिएको थियो ।
- उन्नाइसौं शताब्दीको मध्यमा जर्मन भूगर्भविद् फर्दिन्यांड यो रिक्थोफेन्ले सो मार्ग बाट अधिकांश चिनिया रेशमकै व्यापार बढी हुनाले यसको नाम रेशम मार्ग राखेका हुन् ।
- चार हजार माइलको सो मार्ग भएरै रेशम, सेरामिक्स भाडा आदिको व्यापार गरिन्थियो । चिनिया रेशमको नरमपना र सौन्दर्य प्रति रोमनी हरु (रानी क्योलोपेत्रा समेत) मुग्ध हुन्थे । पछि यसको उत्पादन तरिका बारे अन्य देशले पनि थाहा पाएपछि यस मार्गको महत्व घट्यो ।
- विश्वको सबैभन्दा ठुलो पार्टी, चिनिया कम्नियुष्ट पार्टीको १९ औ महाधिबेशनले प्राचिनकालिन रेशम मार्गको नयाँ अवधारणा Belt and Road Initiative पार्टी विधानमै राखी कार्यान्वयन गर्नुपर्ने अवधारणा पारित गरेको ।
- ओवर चिनिया विकासको मुख्य रणनीति र ढांचाक रूपमा आएको छ जुन ऐतिहासिक अवधारणा चिनिया राष्ट्रपति सि झिनपिनले सन् २०१३ मा ल्याउनु भएको हो । यसले छिन् र बाँकि विश्वका रूपमा रहेको युरेसिया जमिनमा आधारित सिल्क रोड/economic belt र समुद्रमा आधारित मेरीटाइम सिल्क रोडको बिचमा सम्पर्क र सहयोगलाई जोड दिएको छ ।
- यसले एसिया र युरोपका ८० भन्दा बढी राष्ट्रहरूलाई समेट्ने जसमा दक्षिण, पूर्वी, मध्य, पश्चिम एसिया देखि मध्यपूर्व र पूर्वी तथा मध्य युरोप समेट्ने छन् यो मार्गकाइ पुनर्स्थापना गरी चीनको अन्तर्राष्ट्रिय व्यापार र राजनीतिक सम्बन्ध बढाएर मुलुकको आन्तरिक विकास र वैदेशिक नीति सफल बनाउने रणनीति र ढांचा समेत हो ।
- BRI को पाँच उद्देश्य चीन सरकारले राखेको पाइन्छ जसमा
 - Multi model connectivity: road, rail, air, energy, pipeline, transmission line
 - उदार र कुनै अवरोध बिना व्यापार
 - वितिय एकीकरण जस्तै एक देशबाट अर्को देशमा financial transection मा सहजता
 - नीतिगत समन्वय: BRI संग जोडिने देशमा नीतिगत समानता ल्याउने
 - जनता र जनता बीच सम्बन्धको विकास र बिस्तार गर्ने
- चीनकै पहलमा ४० अर्ब अमेरिकी डलर को रेशम मार्ग कोषको स्थापना भएको र यो कोष अति आवश्यक ठानिएको र न्यून आर्थिक क्षमता भएको मुलुकमा लह=लगानी गर्ने उद्देश्य राखेको ।
- सन् २०१७ को बोआवो एसिया मन्चमा मुख्य मन्त्रव्य दिई ओवरका परिकल्पनाकार चिनिया राष्ट्रपतिले Belt and Road निर्माण संयुक्त परामर्श, संयुक्त निर्माण र संयुक्त बांडफांडको सिद्धान्त प्रति दृढ रहेको र यो बन्द भन्दा खुला र समाबेशी भएको जसमा चीन मात्र नभई Belt and Road मा पर्ने धैरे मुलुकको यसमा सामुहिक सहभागिता आवश्यक रहेको भनाई राखेको । साथै यस अन्तर्गत धैरे योजना बनाइएको र तिनको कार्यान्वयन समेत शुरु भएको भन्दै चाईना पाकिस्तान इकोनोमिक करिङ्गोर लाई उदाहरण दिई यो रणनीति होइन्, कार्यक्रम हो र साबिक लागि अवसर भएकोले सहकार्य र खुलापनको नमुना भएको उल्लेख गरेको ।
- BBIN अन्तर्गतको सङ्क संजाल पनि Belt and Road परियोजना अन्तर्गत रहेको र यसले भारत र भुटानलाई एकै ठाउमा आएको पुष्टि ।
- हाल सम्म करिव ८६ राष्ट्र संग १०० सहयोग समझौता भैसकेको ।

नेपालको सन्दर्भ

- ओवरमा MoU मा भएको नेपाल र चीन बिचको हस्ताक्षर बाट यातायात संजाल, व्यवस्थापकीय प्रणाली, पूर्वाधारको बिकासका लागि रेल मार्ग, सङ्क, नागरिक उड्डयन, पावर ग्रिड, सूचना संचार, संस्कृति, लगानी जस्ता क्षेत्रआ सहकार्य हुने समझौतामा उल्लेख भएको ।

- अहिले पनि हामि सार्क, बिमस्टेक, WTO, लगायतका सदस्य छदैछौं तरपनि हाम्रो व्यापार र बाणिज्य प्रवर्धन अपेक्षित प्रगति उन्मुख छैन । यसैले BRI प्रति उत्साहित हुँदै गर्दा हामीले उधोग धन्दा विस्तार, उत्पादन वृद्धि, रोजगारी सिर्जना, आयमुलक र व्यवहारिक सौंच लाई बढावा दिनुपर्ने देखिन्छ । BRI आफै परिणाम होइन यो त मौका चाहिँ अवश्य हो त्यसैले यसको सार्थक प्रयोगबाट परिणाम सकारात्मक परिणाम निकाल्नु पर्छ ।
- बिकासको आधार पूर्वाधार भए पनि पूर्वाधारको लगानीले दिने प्रतिफलको दर र त्यसको दिगोपना महत्वपूर्ण हुन्छ । यातायातलाई पूर्वाधारको पनि आधार मानिन्छ । निर्माण अवधिको असंख्य रोजगार देखि निर्माण पछिको सेवा सम्म पूर्वाधारको प्रत्यक्ष लाभ नै अर्थतन्त्र बिअक्सका आधारहरु हुन् ।
- WB को “Thumb Rule” अनुसार पूर्वाधारको एक डलर लगानीले दुई डलरको आर्थिक प्रतिफल दिन्छ । उर्जा, यातायात, आवास आदि पूर्वाधार हरुमा निरपेक्ष रहेर आजकाल विकास आयोजनाहरुमा यो सवा स्वीकार्य सिद्धान्त भैसकेको छ । यधपी पूर्वाधार आयोजनका आ आफै विशेषता, चुनौती र अवसरहरु हुन्छन नै ।
- यातायात लगायतका सार्वजनिक पूर्वाधारका संरचनाको प्रतिफल तत्कालिन प्रत्यक्ष नाफामा भन्दा पनि दीर्घकालीन र राष्ट्रिय लाभमा बढी देखिन्छ । उदाहरणको लागि सन् २००० मा सम्पन्न डेनमार्कको कोपेनहेगन र स्वीडेनको महानगर जोड्ने ओरेसुंड क्षेत्रको पुल निर्माण पछि यसको आर्थिक प्रभाव मूल्यांकन ८ अर्ब डलर थियो, त्यस्तै ५५ कि.मि मकाउ जोड्ने पुल चीनले बनाएको बाट २०% कुल अर्थतन्त्र बढ्ने अनुमान ।
- WB को प्रक्षेपण अनुसार यदि न्यून यातायात पूर्वाधारको मापदण्ड पुग्ने हो भन्ने अफिकामा ४०% उत्पादकत्व बढ्ने अनुमान र आजको यहि यातायात जोड्ने संजाल बाट सम्बृद्धि हासिल गर्ने चीनको उद्देश्य ।
- नेपालको यातायातका सन्दर्भमा कुरा गर्दा, द्रुत गतिमा सुधारोन्मुख र विस्तार भैरहेकोले आन्तरिक यातायात र अधिक जनसंख्या रहेको सहरहरु बिचको यातायात प्रणालीमा व्यापक सुदूर र नयाँ प्रणालीको बिकासको आवश्यकता देखिन्छ । यसका साथै देशको धेरै जनसंख्या ओगट्ने ग्रामिण क्षेत्रको यातायात नीतिमा पनि परिवर्तन र अनुसन्धानको खाँचो देखिन्छ ।
- ओवरमा नेपालले हस्ताक्षर गरेको मौकालाई “क्यास” गर्न नेपाल चीन बिचको अन्तरसीमा व्यापार बाणिज्य बृद्धिका लागि बिध्यमान रसुवागडी केरुंग, कोदारी खासा दुई नाका बाहेक मुस्तांगको कोरला लिची, हमालको हिल्सा शेरा, सखुवासभाको किमाथांका लेंदुग, ओलांगचुंगगोलाको टिपताला रिवाबजार, गोर्खाको लज्यांग भन्ज्यांग कुंगटांग र दोलखाको लामाबगरको लाप्ची फालेक समेत ६ नाका व्यापारिक इष्टिकोण बाटै खोल्नुपर्ने देखिन्छ ।
- ओवरमा नेपालको प्राथमिकताका क्षेत्रहरु केरुंग काठमाण्डौ पोखरा लुम्बिनी रेलमार्ग, बाहिरी चक्रपथ, नेपाल चीन विधुत प्रसारण लाईन, सुनकोशी मारिन डाईभर्सन, प्राविधिक शिक्षालय, औषधि आपूर्ति, रासायनिक मल कारखाना, ठुलो शहरमा पूर्वाधार निर्माण आदि हुन् ।

नेपालको लागि ओवर प्रवेशका अवसर र चुनौतिहरु

अवसर

- BRI आफै परिणाम होइन यो त मौका चाहिँ अवश्य हो त्यसैले यसको उपयोगबाट परिणाम सकारात्मक परिणाम निकाल्नु पर्छ ।
- ओवरमा नेपालले हस्ताक्षर गरेको मौकालाई “क्यास” गर्न नेपाल चीन बिचको अन्तरसीमा व्यापार बाणिज्य बृद्धिका लागि बिध्यमान रसुवागडी केरुंग, कोदारी खासा दुई नाका बाहेक मुस्तांगको कोरला लिची, हमालको हिल्सा शेरा, सखुवासभाको किमाथांका लेंदुग, ओलांगचुंगगोलाको टिपताला रिवाबजार, गोर्खाको लज्यांग भन्ज्यांग कुंगटांग र दोलखाको लामाबगरको लाप्ची फालेक समेत ६ नाका व्यापारिक इष्टिकोण बाटै खोल्नुपर्ने अवसर देखिन्छ ।
- ओवरमा नेपालको प्राथमिकताका क्षेत्रहरु केरुंग काठमाण्डौ पोखरा लुम्बिनी रेलमार्ग, बाहिरी चक्रपथ, नेपाल चीन विधुत प्रसारण लाईन, सुनकोशी मारिन डाईभर्सन, प्राविधिक शिक्षालय, औषधि आपूर्ति, रासायनिक मल कारखाना, ठुलो शहरमा पूर्वाधार निर्माण गर्ने अवसरको रूपमा लिनुपर्ने छ ।

चुनौतीहरु

- भारत र जापानले यतिबेला चीनको यस परियोजनालाई काउन्टर दिन उद्देश्यका देखिन्छ । उत्तरपूर्वी एसियाली, दक्षिणपूर्वी र दक्षिण एसियाली साना मुलुकहरुमा आफ्नो connectivity परियोजना बढाउने प्रतिष्पर्धा नै देखिन्छ । एसिया अफ्रीका ग्रोथ करिडोर (Bottom up approach मा आधिकारित र आफ्नो अनुकूल प्रयोग गर्ने उद्देश्यक साथ) ४० अर्ब डलरको परियोजनाकोलागी जापानले ३० अर्ब दिने घोषणा गरेको ।

- भारत, जापान र अमेरिकाको साझा बुझाई के छ भन्ने चीनले सो परियोजना मार्फत व्यापार भन्दा पनि सैन्य र राजनीतिक प्रभाव बढाउन खोजेको छ त्यसैले रोकन खोजेको देखिन्छ ।
- जापानको मुख्य उद्देश्य बंगलादेश, भारत, म्यानमार र थाईल्याण्ड बिचमा connectivity बढाउने र विशेषगरी नेपाल र भूटानलाई समुन्द्री तटीयमा बढी पहुँच दिने योजना राखेको देखिन्छ ।
- क्षेत्रिय बाहेक दिदेशीय तथा त्रिदेशीय connectivity project हरु नयादिल्लीको चाँसोको बिषय बनेको देखिन्छ । पछिल्लो समय भारत थाईल्याण्ड म्यानमार राजमार्गको निर्माणको तयारी गरेको र अफगानिस्तान तथा ने मुलुकहरु संगको connectivity लाई प्राथमिकतामा राखेको देखिन्छ ।
- एसियामा देखिएको यो प्रतिष्पर्धा यस क्षेत्रका नेपाल जस्ता कम बिक्षित मुलुकहरुको लागी अवसर र चुनौती दुवै भएकोले दुवै धुवसंग राम्रो डिल गरेर आगाडी बढाउन सक्नु नै नेपालको विदेश नीतिको मुख्य चुनौती रहेको देखिन्छ ।
- राजनीतिक अस्थिरता
- भ्रष्टाचार
- सुरक्षा (चीनको मुख्य उद्देश्य)
- वातावरणीय ह्वास र स्थानीय संस्कृतिमा पर्ने दबाव
- सूचना संचार र प्रविधिले ल्याउने थप चुनौती आदि
- त्यसैले ओवर प्रवेशसंगै नेपालले अवसर संगै जोडिएर चुनौतीलाई सामना गर्न दिपक्षिय र राष्ट्रिय तहमा बलिया संयन्त्रहरु तयार गर्न आवश्यक छ । त्यस्ता संयन्त्रहरुमा सरकारको साधुरो दायराबाट बाहिर निस्केर बृहत नागरिक स्तर तथा प्राजिक तह समेत समेट्न जरुरी देखिन्छ ।

OPPORTUNITIES AVAILABLE UNDER THE BELT AND ROAD INITIATIVE (BRI)

- BRI will “help meet infrastructure gaps, connect countries supply and value chain, increase in trade and employment and boosting economic growth”- IMF
- Fund for infrastructure projects / banks and institutions
- Opening up of markets
- Connectivity
- More investment
- Economic integration
- People-to-people contacts

FACTORS AFFECTING THE SUCCESS OF THE BRI

- Strategic objectives versus economic objectives
- Superpower rivalry/ Strategic competition
- Uncertainty of cooperative international environment
- Political controversy and backlash (e.g. Malaysia)
- Hype of the “debt trap”
- Delay in project selection / implementation

ISSUES TO BE CONSIDERED UNDER BRI PROJECTS

- Economic viability, not political preference for project selection
- Complementarity with other initiatives
- Debt sustainability
- Transparency
- Focus on missing links
- Using transformative opportunity/not fear

Development of Railway in Nepal

- The history of Nepal Railways dates back to 1937.
- It was established by the then East India company.
- 51 kilometers from Bijalpura of Mahottari in Nepal to Jayanagar in India.
- Raxual-Amlekhangunj (40 km)
- Rani-Dharan (50 km)

Bijalpura-Jayanagar

- Heavy flood of 2001 in Bighi River in Mahottari washed away some parts of Railway Bridge, disrupting the services in Janakpur- Bijalpura sector (22 Km).
- From that day onwards and upto 2014 the railway is functioned on Janakpur - Jayanagar sector of 29 kilometers stretching along the eight stations.
- Now, upgrading of this section completed and in operation and 800 m railway line for freight service at Birgunj is

under operation.

Government Policy and Initiatives for Rail Transport Development in Nepal

The National Transport Policy, 1998 states

..... develop Transport system for prosperity.

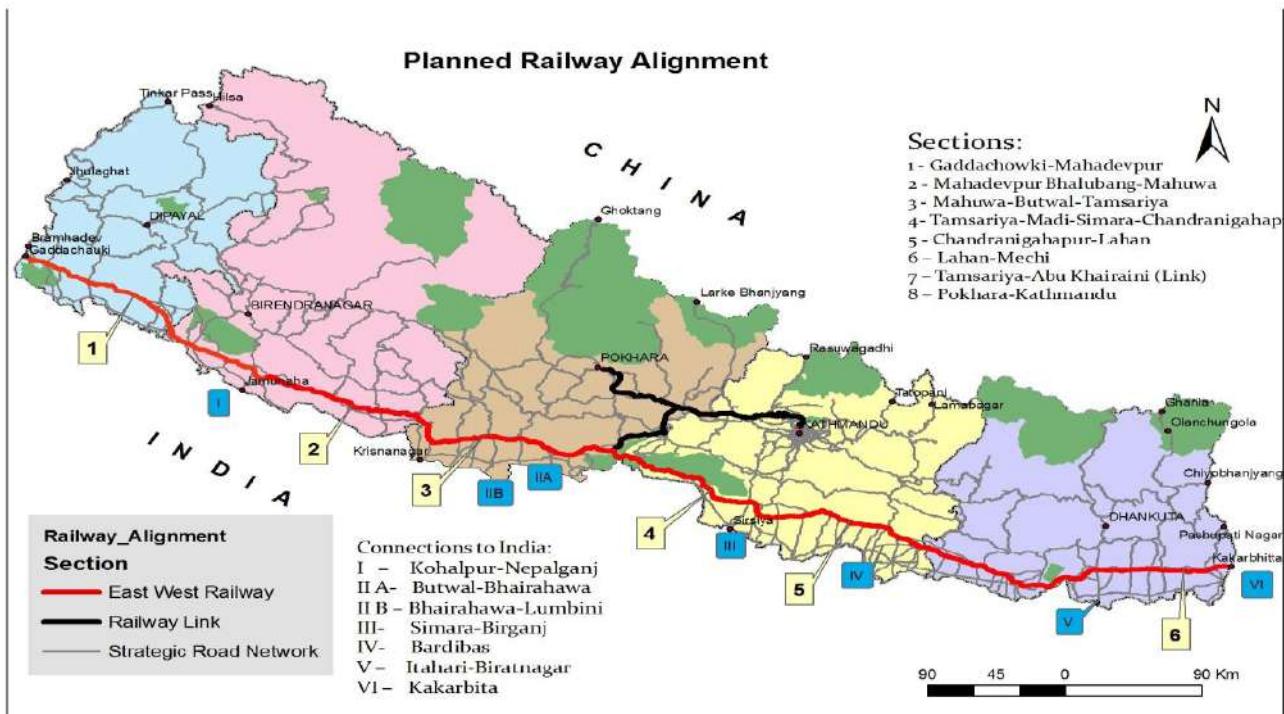
..... Cross border, regional and sub regional transport and transit facilities shall be further developed and expanded.

..... Construction of existing rail services shall be expanded and developed in coordination with the Indian railway service.

..... Construction of Inland Container Depots and Improvement of the Road for Multi model (rail/road)

Containerized traffic between Kathmandu and Birgunj(Raxsaul).

..... Electric Rail services to facilitate Hydropower development.





Construction of railway links between border towns of India and Nepal has already started at following 5 locations (under the grant assistance of Government of India).

Phase I (Under Construction)

Jogbani (India) – Biratnagar (Nepal) 18.60 Kms

Janakpur (India) – Bardibas (Nepal) 69.00 Kms

Phase II

New Jalpaiguri (India) – Kakarvitta (Nepal) 70.00 Kms

Nautanwa (India) – Bhairahawa (Nepal) 15.30 Kms

Nepalganj Road (India) – Nepalganj (Nepal) 12.10 Kms

- DPR of all East West (TAR link) has been completed and tentative cost 50 to 60 crore per km.
- Bardibas to Simara 69 km is under construction.
- Kathmandu Birganj Sector in under feasibility study by GoI
- Kathmandu kerung Section in under feasibility study by Chinese Government.

Legal Arrangements for Cross Border Rail Operations

- Nepal India Railway Service agreement in May 2004
- Need to review in every 5 year
- The existing railway agreement signed in 2004 allows limited movement of rail Cargo between Birgunj ICD and Kolkata and Haldia ports of India

Challenges of Railway Development in Nepal

- High Investment Cost (50 to 60 km Crore per km for rail, MMER 945 km TAR link)
- Support from the donor agencies
- Topography: Topography of the Nepal's landmass is furrowed by mountain ranges and rivers flowing from north to south.
- Lack of Technical Human Resources : No Railway Engineer, no operational man power even railway driver
- Policy Problems: Railway policy
- Lack of Government strategy about railway development and changing the priority as per the ruling political party.

Current Status of Cross-Border Operations for Freight and Passengers by Rail

- Half the third-country imports transit in containers by rail from Kolkata to Birgunj.
- The low tonne/TEU ratio suggests these goods are high-value goods. The remaining 50% of third-country goods travel to Nepal by road in containers or as break-bulk.
- Approximately 5% of third-country containers arriving by rail at Raxaul originate from Chittagong.
- While there is a rail link from Chittagong to Dhaka ICD, it is not possible to transit completely by rail to Nepal

(West, though Bangladesh and India) as the Jamuna Bridge (near Saidabad, Bangladesh) cannot support rail freight loading.

- The defined corridor for bilateral rail movement is between Nepal and India is-
 - Single broad gauge line from Birgunj to Muzaffarpur (137km);
 - Double track between that point and Varanasi (103km); and thereafter;
 - Electrified double line to Kolkata or other Indian destination
- The distance from Kolkata to Birgunj is 704 km and between Haldia and Birgunj, 832km.
- The train path is controlled by Indian Railways and the container haulage operation is Concor.
- 20, 000 TEU per annum arrive in Nepal and represents about 250 train movements to Nepal each year.
- Indian Railways is required by agreement to unload the 80-90 containers on the rake in 8 to 12 hours and this is achieved using modern reach stackers (there are no rail mounted gantry cranes)

Major Challenges in Cross-border rail Transport

- Poor institutions and governance (no regional mechanism)
 - The Bangabandha port was formally inaugurated in May 2004 but has not been fully functional owing to the absence of a transit agreement for the use of Indian territory as a transport route for Bangladeshi, Nepalese and Bhutanese trade cargoes
- There are a number of time hindrances to the rail transit of goods that include:
 - the need for aggregation of goods at the port of departure or the de-stuffing and aggregation of containers at the port of arrival.
 - as the shipping lines only conventionally provide 14 days free time for the use of containers from ship discharge to return to port, the extended transit times can result in significant demurrage charges that add significantly to overall cost.
 - the need to fill each train rake before it can depart; and
 - the need to agree train paths between existing train services.
 - the consequence of these hindrances is that for cost reasons, or because cargo is time-critical cargo, goods are transferred from the port by road.
- Lack of timely amendment of Rail treaty with India
- Need to extend railway link in Kakrabitta, Biratnagar, Nepalganj and Bhairawa Customs .
- Infrastructure development for railway connectivity .
- Lack of cooperation and integrated approach among border agencies
- Provision of multimodal transport facility (with rail transit, regular container train in the region)
- High trade transaction costs.

नेपालमा रेल र केरुंग काठमाण्डौ रेलमार्ग

- संसारमा रेल्वे सेवाको बिअक्स ल्याटिन अमेरिकी देशमा भएको भनाई रहेपनि बेलायतमा सन् १८२०को दशकमा वागनवायरस प्रणालीबाट शुरुवात भएको पाइन्छ ।
- भारतमा १८५७ मा शुरु भई १९४० को दशकमा संसारकै अग्रज स्थानमा स्थापित जसमा दैनिक २.३ करोड नागरिकले रेल सेवा प्रयोग गर्ने गरेको ।
- जापानमा सन् १९६४ मा संचालन गरेको टोक्यो-ओसाका सम्मको सिनकासेन लाइन संसारमै पहिलो उच्च गतिको रेल्वे लाइनको रूपमा स्थापित भएपछि स्पेन, फ्रान्स, जर्मन, चीनले समेत त्यस्तै रेल सेवा विकास गरेको पाइन्छ ।
- नेपालमा सन् १९२७ ब्रिटिश सरकारले रक्सौल देखि अमलेखगञ्ज र जनकपुर -जयनगर बिजलपुरा सम्मको रेल्वेको लागि संरचना बनाई नेपालमा रेल्वे सेवा चालु भएको र यसको बिस्तारको लागि नेपालमा रेल्वे ऐन २०२० समेत लागू भएकोमा उक्त ऐनले समसामयिक बिषयबस्तु समेट्न नसकेकोले रेल्वे अध्यादेश २०६९ र त्यसपछि रेल्वे ऐन २०७८ समेत जारी भैसकेको छ ।

काठमाण्डौ केरुंग रेलमार्ग (तर्जुमा, लगानी देखि संचालन सम्म विचारणीय पक्षहरू)

- नेपाल सरकार र चीन सरकार बीच सम्भाव्यता अध्ययन चीन बाट हुने गरी MOU भएको र सोहिं अनुसार अध्ययनको चरणमा रहेको ।
- रसुवागढि -काठमाण्डौ रेलमार्ग निर्माण गरेर देशको पारवाहन समबन्धि वर्तमान संकुचित द्यारलाई फराकिलो पारी दक्षिणी छिमेकीमाथिको परनिर्भरता घटाउन खोजेको देखिन्छ । परनिर्भरता भनेको परनिर्भरता नै हो चाहे जताको किन नहोस् । किनकि यस्तो अवस्था भनेको तावाबाट उफेर भुग्नोमा खस्ने जस्तै हो । त्यसैले यस्तो अवस्थाबाट सुरक्षित हुन् रसुवागढि काठमाण्डौ रेलमार्ग योजनालाई लागत लाभ विधि अनुसार लेखाजोखा हुन् जरुरी

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- केरुंग काठमाण्डौको प्रति कि.मि. करिब ३ अर्ब अनुमान गरिएको ले आर्थिक रूपमा कसरी निर्माण संभव होला । नेपाल जस्तै भूगोल भएका विश्वका अन्य देशहरूमा रेलको अवस्था कस्तो छ ? ति देशहरूमा रेल बढी सफल कि सडक? अनुसन्धान हुन् जरुरी छ ।
- अर्थतन्त्रकै संरचना परिवर्तन गर्न सक्ने “ गेम चेन्जर ” आयोजनामा परम्परागत लाभ प्रतिफलको विश्लेषण सान्दर्भिक हुदैन भन्ने जापानको बुलेट रेल लगायत अन्य मुलुकको ठुला पूर्वाधार आयोजनाले पुष्टि गरेको छ । तसर्थ चर्चामा रहेको केरुंग काठमाण्डौ रेलमार्ग विविध कारणले गर्दा नेपालको भौतिक विकास र आर्थिक रूपन्तरका लागि वास्तवमा गेम चेन्जर आयोजना भएको हुदा सामान्य आयोजनाको हकमा लागू हुने परम्परागत लाभ प्रतिफलको विश्लेषणक हिसाबले मात्र यसको मूल्यांकन गरिनुहुदैन । सहज यातायातको पूर्वाधार हुने हो भने चिनिया पर्यटकहरूको भ्रमणले ल्याउने दिगो आर्थिक विकास रेलमार्ग निर्माणमा लाग्ने खर्चको तुलानामा निकै बढी हुन्छ । तर के कति यात्रु आउने कति आम्दानी हुने कुरा प्रष्ट नहुदा सम्म नेपालले आन्फो लगानी गरेर संभव देखिदैन ।
- स्वदेशी पुँजी बाट बनाउन गरे पनि सम्बन्धित देशको सहयोग समुद्धुर नभएमा यस योजनाबाट हामी लाभ लिन सक्दैनौ ।
- पारवहन र आधुनिक लजिस्टिक प्रणालीका लागि रेलमार्गको छुट्टै महत्व छ । हामीले दुवै छिमेकि संग पारवहन र connectivity सुधार्न जरुरी छ । संसार कै उत्पादन हब्को रूपमा उदय भएको चीन संग रेलमार्ग बाट जोदिएँ भनेको नेपालको अर्थतन्त्रलाई “Global Value Chain” मा जोडिनु पनि हो ।
- चीनले अहिले निर्माण गरिरहेको संसारको चुनौतिपूर्ण भूबनोटमा बनेको छेदुंगबाट ल्हासा जोड्ने रेलमार्गको प्रति कि.मि. २.४ अर्ब नेपाली रूपैया छ भने हाम्रो भूमिमा पनि २.५ देखि ३ अर्ब प्रति कि.मि. लाग्ने र बिकट हिमाली भैग छिचोलेर आउनुपर्ने केरुंग काठमाण्डौ रेलमार्ग निर्माणका लागि चिनिया प्रविधि नै हाम्रो लागि सर्वोत्तम विकल्प हुन्छ र गरेर सिक्ने “ Learning by Doing ” विधिको पूर्वाधार निर्माणका आधुनिक प्रविधि भित्राउने र हाम्रा प्राविधिक जनशक्तिलाइ तालिम दिने महत्वपूर्ण अवसर हुन् सक्ने देखिन्छ ।
- प्रस्तावित रेलमार्गले काठमाण्डौ, नुवाकोट र रसुवालाई छिचोलेर आउने जसमा माहभारत पर्वत, उच्च पहाडी भूभाग र उच्च हिमशृंखला पर्दछन । यो क्षेत्रको भौगोलिक अद्ययन नेपाल सरकारको खानी तथा भूगर्भ विभाग लगायत नेपाली तथा विदेशी भूगर्भ विद्युत गरेको छ तर यी अद्ययन खानी जन्य पदार्थको उपलब्धता र पहाड बन्ने प्रक्रिया लगायत प्राजिक महत्वक बिषयमा केन्द्रित रहेको छ । यातायात पूर्वाधार विकासलाई चाहिने भौगोलिक अद्ययन हुदै नभएको होइन तर यस्तो अद्ययन मुख्य सडकले ओगटेको क्षेत्रमा सिमित छ । रेलमार्ग निर्माणका लागि चट्टानको फैलावट दर्शाउने सहितको विस्तृत इन्जिनियरिङ भौगोलिकताको नक्सा बनाउनुपर्ने देखिन्छ । यो काम नेपाली भूगर्भविद्ले सजिलै गर्न सक्ने र जमिनमा भएको फल्ट कहाँ कहाँ छन् भन्ने चाहिँ अनुभवी भूगर्भविद् बाट बेग्लै नक्साकन गरी सो ठाउको भौगोलिक मूल्यांकन गराई रेल मार्ग डिजाइन र निर्माण सजिलै गर्न सकिने देखिन्छ ।
- प्राकृतिक प्रकोपबाट हुने क्षति न्युनिकरणका यी सवाल सम्बोधन गर्न प्रस्तावित रेलमार्ग यथासम्भव सुरुडमार्गका रूपमा विकास गर्नुपर्छ । सुरुंग मार्ग भूसतह भित्र चट्टानमा बनाइने हुनाले भूकम्पीय क्षति अत्यन्त न्यून हुन्छ । भूसतहमा पनि भूकम्पीय जोखिम न्यूनीकरण गरेर पहिरोले दुख नदिने गरी रेल मार्ग बनाउने प्रविधिको उपयोग गर्नु पर्ने देखिन्छ । साथै जलबिधुत, सिंचाई, खानेपानी योजनाका लागि खनिएका सुरुंगमा पनि विभिन्न समस्या देखिए पनि नेपाली प्राविधिकले समाधान गरेकाबाट उनीहरूको अनुभव र ज्ञानबाट लाभान्वित हुने अवसर पनि हामी संग छ ।
- सम्भाव्यता अद्ययन, प्राविधिक सर्वेक्षण, डिजाइन र निर्माण कार्यको सुपरिवेक्षण खर्च करिब ३ देखि ७ प्रतिशत सम्म लाग्ने देखिन्छ ।
- जग्गा अधिग्रहण खर्चिलो हुने
- प्रस्तावित रेलमार्गले काठमाण्डौ, नुवाकोट र रसुवालाई छिचोलेर आउने जसमा माहभारत पर्वत, उच्च पहाडी भूभाग र उच्च हिमशृंखला र भूकम्पीय जोखिम क्षेत्र भएकोले झन महँगो हुने निश्चित छ ।
- रसुवागढी १८५० मि बाट शुरु भइ १४४० मि मा रहेको काठमाण्डौ जोड्दा अझै बिचको स्थानहरूमा यी मानहरू परिवर्तन हुन् सक्ने । अनुमानित १०० कि.मि. अ सरदार ग्रेड ०.४५ प्रतिशत हुने अनुमान रहेको छ ।
- चीनले अहिले निर्माण गरिरहेको संसारको चुनौतिपूर्ण भूबनोटमा बनेको छेदुंगबाट ल्हासा जोड्ने रेलमार्गको प्रति

- कि.मि. २.४ अर्ब नेपाली रुपैया छ भने हाम्रो भूमिमा पनि २.५ देखि ३ अर्ब प्रति कि.मि. लाग्ने र बिकट हिमाली भेग छिचोलेर आउनुपर्ने केरुंग काठमाण्डौ रेलमार्ग निर्माणका लागि चिनिया प्रविधि नै हाम्रो लागि सर्वोत्तम विकल्प हुन्छ र गरेर सिक्ने “Learning by Doing” विधिको पूर्वाधार निर्माणका आधुनिक प्रविधि भित्राउने र हाम्रा प्राविधिक जनशक्तिलाई तालिम दिने महत्वपूर्ण अवसर हुन् सक्ने देखिन्छ ।
- सुरुगमार्ग बनाएको दक्ष जनशक्ति र प्राविधिक क्षमता नभएको हाम्रो मुलुकमा प्राकृतिक प्रकोपबाट हुने क्षति न्युनिकरण हुने गरी भूस्तहमा पनि भूकम्पीय जोखिम न्यूनीकरण गरेर पहिरोले दुख नदिने गरी रेल मार्ग बनाउने उपयुक्त प्रविधिको उपयोग गर्नु पर्ने देखिन्छ । साथै जलबिधुत, सिंचाई, खानेपानी योजनाका लागि खनिएका सुरुगमा पनि विभिन्न समस्या देखिए पनि नेपाली प्राविधिकले समाधान गरेकाबाट उनीहरुको अनुभव र जानबाट लाभान्वित हुने अवसर पनि हामी संग छ ।
 - रेलमार्ग निर्माणपछि गुड्ने रेलका इन्जिनहरु/मालगाडीका डब्बाहरुको खरिद (हाल भारतीय इन्जिनको भारु ७० करोड सम्म पर्ने) रेखदेख, मर्मत र संचालनको लागि दक्ष जनशक्ति नभएकोले छुटै प्राविधिक हस्तान्तरण र तालिम सम्बन्धि समझौता गर्नुपर्ने र परनिर्भरता घटाउनुपर्ने देखिन्छ ।
 - अर्थतन्त्रकै संरचना परिवर्तन गर्न सक्ने “गेम चेन्जर” आयोजनामा परम्परागत लाभ प्रतिफलको विश्लेषण सान्दर्भिक हुदैन भन्ने जापानको बुलेट रेल लगायत अन्य मुलुकको ठुला पूर्वाधार आयोजनाले पुष्टि गरेको छ । तसर्थ चर्योमा रहेको केरुंग काठमाण्डौ रेलमार्ग विविध कारणले गर्दा नेपालको भौतिक विकास र आर्थिक रूपन्तरका लागि वास्तवमा “गेम चेन्जर” आयोजना भएको हुदा सामान्य आयोजनाको हकमा लागू हुने परम्परागत लाभ प्रतिफलको विश्लेषणका हिसाबले मात्र यसको मूल्यांकन गरिनहुदैन । सहज यातायातको पूर्वाधार हुने हो भने चिनिया पर्यटकहरुको भ्रमणले ल्याउने दिगो आर्थिक विकास रेलमार्ग निर्माणमा लाग्ने खर्चको तुलानामा निकै बढी हुन्छ । तर के कति यात्रु आउने कति आमदानी हुने कुरा प्रष्ट नहुदा सम्म नेपालले आफ्नो लगानी गरेर संभव देखिदैन ।
 - सहयोगी देशले अनुदानमा बनाईदिन्छ भन्ने पनि छन् तर प्रायः अनुदानका सर्त कठिन र अनुदानकर्ता को पक्षपोषक हुन्छन् । के कति सर्त सहित को योजना हामीलाई आवश्यक छ ? विश्लेषण गर्नुपर्ने किनकी हाल भारतीय अनुदानमा निर्माण भएको जनकपुर जयनगर रेल संचालन मासिक हामीले करोडौ घाटा व्यहोर्नु परेको छ । त्येसैले उतरी रेलमार्गको पनि बिभिन्न विकल्पहरुहरु बारे राम्री सोच विचार र विश्लेषण समेत गर्नुपर्ने देखिन्छ ।

Initiatives on Transport Connectivity by Subregional Organizations of Southern and Central Asia by BIMSTEC BIMSTEC-at a glance

- The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) was established as an interregional grouping in June 1997 with the Bangkok Declaration.
- Its seven country membership comprises Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka and Thailand.
- The objective is to accelerate economic growth and social progress in the sub region through joint endeavors. Further, to cooperate more effectively in joint efforts that are supportive of and complementary to national development plans of Member States.
- Secretariat has been established at Dhaka, Bangladesh and is operative since September 2014.
- BIMSTEC is a market of almost 1.7 billion people, 1/5th of the world's total.
- BIMSTEC brings together US\$ 3 trillion economy which accounts for only 4% of global GDP (2016) and 3.7 % of global trade.
- While total trade volume is US\$ 1295 billion, intraregional trade was only about US\$ 37 billion in 2014 (2.86%) , much less than other similar regional groupings in the world. Intra BIMSTEC trade is growing at around 0.62%.
- GDP growth in BIMSTEC (approx 6%) much higher than world's (2.5% in 2016)
- FDI inflows which was US\$ 8 billion rose to US\$ 61 billion in 2015.
- Geographical contiguity, abundant natural and human resources, rich historical linkages and shared cultural heritage define BIMSTEC.
- BIMSTEC's potential in enhancing trade among the Member States lies in geographical contiguity and common coastal link with the Bay of Bengal and the Eastern coast of the Indian Ocean.
- BIMSTEC Members are at different levels of development, 4 LDCs .
- 14 identified sectors of cooperation each sector being led by a Member State.
- BIMSTEC is a member driven organization with the Secretariat acting as a facilitator.
- 5 Member countries of BIMSTEC are also members of SAARC and 2 Member States are part of ASEAN, 6 Member States also members of SASEC(South Asia Sub-regional Economic Cooperation) .
- BIMSTEC bridges the gap between South and South East Asia.

- BIMSTEC does not have a laid down charter. Bangkok Declaration and directions of the leaders are the guiding principles.

BTILS

- BTILS- BIMSTEC Transport Infrastructure Logistics Study- first major initiative in the Transport sector
- The study was completed with Asian Development Bank (ADB) funding in November 2007.
- The BIMSTEC Working Group recognized in March 2011 that since the BTILS had been undertaken in 2007 there had been significant changes, both in relation to global and intra-regional trade and in the respective national and regional transport environments. The working group requested ADB to conduct an update and enhancement of the BTILS reflecting these changes and extending the planning time frame forward to 2020, including assessing the future effect of the various trade-related initiatives impacting the region.
- The overall study was expected to generate four key outputs:
 1. a profile of the transport and logistics environment in the Member States, focusing on international connectivity, both among the BIMSTEC Member States and their access to external markets;
 2. recommendations on future BIMSTEC policies and strategies designed to enhance connectivity and promote the development of intra-BIMSTEC trade ;
 3. identification of relevant “hard” and “soft” infrastructure projects whose realization would enhance BIMSTEC connectivity and trade ; and
 4. recommendations on an effective institutional mechanism to monitor and facilitate the implementation of the agreed BIMSTEC policies, strategies, and priority projects .
- BTILS has identified 166 projects as being 'important' in a national context. Out of this, 65 projects have been identified as priority projects.
- Priority Projects [2014-2020]

Country	Projects
1. Bangladesh	16
2. Bhutan	4
3. India	17
4. Myanmar	9
5. Nepal	6
6. Sri Lanka	5
7. Thailand	8

- BTILS-identified projects are national projects of the country concerned, either ‘governmental’ or donor infrastructure development programs.

BTILS-Road projects

- Road transport alone caters for 65-70% of all freight movement in the BIMSTEC sub region.
- All BIMSTEC states are members of Asian Highway (AH) initiative. Road Connectivity is uneven.
- BTILS identified 36 projects in the Road Sector:
- Upgrading of Border Roads:10 Projects
- [BAN- 1, Ind-2, Myn-4, Nep-2 Thai-1]
- Upgrading of Port Access Roads : 7 Projects
- [Ind-3, Myn-1, SL-2 Thai-1]
- Enhancement of Arterial Link to Borders and Ports : 15 projects
- BAN-5, BTN-1, Ind-7, Myn-1, Nep-1
- Coordination of Road Programs
- Development of the Trilateral Highway (IND/MYA/THA)
- New border link Mae Sot/Myawaddy (MYA and THA)
- Lack of Through transport (2 projects)

BTILS :- Railways

- BIMSTEC region is home to one of the largest rail networks in the world, stretching around 80,000 kilometers of route length and more than 130,000 kilometers of track length.
- Railway Network in member countries is not in harmony; Meter gauge (BD, Myanmar and Thailand) and Broad gauge (India and Sri Lanka).
- Two key findings of BTILS:
- Rail is becoming less important to intra-BIMSTEC transport
- Each of the rail network operates independently. There is limited evidence to suggest commonality of issues with respect to international services and therefore development of a regional dimension to rail infrastructure is difficult.
- BTILS identified 12 projects in the Railway Sector.
- Rail Connectivity to Landlocked Countries : 5 projects [India-Nepal]

- Enhanced Rail Connectivity between Ports and their Hinterland: 7 projects [BAN-5, Ind-1, Thai-1]

BTILS-Aviation projects

- BTILS findings:
- There are major programs for airport development in all seven Member States and therefore it is clearly an area where BIMSTEC should have some policy.
- Common interest in development of LCC market
- BTILS has recommended 9 projects under the following captions:
- Expansion of Airport Capacity : 6 projects [BN-1, BTN-1, Myn-1, SL-1, Nep-1, Thai-1]
- Development of Freight Services and Facilities: 2 projects [Ind-1, BTN-1]
- Development of Support Facilities for LCC Operations: 1 project [Bangladesh]

BTILS- Marine Transport

- BTILS identifies a common constraint in the region:
- Access to deeper water to enable large vessels to call and the container handling performance at some of the key ports in the Bay of Bengal.
- BTILS recommended projects are:
- Development of Deeper ware Ports : 7 projects [BN-1, Ind-1, SL-2, Thai-3]
- Container Handling at Bay of Bengal Ports: 2 projects [Ind- 1 (Kalkata), Mynmar-1 (Thilawa)]

BTILS-Trade Facilitation

- BTILS proposed breaking bottle-necks in non-tariff barriers like lengthy administrative procedures, unnecessary documentation requirements, lack of automation, lack of harmonization of trade regulations, and through transport and transit arrangements.
- One study shows. Intra-regional trade in SA could rise by as much as 60%, and region's trade with the world could grow by 30% if trade facilitation systems could be raised to intl standards
- BTILS recommended projects are:
 - Development of Border Infrastructure: 4 projects: [BN-1, Ind-1, Thai-Myn border-1, Nep-1]
 - Construction of Inland Container Depots (ICDs): 4 projects [BN-1, BTN-2, Myn-1]
 - Simplification and Harmonization of Import/Export Document:
 - possible SASEC project business process analysis extension
 - Further Development of Automated Systems:
 - Customs IT upgrades in BD, BTN, Myn and Nepal
 - Development of national single windows in all countries except Thailand
- One of the recommendations of the BTILS Study was to create a single Working Group on transport and trade facilitation to be referred as BIMSTEC Transport Connectivity Working Group (BTCWG).
- The Inception Meeting of the BIMSTEC Transport and Connectivity Working Group (BTCWG) held in Bangkok, Thailand in August 2016 reviewed the key agreements reached at the Final BTILS Workshop, covering updated and enhanced policies/strategies, priority projects, monitoring framework, action plan, theme and institutional arrangements and formulated the draft Terms of Reference (ToR) of the BTCWG and monitoring system for the projects.

Goa Retreat- future roadmap of BIMSTEC

- In the Goa Retreat in October 2016, the Leaders of BIMSTEC have given the following directions on the Transport Sector:
 - To seek greater physical and economic connectivity between South and South East Asia.
 - to advance multi-modal physical connectivity (air, rail, roads and waterways) in the BIMSTEC region
 - To prepare a Master Plan for BIMSTEC Connectivity.
 - To conclude BIMSTEC Coastal Shipping Agreement.
 - to explore the possibility of having a BIMSTEC Motor Vehicle Agreement.

Master Plan for BIMSTEC Connectivity

- A need of a Master Plan was felt by the Member States as various other initiatives with overlapping domain has been initiated in the region. Further, many of the projects in the BTILS have already been completed or in the advance stage of completion or have been approved. The Master Plan will take note of these factors and will address various other missing links in the region.

Guidelines for Implementation

- i. The Master Plan should be compatible with the ASEAN Connectivity 2025 Master Plan, but different.
 - ii. To emphasize BIMSTEC's bridge connectivity between South and South East Asia, ASEAN and SAARC.
 - iii. Bilateral and trilateral joint Development Strategies are considered e.g. Trilateral Highway linking India, Myanmar and Thailand, Kaladan Multi Modal Transport project.
- With Technical Assistance of ADB.

- To be finalised by end of 2018.
- Modalities have been worked out.
- Vision for the BIMSTEC Transport Connectivity Master Plan
 - promoting seamless connectivity between and across BIMSTE countries through enhanced transport and trade linkages for faster and more inclusive growth.
- Roads and Road Transport – the development of physical infrastructure and services along the primary road corridors handling or having the potential to carry volumes of trade or passengers between Member States or to primary maritime ‘gateways’, and the international road transport sector plying those corridors;
- Rail and Rail Transport – the development of the rail infrastructure and services connecting member states or to relevant primary maritime ‘gateways’ and the construction of missing links within the sub-region’s international rail network;
- Ports and Maritime Transport Development – the development of the region’s main ports and maritime ‘gateways’ to facilitate intra-BIMSTEC trade and enhance maritime connectivity and access to global markets;
- Inland Waterways – the development of key waterways to help transfer some intra-regional road traffic to a more environmentally-friendly mode;
- Airports and Air Transport – the development of international standard airports and aviation services enabling increased passenger and cargo choices and more services between airports in the Member States;
- Multi-Modal Transport – the development of multi-modal transport regimes and services using more than one mode of transport in an international movement;
- Logistics – the development of modern logistics designed to enhance the performance of transport services;
- Trade Facilitation – the harmonization and simplification of border and customs clearance processes relating to the movement of freight and passengers among Member States; and
- Human Resources Development – the development of training services designed to enhance the capacity and skill of personnel of Member States engaged in the above transport and related sectors.

Coastal Shipping Agreement

- Drafted by India.
- Only for cargo ships
- Applicable upto 20 NM
- First Working Group Meeting was held at New Delhi on 28/29 November 2017 at Delhi.
- General consensus arrived at
- Standard Operating Procedures(SoPs) drafted by India

BIMSTEC Motor Vehicle Agreement

- Drafted by India.
- First Working Group Meeting is scheduled shortly
- BBIN experience

Conclusion

- Most of the projects enlisted in the BTILS are at various stages of execution.
- Renewed emphasis on development of border infrastructure.
- Special emphasis on development of road infrastructure in North East India- vital for linking India to Myanmar
- Goa Retreat- impetus to BIMSTEC process.
- BIMSTEC Master Plan, to be ready by end of 2018 will bring new momentum.
- Important role that BIMSTEC can play in the Indo-Pacific sphere of activities

Asian Highway or Great Asian Highway

- The AH project is a cooperative project among countries in Asia and Europe and the United Nations (Economic and social commission for Asia and pacific, ESCAP) to improve the highway system in Asia.
- It is one of the three pillars of Asian Land Transport Infrastructure Development (ALTID) project endorsed by the ESCAP commission at its forty-eight sessions in 1992 comprising
 - Asian highway (AH)
 - Trans-Asian Railway (TAR) and
 - Facilitation of land transport project.
- Agreement have been signed by 32 countries including Nepal to allow the highway to cross the continent and also reach to Europe.
- The project aims to make maximum use of the continent’s existing highway to avoid the construction of newer except in case where missing routes necessitate their construction.
- The AH project was initiated by UN in 1959 with the aim of promoting the development of international road

transport in the region. During the first phase (1960 to 1970) considerable progress was achievement, however progress slowed down when financial assistance was suspended in 1975.

- The intergovernmental agreement on the AH, Nov 18, 2003, identifies 55 AH routes among 32 countries totaling 1,40,000 KM.
- To date, the AH cover international trunk routes of about 90,000 KM in length transiting 25 countries.
- In Nepal, two AH, AH2 (1024 KM, MRM) and AH42 (297KM, Kodari-KTM-Narayanghat-Pathliya-Birgunj) totaling 1321 KN.
- Single digit route 1 to 9 represent all major and two and three digit represent routes within subregional countries.

Importance of Asian Highway/Benefits from Asian Highway

- Provide standards for roads and bridges, road signs, traffic safety etc., by AH standards.
- Capital to capital links for inter-nation transport
- Provide efficient routes for landlocked countries like Nepal
- Integration of land and sea transport network
- Improves economic integration
- Facilitates trade, transit and investment
- Boosts tourism
- Increases opportunities for business/cooperation
- Enhances people-to-people contacts
- Enhances competitiveness in trade and investment
- Contribution to environmental, food and energy security
- Contributes to inclusive economic growth

Follow up Action

- Encompassing the AH network within a legal framework in the form of an “ESCAP” agreement on the AH routes.
- Improving the transport logistics and improving the operational efficiency of AH routes
- Promoting use of the AH through the mass media and tourism authorities and creating a greater awareness of its potentials
- Operationalization of available connectivity and transport transit networks (e.g., ports and routes)
- Implementation of transit and other agreements with China
- Regional transit and transport agreements
- Connectivity thrust on the BBIN, BIMSTEC and SAARC
- Gaining from BRI – establishing missing links, clarifying myths of debt trap, economic viability of projects, political consensus
- Connectivity-driven approach to development
- Partnering in initiatives with connectivity elements (BRI, MCC)
- Policy harmonization/ Soft connectivity
- Implementation of free trade agreements (SAFTA)
- Integration into the supply and value chain
- Regional investment protection treaties
- Strategic prioritization of connectivity

A. Asian Highway routes

The secretariat presented an overview of its study on the road networks connecting China, Kazakhstan, Mongolia, the Russian Federation and the Korean peninsula. This included the proposed Asian Highway routes in the member countries, illustrated on a subregional Asian Highway route map and suggested a numbering system for the routes. The secretariat also informed the Meeting that as the present study was limited to six countries, the route numbering would be further reviewed by an expert group meeting for all Asian Highway member countries in 2002.

B. Design standards

The secretariat introduced the provision of Asian Highway design standards, which were developed in 1993. A comparison was also made between the Asian Highway design standards, the national standards of the participating countries and the European arterial road standards, as they were reflected in the European Agreement on Main International Traffic Arteries, 1975.

C. Proposal for the formalization of the Asian Highway network

The Director of the Transport, Communications, Tourism and Infrastructure Development Division introduced the proposed formalization of the Asian Highway network to the Meeting. He

mentioned the need for the coordinated development of the Asian Highway network and the benefits it could bring to member countries. He noted that a regional agreement could include the agreed Asian Highway routes, the Asian Highway design standards and route signs and be open for voluntary accession by the member countries. A comparable agreement had been in existence since 1975 to guide the development of the main international road traffic arteries in Europe. He further mentioned that there could be a built-in mechanism for the revision of the network in the agreement through the establishment of a working party comprising the Asian Highway member countries.

I. MAJOR CONCLUSIONS AND RECOMMENDATIONS

The Meeting discussed the following international and subregional Asian Highway routes and recommended the following routes for inclusion in the Asian Highway network. The Meeting prepared a sketch of the agreed routes, which is attached (figure 33) to this report.

The Asian Highway routes

International routes:

- | | |
|-----|--|
| A-1 | Border of Viet Nam-Pingxiang-Shenzhen-Changsha-Zhengzhou-Beijing-Shenyang-Dandong- Shinuiju-Pyongyang-Kaesung-Seoul-Daejon-Pusan |
| A-3 | Daluo (to Myanmar)/Mohan(to Lao People's Democratic Republic)-MengIa-Jinghong-Kunming -Changsha- Zhengzhou -Beijing-Erenhot-Dzamiin-Uud-Ulaanbaatar- Altanbulag —Ulan-Ude |
| A-4 | Urumqi- Khasi- Hongqilafu-Khunjurab |
| A-5 | Shanghai-Xi'an-Lanzhou-Urumqi-Korgas-A1maty-Tashkent-Ashgabat- Turkemenbashi-Baku-Derbent-Makhachkala- Astrakhan-Volgograd- -Tambov- Moscow- St. Peterburg-Vyborg- Border of Finland |

- A-6 Pusan-Seoul-Pyongyang-Wonsan- Chongjin-Rason-Hunchun-Yanji—Changchun- Harbin- Manzhouli- Chita-Ulan-Ude-Novosibirsk- Omsk-Petropavlovsk-Chelyabinsk- Samara- Moscow- Smolensk-Border of Belarus
- A-6A Hasan-Vladivostok-Khabarovsk-Birobidzhan-Svobodnyy-Never-Chita

Subregional routes:

- A-14 Kunming-Hekou (to Viet Nam)
- A-16 Kunming-RuiIi (to Myanmar)
- A-42 Kodari (Border of Nepal) - Choksum- Lhasa
- A-60 Omsk- Cherlak- Pavlodar
- A-61 Border of Ukraine -Kursk-Voronezh—Saratov-Ural'sk- Aktyubinsk-Kyzylorda- Shymkent-Bishkek- Turugart- Kashi
- A-63 Samara-Bol'shaya Chemigovka- Ural'sk- Atyrau
- A-70 Border of Ukraine-Kamensk-Shakhtinskiy— Volgograd- Astrakhan-Atyrau
- A-72 Kuytun-Alashankou (Dostyk)
- A-74 Yekaterinburg-Chelyabinsk-Troitsk-Kostanay-Astana-Balkhash-Almaty
- A-81 Beijing- Tanggu
- A-83 Petropavlovsk- Astana- Pavlodar-Rubtsovsk- Barnaul-Tashanta-Ulaanbaishint- Tsagaannuur- Olgii-Hovd-Tselerleg-Harhorin- Ulaanbaatar- Ondorhaan-ChoybaIsan- Sumber- Yirshi-Ulanhot-Baicheng- Changchun
- A-87 Harbin- Suifenhe- Ussuriysk-Vladivostok- Nakhodka
- A-88 Pusan-Pohang-Kangreung-Wonsan
- A-89 Hong Kong, China-Shanghai-Lianyungang-Shenyang-Changchun-Harbin- Heihe- Blagoveshchensk-Svobodnyy
- A-90 Novosibirsk- Barnaul-Tashanta- Ulaanbaishint -Hovd-Bulgan Sum-Yarantai
Ertai- Urumqi
- A-91 Zhezkazgan-Karaganda- Pavlodar

ASIAN HIGHWAY CLASSIFICATION AND DESIGN STANDARDS

1. General

New Asian Highway classification and design standards were proposed and endorsed as general guidelines for Asian Highways by the Expert Group Meeting held from 29 November to 3 December 1993 in Bangkok, attended by fifteen Asian Highway member countries, Bangladesh, Cambodia, China, India, Indonesia, Iran (Islamic Republic of), the Lao People's Democratic Republic, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand and Viet Nam. This was the first revision of both the classification and the design standards from the original "Classification and Design Standards for the Asian Highway" developed in 1974, taking into consideration recent progress in highway design, construction and maintenance as well as in road transport technology.

Since most Asian Highway member countries have their own design standards (most of them are based on the American AASHTO standards), the revised "Classification and Standards for the Asian Highway" was simplified to provide only the necessary "minimum" standards and guidelines to facilitate international road traffic.

2. Classification

Asian Highways are classified as shown in table 1.

Table 1. Asian Highway classification

Classification	Description	Pavement Type
Primary	Access-controlled motorway	Asphalt or cement concrete
Class I	4 or more lanes highway	Asphalt or cement concrete
Class II	2 lanes	Asphalt or cement concrete
Class III	2 lanes (narrow)	Double bituminous treatment

"Primary" class in the classification is access-controlled motorways. Access-controlled motorways are used exclusively by automobiles. Access to the motorway is at grade-separated interchanges only. Motorcycles, bicycles and pedestrians will not be allowed to enter the motorway in order to ensure traffic safety and the high running speed of automobiles. At-grade intersections shall not be designed on the motorway and the carriageway will be divided by a median strip.

"Class III" can be used only when the funding for the construction and/or land for the road is limited. The type of pavement should be upgraded to asphalt concrete or cement concrete as soon as possible in the future. Since Class III is also regarded as the minimum desirable standard, the upgrading of any road sections below Class III to comply with the Class III standard should be encouraged.

Future traffic volume projected for 20 years after completion of road construction/ improvement (called projected daily traffic volume) should be used to determine the classification of roads as described below.

It is recognized internationally that the presence of heavy vehicles and slow-moving vehicles greatly influence the design of a highway. Therefore, in this classification, the approach of "passenger car unit (pcu)" which is widely used for design purposes in Asian countries has been used. The flow coefficients shown in table 2 are used to convert vehicles into "pcu".

Table 2. Flow coefficients

Vehicle type	Flow coefficient
Bicycles	0.5
Motorcycles	0.5
Light, commercial motor vehicles (gross weight 10 tons)	1
Passenger cars	1
Trucks and buses	2
Semi-trailers and trailers	3

The traffic volume of light vehicles does not need to be taken into account if exclusive lanes for light vehicles are provided. Flow coefficients for heavy vehicles can be increased if the road is located in a mountainous area.

The classification of a road is determined as follows using "pcu" as an index representing traffic volume:

- (i) Determine "**PDT**" or "projected daily traffic volume (pcu/day)" using projected traffic volume by vehicle type (vehicle/day) and flow coefficients,'
- (ii) Determine "K value" which is the ratio of the 30th highest hourly traffic volume over one year (pcu/hour) to annual average daily traffic (pcu/day). Traffic count data on a road section which has similar characteristics to the planned road can be used. K value is usually around 0.10,
- (iii) Determine "D value" which is the ratio of heavy directional peak hour (30ih highest) traffic volume (pcu/hour) to both directional peak hour (30ih highest) traffic volume (pcu/hour). D value usually ranges from 0.55 to 0.60,'
- (iv) Calculate "**PPHT**" or "planning peak hour traffic volume ipcu/hour)" using a formula $PPHT = PDT \times K \times D$. PPHT represents projected heavy directional 30th highest hourly traffic volume ipcu/hour);
- (v) Divide PPHT (per/hour) by 1,800 (pcu/hour) which is widely recognized as standard capacity per one lane and round up the calculated value to determine the number of lanes in one direction. Multiplying by 2 gives the required number of lanes (both directions);
- (vi) Determine the class according to the required number of lanes determined in step (v). "Primary" class can be used if the development of access-controlled motorway is needed.

3. Design standards

(a) Terrain classification

Terrain classification is shown in table 3

Table 3. Terrain classification

Terrain classification	Cross slope
Level (L)	0 to 9.9%
Rolling (R)	10 to 24.9%
Mountains (M)	25 to 60%
Steep (S)	Greater than 60%

(b) Design speed

The design speed of 120, 100, 80, 60, 50, 40 and 30 kilometres per hour is to be used. The relation between design speed, highway classification and terrain classification is shown in table 4. Design speed of 120 km/h will be used only for Primary class (access-controlled motorways) which has median strips and grade-separated interchanges.

Table 4. Design speed, highway classification and terrain classification

Terrain	Primary	Class I	Class II	Class III	(Unit: km/h)
Level (L)	120	100	80	60	
Rolling (R)	100	80	60	50	
Mountain (M)	80	60	50	40	
Steep (S)	60	60	40	30	

(c) Cross-section

The dimension, such as right of way width, lane width, shoulder width, median strip width, pavement slope and shoulder slope for each highway classification are shown in table 5.

It is highly recommended that pedestrians, bicycles and animal-drawn carts be separated from through traffic by provision, where practical, of frontage roads and/or sidewalks for the sections where smooth traffic is impeded by the existence of this local traffic.

Table S. Asian Highway design standards 1993

Highway classification		Primary (4 or more lanes)				Class I (4 or more lanes)				Class II (2 lanes)				Class III (2 lanes)			
Terrain classification		L	R	M	S	L	R	M	S	L	R	M	S	L	R	M	S
Design speed (km/h)		120	100	80	60	100	80	60		80	60	50	40	60	50	40	30
Width (m)	Right of way	50				40				40				30(40)			
	Lane	3.75				3.50				3.50				3.00(3.25)			
	Shoulder	3.00		2.50		3.00		2.50		2.50		2.00		1.5(2.0)		1.0(1.5)	
	Median strip	4.00		3.00		3.00		2.50		N/A		N/A		N/A		N/A	
Min. horizontal curve (m)		520	350	210	115	350	210	115		210	115	80	50	115	80	50	30
Pavement slope (%)		2				2				2				2 – 5			
Shoulder slope (%)		3 – 6				3 - 6				3. 6				3 – 6			
Type of pavement		Asphalt/cement concrete				Asphalt/cement concrete				Asphalt/cement concrete				Dbl. bituminous treatment			
Max. superelevation (%)		10				10				10				10			
Max. vertical grade (%)		4	5	6	7	4	5	6	7	4	5	6	7	4	5	6	7
Structural loading (minimum)		HS20-44				HS20-44				HS20-44				HS20-44			

Scies' Figures bracket are desirable values.

Minimum horizontal curve shall be determined in conjunction with superelevation.

(d) Horizontal alignment

Horizontal alignment of the road should be consistent with the topography of the terrain through which it passes. Minimum curve radii should be applied only when necessary and should be used in conjunction with transition curves. Compound curves should be avoided whenever possible. The minimum radii of horizontal curve is shown in table 6 for each highway class.

Table 6. Minimum radii of horizontal curve (Asian Highway standards)

(Unit: m)

Terrain	Primary	Class I	Class II	Class III
Level (L)	520(1000)	350(600)	210	115
Rolling (R)	350(600)	210(350)	115	80
Mountain (M)	210(350)	115(160)	80	50
Steep (S)	115(160)	115(160)	50	30

Name. The values in parentheses should be considered as the ordinary standards.

It is recommended that the application of the minimum curve radii be limited to unavoidable cases and values larger by 50 to 100 per cent should be considered as the normal minimum ones.

Transition curves should be applied to connect curves with radii smaller than the values shown in table 7. It is also recommended that transition curves be applied even in cases where the radii are as large as twice the values in table 7.

Table 7. Radii for which transition curves should be applied (Asian Highway standards)

(Unit: m)

Terrain	Primary	Class I	Class II	Class III
Level (L)	2,100	1,500	900	500
Rolling (R)	1,500	900	500	350
Mountain (M)	900	500	350	250
Steep (S)	500	500	250	130

The minimum transition curve length shown in table 8 is recommended.

Table 8. Minimum transition curve length (Asian Highway standards)

Terrain	Primary	Class I	Class II	Class III
Level (L)	100	85	70	50
Rolling (R)	85	70	50	40
Mountain (M)	70	50	40	35
Steep (S)	50	50	35	25

The maximum super elevation should be 10 per cent for all the terrain classification.

(e) Vertical alignment

The vertical alignment of any highway should be as smooth as economically feasible, that is, there should be a balance of cutting and filling to eliminate the rolling nature of land. In the use of the maximum vertical gradient, it should be kept clear in the mind of the designer that, once constructed to a given vertical grade, the highway cannot be upgraded to a lesser gradient without the loss of the entire initial investment.

The maximum vertical grade shown in table 9 should be used for all highway classes.

Table 9. Maximum vertical grade (Asian Highway standards)

Terrain classification	Maximum vertical grade
Level (L)	4%
Rolling (R)	5%
Mountains (M)	6%
Steep (S)	7%

The critical length of gradient section for the provision of a climbing lane is recommended to highway classifications Primary and Class I, as shown in table 10.

Table 10. Critical length of gradient section for the provision of a climbing lane (Asian Highway standards)

Terrain Classification	Primary	Class I
Level (L)	3% - 800m	3% - 900m
	4% - 500m	4% - 700m
Rolling (R)	4% - 700m	4% - 800m
	5% - 500m	5% - 600m
Mountains (M)	5% - 600m	5% - 700m
	6% - 500m	6% - 500m
Steep (S)	6% - 500m	6% - 500m
	7% - 400m	7% - 400m

It is desirable to provide a climbing lane to the up-gradient highways with heavy truck traffic where the length of the gradient exceeds the above values.

(f) Pavement

Carriageways should be paved with cement concrete or asphalt concrete. However, as mentioned before, Class III (double bituminous treatment) could be included in the classification and standards tentatively, only if pavement types will be upgraded in the near future.

The pavement of many road sections in the Asian Highway member countries is damaged owing to insufficient load capacity. The design load for pavement should, therefore, be determined carefully to prevent damage to the road surface and consequently to reduce maintenance costs.

However, road pavement should be designed taking into account:

(i) Maximum wheel load;

(ii) traffic volume,'

(iii) Quality of materials to be used [or basecourse and subgrade (as the quality of road construction materials vary from country to country), the pavement load specification was not included in the Asian Highway standards.]

(g) Structure loading

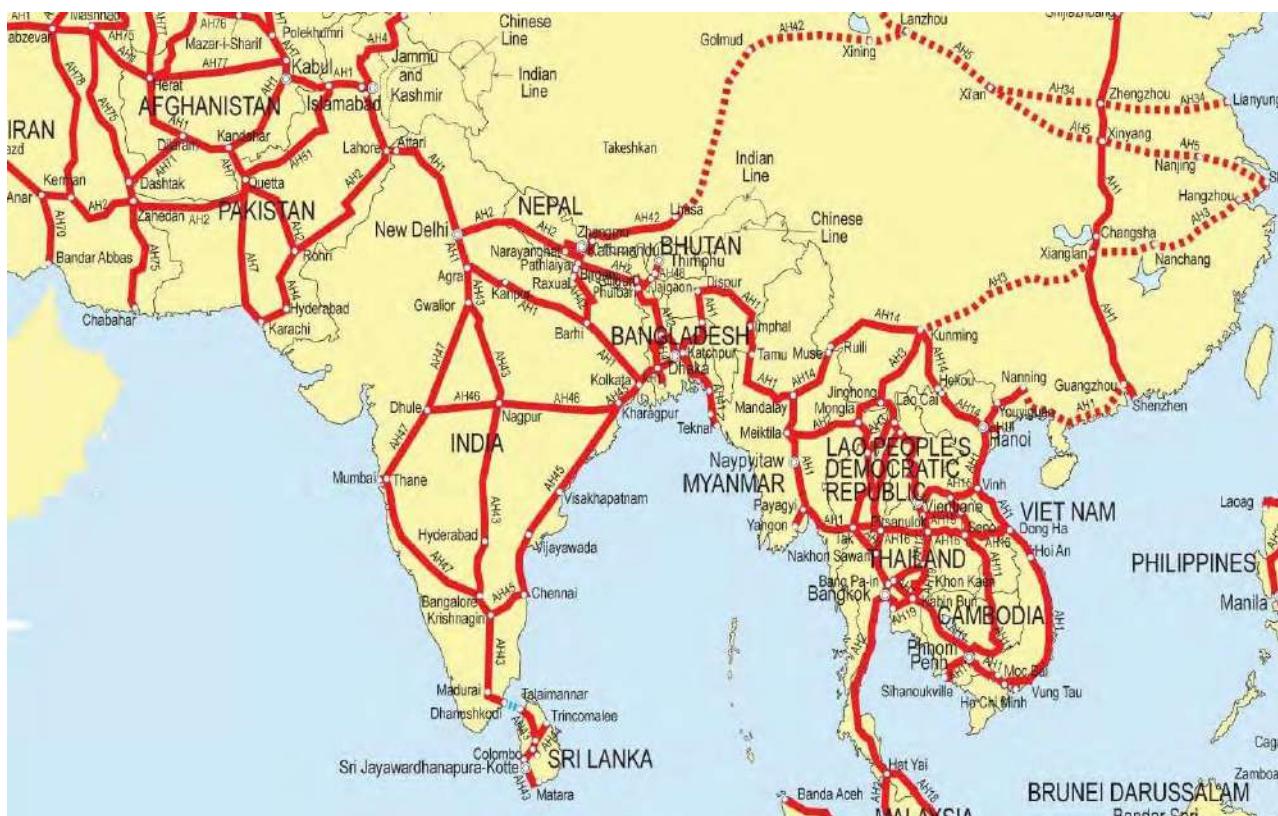
Increasingly heavy traffic, particularly container traffic, requires properly designed load capacity (maximum axle load). In order to prevent serious damage to road structures, and also to reduce maintenance costs, the Asian Highway network, as an international road network, should have a high design load capacity.

The minimum design loading of HS 20-44, which is the international standard corresponding to full-size trailer loading, should therefore be used for the design of structures.

(h) Vertical clearance

Minimum vertical clearance should be 4.5 metres, which is the requirement for safe passage of standard ISO containers. However, in cases where sufficient clearance cannot be secured because of the high cost of rebuilding existing structures such as bridges, gooseneck trailers with low vehicle bed clearance could be used.

Asian Highway in South Asia



Asian Highway in Nepal

Government Policy and Initiatives for Asian Highway Development in Nepal

The National Transport Policy, 1998 states

..... develop Transport system for prosperity.

.....Cross border, regional and sub regional transport and transit facilities shall be further developed and expanded.

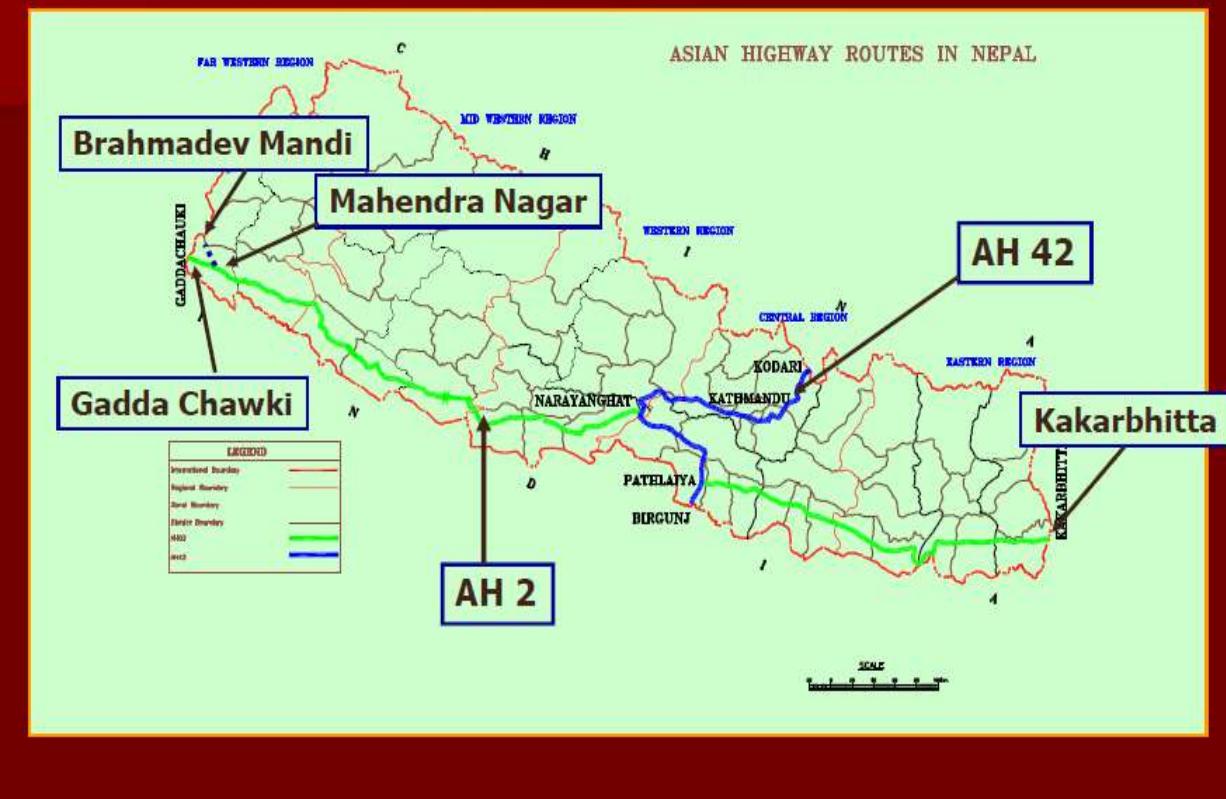
..... Construction of existing rail services shall be expanded and developed in coordination with the Indian railway service.

.....Construction of Inland Container Depots and Improvement of the Road for Multi model (rail/road) Containerized traffic.

.....Promulgated the Roads board Act with view to levy toll charges for effective maintenance of AH Routes effectively.

- A Missing link on the AH 02
- Connection beyond Mahendranagar via Brahmdevmandi through Tanakpur Banbasa (India) does not exist.
- The GoI has taken initiative to support and Construct this portion but no progress has been made for a long time.
- The GoN has taken initiative and start Construction of 4 lane Motorable bridge on Mahakali river (Mahendranagar) for connection the same link.

Asian Highway Routes in Nepal



Current Status of Asian Highway

Description	Pavement Width and Condition	KM	Asian Highway	SASEC Corridor	SAARC Corridor	NEPAL
Raxsaul/Birgunj(India Nepal Border) to Hetauda, Narayanghat, Kathamandu Kodari (China Border). Further linked to AH1 at Barahi(India) in south and Connects AH5 (China) in North	7m-12m, 90% in good condition	297	East West Link, AH02	No.1	No.2	also known as Mahendra Rajmarg in Nepal
Kakarbhitta (India Nepal Border) to Mahendranagar (Brahmadevmandi),	7m -10m, 95% in good condition	1027	North south Link, AH42	No.5	No.4	Traces Mahendra Rajmarg, Tribhuwan Rajmarg, Prithivi Rajmarg and Arniko Rajmarg in Nepal

Major Works implementing on Asian Highway

Route	Itinerary	Length of Section, km	Upgradation	Status	Remarks
AH2	Narayanghat-Butwal, kamala –kanchanpur	115, 86 km	Widening to 4 lane from 2 lane at present	Under construction	ADB
AH2	Mahendranagar -Banbasa	0.840	4 lane Motorable bridge	Under construction	GoN
AH42	Birgunj(Raxsaul-Pathalaiya)	24	4 lanes plus service lane	Under construction	GoN
AH42	Narayanghat -Muglin	36	Widening to dedicated 2 lane from intermediate lane	completed	WB
AH42	Kathmandu Naubise Mugling	112	Widening to dedicated 2 lane from intermediate lane	Going to start the construction work.	WB
AH42	Thankot-kalanki –Tripureshwor-koteshwor-suryabinayak	27	4 to 6 lane	completed	GoN/JICA

Route	Itinerary	Length of Section, km	Upgradation	Status	Remarks
AH2	Pathalaiya – Narayanghat, Kanchanpur – laukahi	120 32	Widening to 4 lane from 2 lane at present	Detailed design	ADB
AH2	Pathalaiya – Kamala	140	Widening to 4 lane from 2 lane at present	Detailed design	WB
AH2	Kakarbhitta-Panitanki,India And laukahi – Kakarbhitta	1 146 km	4 lanes Motor able bridge on Mechi River, 4 lanes plus service road	Completed , Under tendering process	ADB, GOI
AH42	Suryabinayak - Dhulikhel	20	4 lanes plus service lane	Under tendering process	GON
AH42	Kathmandu Naubise Mugling	112	Widening to dedicated 2 lane from intermediate lane	Feasibility / Detailed Design	WB
AH42	Thankot-Naubise	2.5	Tunnel Construction	Under Detailed Design	JICA

Challenges of Asian Highway Development

- ❖ Investment (Funding) on Infrastructure.
- ❖ China Nepal Border (Kodari) AH42 is fully closed by China after Earthquake in Nepal in 2015 and start new Trade Route Kerung-Rashuwagadi Border.
- ❖ Support from the donor agencies : International donors, such as ADB, the World Bank, the Japan Bank for International Cooperation etc, would give priority attention to AsianHighway routes.
- ❖ Topography : Topography of the Nepal's landmass is furrowed by mountain ranges and rivers flowing from north to south
- ❖ Regional and global integration through improved connectivity.
- ❖ Improvement of trade infrastructure such as development of economic corridor, border infrastructure, SEZs, Ports.

Organizational Capacity and Institutional Strengthening

Organizational Capacity is the level of an organization's capability to deliver services and products that not only satisfy present customer expectations, but continually anticipate future marketplace opportunities. Key among the primary components of capacity is those associated with the human side of performance. These include the traditional classification of knowledge, skills, and abilities. These elements contribute substantially to an organization's capacity and serve as the primary focus of its capabilities.

Key Dimensions of Organizational Capacity

The different aspects of organizational capacity can be organized into five categories or “dimensions.”

- **Organizational Resources:** Organizational resources consist of the concrete materials and tangible assets that support programs, practice improvements, and service delivery. They encompass adequate and stable funding, staffing, facilities and equipment, technology, informational resources, and program materials. Adequate resources enable an organization to meet ongoing needs and targeted improvements. For example, to implement a new project, a company may need additional staff to provide services, additional office space for the new staff, project materials that guide service delivery, data collection tools and equipment to track and assess services, and funding to pay for these and other assets. All these organizational resources will contribute to the company's ability to implement and sustain the new project and, ultimately, to achieve the desired outcomes. In many cases, adding new staff and facilities may not be feasible, so the company may need to reassign or realign organizational resources to meet the needs of a new project.
- **Organizational Infrastructure:** Organizational infrastructure consists of the systems, protocols, and processes that give structure to the organization, support its key functions, and embed routine practice. Infrastructure may include the policies and operating procedures that guide practice and build a shared understanding of how to deliver services. Infrastructure also includes systems for operations — from human resources, training, supervision, and ongoing communication systems to data, evaluation, and continuous quality improvement (CQI) systems. An organization's structures, processes, and systems institutionalize practices, procedures, and rules to ensure their consistent execution regardless of staff or leadership changes. The organizational infrastructure also supports the organization in carrying out its vision, mission, goals, and values. Organizational infrastructure often sets the foundation for other organizational capacities. For example, recruitment and staff selection processes lead to the availability of adequate workforce resources. Similarly, training systems help build staff knowledge and skills.
- **Organizational Knowledge and Skills:** Organizational knowledge and skills consist of the essential expertise and competencies needed to perform work. Think of this as the organization's “know-how.” For an employee, this includes understanding and application of effective knowledge and practice, decision-making, management, and competence. For managers and administrators, it also includes knowledge and skills related to leadership, management, critical analysis, policy making, workforce development, and change management.
- **Organizational Culture and Climate:** Organizational culture and climate consist of shared values, norms, attitudes, and perceptions that influence how people in an organization behave. An organization's priorities, leadership commitments, and staff motivation reflect its culture and climate. For new programs and practices, a company's culture and climate may affect how people accept and support change. While people often use the terms “culture” and “climate” interchangeably, Charles Glisson, a leading researcher in this area, makes the following distinction:
 - Organizational culture refers to the shared behavioral expectations and norms in a work environment. This is the collective view of “the way work is done.”
 - Organizational climate represents staff perceptions of the impact of the work environment on the individual. This is the view of “how it feels” to work at the agency (e.g., supportive, stressful).
- **Organizational Engagement and Partnership:** Organizational engagement and partnership consist of collaborative relationships within an organization and with external partners, and community to support service integration and inform improved practices. Productive relationships involve building trust, seeking feedback, and actively collaborating toward shared objectives. While organizational engagement and partnership often require structures to facilitate collaboration (e.g., interagency agreements), the structures are part of organizational infrastructure. This dimension features the resulting relationship and collaboration between the partners

Institutional Strengthening

Institutional capacity building (ICB):

Institutional strengthening is about increasing the capacity or ability of institutions to perform their functions. There is a particular focus on improving governance.

Building and maintaining the institutional capacity of an organization is essential to sustainable development of the country. It is the process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives.

Capacity building (or capacity development) is the process by which individuals and organizations obtain, improve, and retain the skills, knowledge, tools, equipment, and other resources needed to do their jobs competently. It allows individuals and organizations to perform at a greater capacity (larger scale, larger audience, larger impact, etc).

Capacity building is currently one of the leading issues in the development of the road sector in developing countries and transition countries. Yet the concept of capacity building remains complex and difficult to grasp and put into practice.

The concept and definition of capacity building

The ICB position paper states that ICB encompasses three main activities:

- skill upgrading,
- procedural improvements, and
- organizational strengthening

This is the most frequent definition found in World Bank documents. Thus, road sector related ICB refers to investment in people, institutions and practices that will enable developing countries and transition countries to achieve their road sector development objectives. Defined in this way, ICB occurs by acquiring resources (human, financial, networks, knowledge, systems and culture) and integrating them in a way that leads to change in individual behavior and ultimately to more efficient and effective operations of institutions and organizations.

However, ICB also has to do with two types of that are emphasized; **tangibles and non-tangibles**.

1. The tangibles include physical assets such as infrastructure, machinery, natural resources, health of the population and education. Organizational structure and systems, legal frameworks and policies are also included in this category. The tangibles can be referred to as hard capabilities. These are factors that generally are amenable in either physical terms or in terms of indices.

2. The intangibles on the other hand, have to do with social skills, experience, creativity, social cohesion, social capital, values, motivation, habits, traditions, institutional culture etc., and hence can be referred to as soft capabilities. These are normally difficult to quantify. Others may term these capabilities as core capabilities as they refer to the creativity, resourcefulness and capacity to learn and adapt of individuals and social entities.

In ICB, the intangibles are as important as the tangibles because they determine how well a given society uses the other resources at its disposal. They are what allow them to realize their human and social potential to the highest possible level. To achieve a proper and balanced ICB a balance is required between the tangibles and intangibles. This is illustrated in figure 1. What the figure illustrates is that, institutional development is more likely to succeed if it promotes both the tangibles (technical competencies and organizational framework) and intangibles (social arrangements).

Strategies for capacity building:

In the following some ICB strategies that have been used in the past in developing countries are discussed in the light of the definition of ICB with the two axes.

1. Financial assistance and supply of physical resources

- In this strategy, simple lack of resources, either financial or physical assets, are seen as the major lack of institutional capacity. This strategy is prevalent among many aid agencies throughout the world. This strategy has in the past dominated development aid.
- The rationale of this strategy is that the concerned institution lacks adequate supplies or finances to achieve its efficiency.
- The strategy for the donors is then to provide more equipment, more funds for operating costs, salary payments, more buildings, trained staff etc. so as to improve the conditions for capacity development.

- It has the advantage that, for donors it is relatively easy to implement and, furthermore does not intrude much into the affairs of participants.
- In several circumstances, the provision of funds, training and machinery has helped institutions develop and in particular get through critical periods.
- However, this strategy may not function well. There is the risk that the resources supplied may be appropriated by officials of the institutions for their own personal benefits. In other circumstances, the supply of resources may make the institutions donor-dependent also in the long run. The supply of resources becomes pay-offs rather than incentives and does not lead to a sustained development of the institutions.
- Returning to the illustration in figure 1, this strategy definitely improves only one of the axes; the tangibles, and therefore will not promote ICB appropriately.

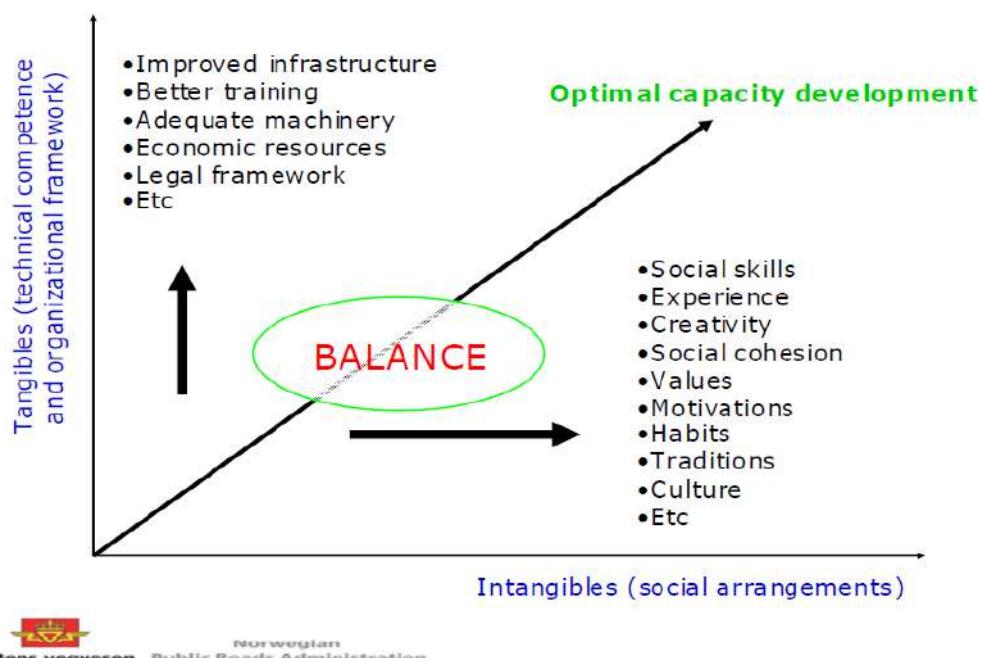


Figure 1 - Balance between intangibles and tangibles in ICB

2. Improving the organizational and technical capabilities of institutions:

- This strategy has the aim of improving the personal, technical and organizational capabilities of the institutions so that they better perform what is already being attempted.
- It is thus a variant or a subset of the strategy above with the difference that it is motivated by lack of technical capabilities and proper institutional structure rather than resources.
- In the road sector in particular, this strategy has become common, and it is the one mostly considered as capacity building approach.

Activities included are such as:

- i. technical assistance in terms of personnel,
 - ii. technical training of local personnel either locally or in form of scholarships abroad,
 - iii. improvement of management and financial systems, and
 - iv. improved working conditions.
- This strategy has definitely improved technical capabilities of many institutions, at least in the short term. The value of training and skill improvement are undoubtedly important for capacity development and should be encouraged.
 - It also remains true that many developing countries suffer from poorly performing organizations and lack of trained staff and proper management systems. However, this strategy may also be inefficient in promoting institutional development. Many institutions are under constraints far beyond what can be termed tangibles and what technical support is not about. Such constraints may include politics, motivation, culture etc., which may prevent institutions and individuals from performing regardless of their technical skill levels. The current situation, after so many years of emphasis on education and training as a means of developing capacity, reveals that skills and training has become less of a constraint in many countries than what was the case 15-20 years ago.

- What should matter now is the utilization and retention of the already available capacities. That can only be achieved if the intangibles discussed above are considered seriously. Again, it is the mix of the two axes in figure 1 that can lead to optimal capacity development.

3. Setting strategic goals for an institution

- The problem is that institutions do not have clear directions or cannot define a consistent direction. Take the case of a road traffic directorate. Should the capacity building be traffic safety, increased supply of roads, and environmental improvement in cities, economic development or all? And further, pressure from the different groups may be enormous, each wishing to achieve their own goals. Or, there may be no consensus in the political system about the purpose of the institution.
- The aim of the strategy is to help induce a policy or a general direction that can guide actions and the development of capacity in the long term.
- The advantage with this strategy is that it is simple. Ideas developed can be compared to experiences elsewhere. The problem, however, is whether the intangibles really are taken into account in an appropriate way. Otherwise, it will most likely result into a failure.

4. Strengthening the larger system, networks and organizational framework

- This strategy aims to help a group of institutions to work together to carry complex tasks such as national budgeting, national health plans and national transport plans. The system lacks the organization or its sub-units to perform these functions. Or the interrelationship between actors in the sector/system needs reshaping to perform their functions.
- For this strategy to work well, focus must be both on the interrelations between the organizations and individuals and groups of individuals. Again, the two axes explained above are important. Perhaps this strategy is the most complex one for development organizations to accomplish.

Optimizing monitoring and evaluation (M&E) for capacity-building:

- **What they want to achieve:** Capacity-building providers need to have a clear, stated rationale for carrying out capacity-building, and a clear idea of what they want to achieve, both in the medium and in the long term.
- **Be clear about the purpose of M&E** – e.g., is it for accountability to donors, or to learn and improve performance? – As this will influence the approaches and methodologies used.
- **Measure contribution:** Where multiple interventions are spread out over time, it may be useful to start by trying to evaluate change at an individual, organizational or even societal level, and then work backwards to identify what contributed to those changes.
- **Changes:** Distinguish between measurable changes and changes that can only be illustrated. Establish an agreement with all concerned about how far M&E should go in terms of measurement, and at what levels.
- **M & E:** Carry out M&E alongside capacity-building support.
- **Demonstrate the scale of change:** It is unlikely that any capacity-building provider working with various organizations or individuals will be able to get away with purely qualitative or anecdotal reporting. At some stage it will be necessary to produce some figures to demonstrate the scale of change.
- **Pace of change:** Capacity-building providers should be cautious about predicting the pace of change within organizations, especially when logical frameworks or project proposals encourage unrealistic expectations. They can influence the pace of change but have no absolute control over it

Some common lessons learned:

- This review reveals that the term capacity building is perceived in different ways, and in most cases, it addresses technical competence and organizational issues while the social and cultural setting is often ignored or underestimated.
- **Key factor leading to success:** From the case studies, it is possible to identify some key factors leading to success in achieving capacity development objectives. These factors seem to be: long-term involvement; demand-driven assistance; interventions adapted to the level of development and absorption capacity of the institutions involved; and focus on human resources development.
- **Results are not impressive:** Looking at the scores on institutional development impact, the results are not impressive as long as the projects have capacity building as a main objective. The scores vary from modest to substantial.
- **Shortcoming:** Some factors seem clearly to cause shortcomings or failures of interventions unless they are taken into account. An important factor in this respect is the need for a proper understanding/competence of institutional

reform processes and capacity building. Further, human resources development is needed to help develop new institutional arrangements, and this aspect is often underestimated.

- **Low salary level:** Low salary levels of the public sector also seem to cause problems in achieving results. These are far from competitive with salary levels of the private sector, and apart from facing problems with recruiting and retaining qualified staff, low salary levels make government organizations prone to corruption and misappropriations.
- This requires expertise in reform processes both at the sector-level and the macro-level.
- **Reform process:** This review also shows that the time required for institutional reform processes to yield results should not be underestimated. Complex bureaucratic structures and decision-making processes easily hamper reform processes.
- **Sustainability:** Lastly, the sustainability of institutional reform processes appears to strongly depend upon political commitment, stakeholders' ownership of the objectives and processes, and mechanisms to secure and allocate human and financial resources.

Process for capacity building: -

Under the UNDP's 2008–2013 "strategic plan for development", capacity building is the "organization's core contribution to development." The UNDP promotes a capacity-building approach to development in the 166 countries it is active in. It focuses on building capacity at an institutional level and offers a six-step process for systematic capacity building. The steps are:

1. Conducting Training Need Assessment (TNA)

2. Engage stakeholders on capacity development

An effective capacity building process must encourage participation by all those involved. If stakeholders are involved and share ownership in the process of development they will feel more responsible for the outcome and sustainability of the development. Engaging stakeholder's who are directly affected by the situation allows for more effective decision-making, it also makes development work more transparent. UNDP and its partners use advocacy and policy advisory to better engage stakeholders.

3. Assess capacity needs and assets

Assessing preexisting capacities through engagement with stakeholders allows capacity builders to see what areas require additional training, what areas should be prioritized, in what ways capacity building can be incorporated into local and institutional development strategies. The UNDP argues that capacity building that is not rooted in a comprehensive study and assessment of the preexisting conditions will be restricted to training alone, which will not facilitate sustained results.

4. Formulate a capacity development response

The UNDP says that once an assessment has been completed a capacity building response must be created based on four core issues:

- **Institutional arrangements:** Assessments often find that institutions are inefficient because of bad or weak policies, procedures, resource management, organization, leadership, frameworks, and communication. The UNDP and its networks work to fix problems associated with institutional arrangements by developing human resource frameworks "cover policies and procedures for recruitment, deployment and transfer, incentives systems, skills development, performance evaluation systems, and ethics and values."
- **Leadership:** The UNDP believes that leadership by either an individual or an organization can catalyze the achievement of development objectives. Strong leadership allows for easier adaption to changes, strong leaders can also influence people. The UNDP uses coaching and mentoring programmers to help encourage the development of leadership skills such as, priority setting, communication and strategic planning.
- **Knowledge:** The UNDP believes knowledge is the foundation of capacity. They believe greater investments should be made in establishing strong education systems and opportunities for continued learning and the development of professional skills. They support the engagement in post-secondary education reforms, continued learning and domestic knowledge services.
- **Accountability:** The implementation of accountability measures facilitates better performance and efficiency. A lack of accountability measures in institutions allows for the proliferation of corruption. The UNDP promotes the strengthening of accountability frameworks that monitor and evaluate institutions. They also promote independent organizations that oversee, monitor and evaluate institutions. They promote the development of capacities such as literacy and language skills in civil societies that will allow for increased engagement in monitoring institutions.

5. Implement a capacity development response

Implementing a capacity building program should involve the inclusion of multiple systems: national, local, institutional. It should involve continual reassessment and expect change depending on changing situations. It should include evaluative indicators to measure the effectiveness of initiated programs.

6. Evaluate capacity development

Evaluation of capacity building promotes accountability. Measurements should be based on changes in an institutions performance. Evaluations should be based on changes in performance-based around the four main issues: institutional arrangements, leadership, knowledge, and accountability.

Area of institutional strengthening:

To strengthen the ability of the institution in following sector:

- Transport planning;
- Project costing and financing;
- Commercialization of transport operations;
- Investment management;
- Social and environmental management; and
- Project Management
- Planning, Design and Supervision
- Procurement
- Land Acquisition/ Resettlement
- Environmental Management
- Training & Capacity Building
- Social Assessment
- Community Participation Processes
- Institutional Strengthening
- Human Resources Development
- Integrated Rural Access Planning
- Cost-Benefit Analysis

Before Implementation of any project Identification of Institutional and Training Requirements is necessary:

Apart from the technical and economic feasibility, the feasibility study shall assess institutional and training requirements. The following guidelines apply:

- The existing organizational structure, staffing, roles and responsibilities and O&M systems and budget of the owner of the completed works shall be assessed.
- The additional responsibility, O&M workload and budget requirement due to the proposed project shall be assessed.
- The requirement for additional staff, and their job responsibilities, to be employed either permanently for the operation of the new works, or temporarily for the duration of the project only shall be assessed.
- Training needs for existing staff and any additional staff shall be assessed.
- The availability of in-house, in-country or external sources to provide the necessary training shall be identified.
- The institutional strengthening and training component within the project shall be recommended.
- The cost of such training and institutional strengthening shall be estimated.
- A staffing plan during the project and for post-project O&M shall be recommended.

Arbitration Act and Dispute related issue

Claim and Dispute Resolution

Claims arises when the Contractor believes he has been impeded in some way from works according to the contract.

Causes	Potential Responsibility
Delay in obtaining possession and access to the site	Employer
Delay in obtaining work permits, custom clearance	Employer
Delay in obtaining drawings and instructions	Consultant
Delay of commencement or completion of works by others	Employer
Delay in Payment	Employer
Mismatch in quantities/Variation	Consultant
Design, layout error	Consultant
Extension of Time	Employer/Consultant/ Contractor
Interpretation of specification	Consultant
Unusual Weather Conditions	None
Strike and Civil disturbances	None

Construction Claim Management Phases

1. Claim Prevention
 - The claim prevention process is activated at Pre-tender and Contract Formulation phases of a project. Contract documents project plans and scope of work should include all requirements related with the project because after the award of contract the opportunity to prevent claim comes to an end.
2. Claim Mitigation
 - Construction activities are generally performed in highly sensitive and outdoor environments. It is better to minimize the possibilities of occurring claim all through the progression of the contract. A well-defined scope, responsibilities and risks will help to decrease the possibility of occurrence of claims. Also risk management plans play important roles in the phase of claim mitigation.
3. Claim Identification and Quantification
 - Claim identification can be done by analyzing both the scope of work and the provisions of the contract. Inputs of the claim identification process are the scope of work, contract terms, definition of extra work and definition of extra time requested. Once an activity is identified as a claim, it will be quantified in terms of additional payment or a time extension to the contract completion or other milestone date. In this phase, schedule and critical path analysis should be made in order to calculate the delay of the project. In addition to that, additional direct and indirect costs originated from the claimed activity should be calculated.
4. Claim Resolution
 - Claim resolution is a step-by-step process to resolve the claim issues. Depending on the resolution terms of the contract, negotiation, mediation, arbitration and litigation processes will be conducted.

Claiming Procedure

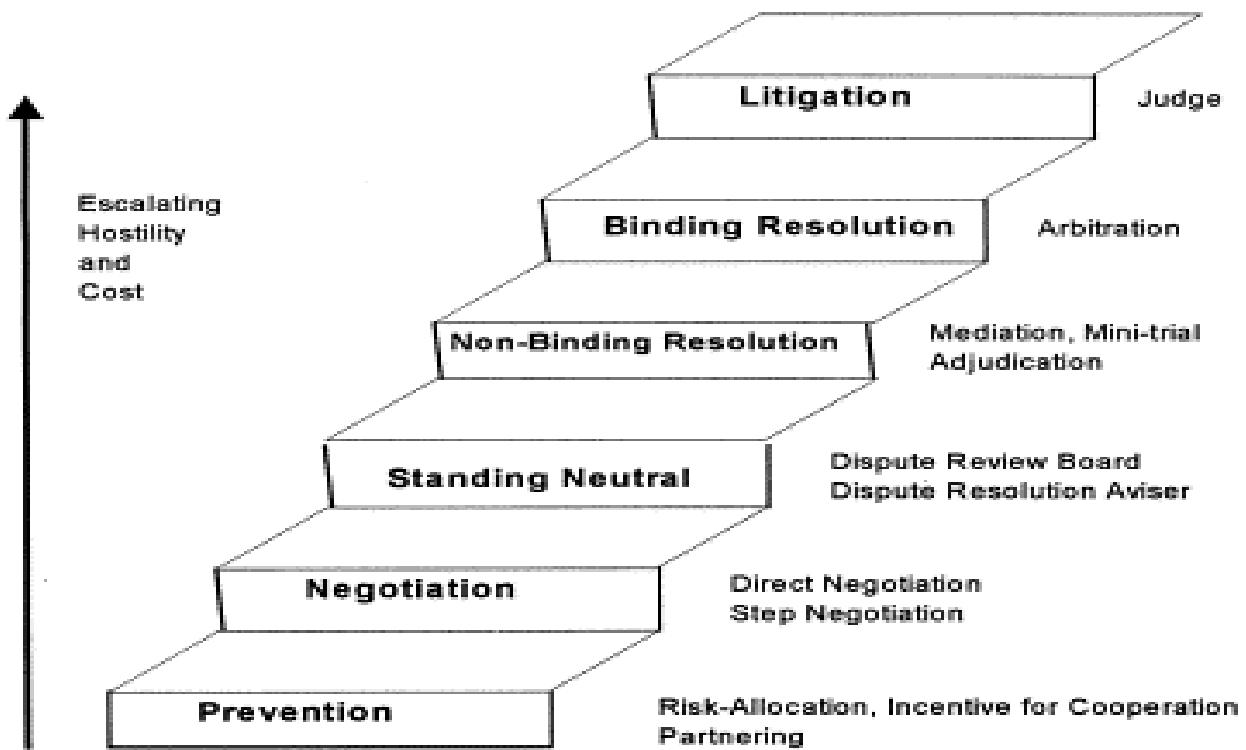
- Start keeping a detailed record simultaneously with occurrence of an event which gives rise to claim
- Give a notice of intention to claim within stipulated time
- Act on the Consultant's instructions regarding additional records needed to substantiate the claim
- Submit a claim with supporting information within the time limit
- For an event with continuing effect, submit an interim account of claim on regular basis
- Include an application for payment in addition to actions

Contents of Contractor's claim document:

1. Background
 - ✓ Provide historical data affecting the subject matter of the claim
 - ✓ Make all necessary references to other documents for appreciation of the background
2. Contractual Argument
 - ✓ State the particulars clause or clauses on which the claim is founded
 - ✓ Set out a logical argument in detail so that the Consultant and Employer may understand the claim
 - ✓ Refer to similar known settled claims in the country under similar contracts
3. Supporting Data, Site records, Photographs, Site diaries, Daily Weather Reports
 - ✓ Consultant's site instructions, Working Drawings, Minutes of Meeting, Visitor's Register
 - ✓ Quality control documents, work program, correspondences. Plants, records, Fuel and labor records
4. Financial Comparison
 - ✓ Comparison between the cost anticipated by the contractor during the bid with the cost actually incurred
 - ✓ Effect of circumstances giving rise to claim
- ✓ Dispute: A 'disagreement' between Employer and the contractor over the payment of money, the adjustment or interpretation of contract terms, any claims arising out of or relating to any aspect of a solicitation, bid, or failure to conduct a solicitation or bid, any decision to award, deny, suspend or cancel, terminate or not renew, any contract or agreement.
- ✓ Dispute Resolution Procedures: Apply to and shall constitute the exclusive procedure for resolution of all claims, disputes, complaints and Dispute Resolution Requests of any kind filed by an Aggrieved Person relating in any way to any agreement entered into by the Vendor.

What is Dispute Resolution

- Dispute resolution refers to the processes by which disputes are brought to an end.
- Dispute Resolution occur through:
 1. A negotiated outcome: Parties concerned sort out things themselves
 2. A mediated outcome: Parties use the services of an independent mediator to help them arrive at their own agreement, or
 3. An arbitrated or adjudicated outcome: An independent arbitrator or court determines how the dispute is to be resolved and makes a binding decision or order to this effect.
 4. Dispute resolution or Dispute settlement is the process of *resolving disputes* between parties.
 5. The term *dispute resolution* is sometimes used interchangeably with conflict resolution, although conflicts are generally more deep-rooted and lengthier than disputes.
 6. Dispute resolution techniques assist the resolution of antagonisms between parties that can include citizens, corporations, and governments.



Forms of Dispute Resolution

- Dispute resolution ranges from informal, non-legally binding methods to more structured legal procedures.
- All of them apply to workplace conflict, and all of them can help organizations avoid lawsuits and other legal battles.
- Some of the most common forms of conflict resolution are negotiation, mediation, arbitration and mediation-arbitration
- All of them focus on solving the conflict with the best interests of all parties involved in mind and avoiding court.
- Simple Dispute/s: Disputes if not too severe, simple negotiation might suffice. With this process, the conflicting parties agree to discuss their concerns with each other openly.
- Suggestions: Parties might share precisely what actions, practices or policies they are upset about and make suggestions about how the dispute/s can be resolved.
- Compromise for Comfort: As part of the dispute resolution, the involved parties typically agree to work together to find a compromise with which they all feel comfortable.
- Informal Process: There will be a meeting between the conflicted parties and a member of the senior management.

Best Practice Dispute Resolution Outcomes

Best Practice should be:

- Quick - the issues should be resolved quickly rather than allowing them to escalate through inaction.
- Fair - all relevant parties should be consulted so that all sides of the story are taken into account.
- Handled sensitively - disputes should, where possible and appropriate, be resolved in a confidential context in order to minimize impact on employees not affected by the dispute.
- Transparent - the procedure should be made known to every employee.
- Dispute resolution procedures should not interfere with the continued operation of the business where possible.
- Continue during Dispute Resolution Process: Any dispute resolution clause in an agreement, contract or policy should require that work is to continue normally during the dispute resolution process subject to any reasonable concerns about health and safety.

Dispute Resolution: Processes

Dispute resolution processes fall into two major types:

- Adjudicative processes: Such as litigation or arbitration, in which a judge, jury or arbitrator determines the outcome.
- Consensual processes: such as collaborative law, mediation, conciliation, or negotiation, in which the parties attempt to reach agreement.

Not all disputes, even those in which skilled intervention occurs, end in resolution.

Dispute resolution is an important requirement in international trade, including negotiation, mediation, arbitration and litigation.

Dispute Resolution: Mediation

- Goal of mediation: It is for a neutral third party to help disputants come to a consensus on their own.
- Rather than imposing a solution, a professional mediator works with the conflicting sides to explore the interests underlying their positions.
- Mediation can be effective at allowing parties to vent their feelings and fully explore their grievances.
- Working with parties together and sometimes separately, mediators can try to help them hammer out a resolution that is sustainable, voluntary, and nonbinding.

Dispute Resolution: Arbitration

- A neutral third party serves as a judge who is responsible for resolving the dispute.
- The arbitrator listens as each side argues its case and presents relevant evidence, then renders a binding decision.
- The disputants can negotiate virtually any aspect of the arbitration process, including whether lawyers will be present at the time and which standards of evidence will be used.

Dispute Resolution: Litigation

- The most familiar type of dispute resolution, civil litigation typically involves a defendant facing off against a plaintiff before either a judge or a judge and jury.
- The judge or the jury is responsible for weighing the evidence and making a ruling. The information conveyed in hearings and trials usually enters, and stays on the public record.
- Lawyers typically dominate litigation, which often ends in a settlement agreement during the pretrial period of discovery and preparation.

Mechanism for Dispute Settlement (PPA-Sec.58)

- Amicable Settlement: Any dispute arising between the Public Entity and the construction entrepreneur in connection with the implementation of the procurement contract shall be settled amicably.
- Arbitration: If the dispute could not be settled through amicable settlement, then the contract agreement should state that the dispute is settled through arbitration as per the prevailing law (Arbitration Act 2055).

Provision Relating to Dispute Resolution

- Dispute Resolution (Rule 129): A procurement contract may provide a mechanism for a resolution of dispute by stating the amicable settlement meetings and decision procedure, application procedure and subject of dispute resolution through amicable settlement as per the section 58 of the PPA 2058.
- Dispute Resolution Through Arbitration (Rule 135): If the dispute could not be resolved through the amicable settlement as per rule 129, shall initiate the proceedings of resolving such a dispute by means of an arbitration in accordance with law in force.

Dispute Settlement & Procedures (SBD)

- Amicable Settlement: The Employer and the Contractor shall attempt to settle amicably by direct negotiation any disagreement or dispute arising between them under or in connection with the Contract.
- Period to refer Arbitration: Any dispute between the Parties as to matters arising in the Contract which cannot be settled amicably within thirty (30) days after receipt by one Party of the other Party's request for such amicable settlement may be referred to Arbitration within 30 days after the expiration of amicable settlement period.
- Procedures of Arbitration: Arbitration shall be conducted in accordance with the arbitration procedures published by the Nepal Council of Arbitration (NEPCA) at the place as mentioned in SCC.

Arbitration Act, 2056 (1999)

- "Agreement": A written agreement reached between the concerned parties for a settlement through arbitration of any dispute concerning any specific legal issue that has arisen or may arise in the future under a contract or otherwise.
- "Dispute": A dispute which can be settled through arbitration under Arbitration Act.
- Counter-claim: means a claim made by the Respondent on the Claimants.
- "Rejoinder": A claim to the counter-claim by the Claimants.

"Arbitrator": An arbitrator appointed for the settlement of a dispute and the term also includes a panel of arbitrators
Disputes to be Settled through Arbitration (Sec.3)

- Procurement Agreement has Arbitration Clause: In case any agreement provides for the settlement of disputes through arbitration, the disputes connected with that agreement or with issues coming under that agreement shall be settled through arbitration according to the procedure prescribed in that agreement, if any, and if not, according to this Act.
- File Price in case of concerned parties to a civil suit of a commercial nature which has been filed in a court and which may be settled through arbitration according to prevailing laws, file an application for its settlement through arbitration, such dispute shall also be settled through arbitration.

Number of Arbitrators

- Arbitrator Number/s: The number of arbitrators is as specified in the agreement. In case the agreement does not specify the number of arbitrators, there shall ordinarily be three arbitrators.
- Turn into Odd: In case the number of arbitrators appointed under the agreement is an even one, it shall be turned into an odd one by designating an additional arbitrator chosen by them.

Appointment of Arbitrator

- Appointment of Arbitrator: The process of appointing arbitrators must be started within 30 days from the date when the reason for the settlement of a dispute through arbitration arises.
- In case the agreement mentions the names of arbitrators, they themselves shall be recognized as having been appointed as arbitrators.
- Separate Provision: If agreement has made any separate provision for the appointment of arbitrators, arbitrators shall be appointed accordingly.
- Each Party to Appoint: Each party shall appoint one arbitrator each and the arbitrators shall appoint the third arbitrator who shall work as the chief arbitrator.

Appointment of Arbitrators by Court:

Appointment by Court: The circumstances:

- In case no arbitrator can be appointed upon following the procedure contained in the agreement.
- In case the agreement does not mention anything about the appointment of arbitrators.

CV Details: Must explicitly mention the full name, address, occupation and the field of specialization of at least three persons who can be appointed as arbitrator, and also be accompanied by a copy of the agreement.

Submission of Claims, Counter-Claims, objections or Rejoinders

- Submission of Claims: The claimant shall submit its claim mentioning the details of the subject-matter of the dispute and the remedy sought, along with evidence, and also supply a copy thereof to the other party within the time limit mentioned in the agreement, if any,
- If there is no time limit mentioned then within three months from the date when a dispute requiring arbitration has arisen in case only the name of the arbitration has been mentioned in the agreement without mentioning any time limit, and from the date of appointment of the arbitrator in case the arbitrator has been appointed after the dispute has arisen.
- Objection to Claim: Other party shall submit its objection to it within 30 days from the date of receipt of the claim, unless otherwise provided for in the agreement.
- Counter Claims: In case it submits a counter-claim also, the arbitrator shall provide a time limit of 15 days to claimant submit its rejoinder over such counter-claim. In case a rejoinder is so submitted a copy thereof shall be supplied to the party making the counter claim.
- Time Extension: The circumstances beyond its control, it may submit an application to the arbitrator for an extension of the time limit within 15 days from the date of expiry of the time limit, explicitly mentioning satisfactory reasons for its failure to do so. The arbitrator may, if he/she finds the reasons mentioned in the application to be satisfactory, extend the time limit for not more than seven days.
- Documents in Full: While submitting claims, counter-claims, objections or rejoinders all documents, as well as evidence substantiating them, if any, shall also be submitted.
- Copies to Other Party: Each party submitting documents to the arbitrator in connection with arbitration proceedings shall supply copies thereof to the other party.

Power of the Arbitrator to Determine Jurisdiction (Sec 16)

- Jurisdiction: If arbitrator has no jurisdiction over the dispute which has been referred to him/her for settlement, or that the contract because of which the dispute has emerged is itself illegal or null and void, it may claim so before the arbitrator. The arbitrator shall take a decision on his/her jurisdiction or the validity or effectiveness of the contract before starting the proceeding on the matter referred to him/her.
- Time of Appeal to Court: Any party is not satisfied with the decision taken may file an appeal with the Appellate Court within 30 days from the date of decision, and the decision taken by that court on the matter shall be final.

Arbitrators to Follow Substantive Law

- The Nepal Law shall be the substantive law to be followed by the arbitrator, except when otherwise provided for in the agreement.
- The arbitrator may settle the dispute according to the *principle of justice and conscience* (Ex aqua et bono) or *natural justice* (amiable compactor) only when explicitly authorized by the parties to do so.
- The arbitrator shall settle the dispute according to the conditions stipulated in the concerned contract.
- Arbitrator shall also pay attention to the commercial usages applicable to the concerned transaction.

Arbitrators Decision Time Period

- Arbitrators should take decision as provided for in the agreement.

- If time is not mentioned in the agreement, then the arbitrator shall pronounce the decision ordinarily within 120 days from the date of submission of documents (Sec 24).
- In case any issue requiring arbitration is found to be inextricably linked with any other issue on which the arbitrator cannot pronounce the decision, the arbitration shall not pronounce decision on that issue (Sec 24).
- If arbitrator cannot take a decision, the arbitration must inform the concerned parties accordingly.
- The concerned party may file a complaint to the Court within 35 days from the date of receipt of a notice as per the prevailing law.

Matters to be mentioned in Decision (Sec. 27)

- Arbitration Issues: Brief particulars of the matter referred to for arbitration.
- Jurisdiction of Arbitration: Grounds for deciding that the matter falls under the jurisdiction of arbitration.
- Reasons & Grounds of Decision: Arbitrator's decision, and reasons and grounds for reaching that decision.
- Determine the Amounts/ validate Issues: Claims which must be realized or amounts which must be compensated.
- Interest / Additional Interest: Interest on amount to be realized, and the additional rate of interest to be charged with after the expiry of the time limit for implementing the decision of the arbitrator in the event of the limit mentioned in section.
- Place and date of decision.

Decision Invalidation Circumstances (Sec. 30)

- Time of Appeal to Invalidate: Any party dissatisfied with the decision taken by the arbitrator may, if one wishes to invalidate the decision file a petition to the High (Appellate) Court along with the related documents and a copy of the decision within 35 days from the date the decision heard or notice received thereof. Petition shall also supply a copy of that petition to the arbitrator and the other party.
- Petitioners to Prove: In case a petition is filed in the High (Appellate) Court the petitioner need to prove that the arbitration decision contains matters that invalidate decision or issue an order and need to have a fresh decision be taken

Implementation of Award (Sec.31)

- Implementation Time of Decision: Concerned parties shall be under obligation to implement the award of the arbitrator within 45 days from the date when they receive a copy thereof.
- Implementation of Award by Court: In case a award cannot be implemented within the time limit as above, the concerned party may file a petition to the District Court within 30 days from the date of expiry of the time limit prescribed for that purpose to implement the award.
- In case such a petition is filed, the District Court shall implement the award ordinarily within 30 days as if it was its own judgment.

Cost of Arbitration Proceedings/ Arbitrator's Remuneration

- Fixed Amount: Parties seeking arbitration must pay to the arbitrator the amount fixed their in consultation with parties for conducting the arbitration proceedings.
- Proportionate Expenses: Each party shall bear the expenses required for the arbitration proceedings in the proportion prescribed by the arbitrator taking into account the relevant circumstances.
- Arbitrator's Remuneration: Shall be as prescribed in the agreement.
- If remuneration is not mentioned in the agreement: Concerned parties shall pay the remuneration fixed by the arbitrator in consultation with them. Paid as a full payment or advance payment.

Dispute Settlement Perspectives in Nepal

- In Nepal, the provision of arbitration was introduced in 1957, while the Development Committee Act 1956 was amended.
- The provisions were confined up to the dispute to which the Development Broad is a party to the contract.
- Real practice of dispute settlement through arbitration was stated after the enhancement of Nepal Arbitration Act 1981 (Now, Arbitration Act 1998)- This is based on UNCITRAL model law.
- Nepal has very short history of modern arbitration concept. Before enactment of the Arbitration Act 1981, arbitration was carried out through a local celebrity when it becomes necessary to settle the disputes between the villagers and it has been in practice for a long time. Slowly business people felt necessary of a quick and cheap methodology of settling disputes and came up with arbitration proceedings.
- The new act stated that the disputes arising out of the agreement made with foreign donor agency shall be settled through arbitration, So, some examples of excessive delay up to four or five years for the settlement of disputes.
- It was felt as expensive as well as cumbersome and has adverse effect on the main purpose of arbitration.
- To solve the problems associated with arbitration and to assist in the development of adequate infrastructure, Nepal Council of Arbitration (NEPCA) was established in 1991 through initiation of non - government sector.

- It is important to understand the problem related to dispute and try to mitigation it in construction contract in the context of Nepal.

Causes for Emergence of Disputes in Nepal

- A dispute arises when a demand is made by a party and denied by the other and the contradiction is not accepted by the demanding party (either employer or contractor).
- Dispute originates due to disagreement on a decision or action taken by one party on the ground of effect to be borne by the other as consequence of the decision.
- In construction projects in all sector of development either completed or ongoing have suffered from time and cost overrun.
- A major reason for this is poor management of contract resulting in disputes leading to intermittent stoppage of works or slow progress or even abandonment of work requiring fresh call of tenders to engage a new contractor for execution.

Major Causes of Disputes in Nepal (Road Project/s)

Generally: four areas of disputes- contract document, force measure, timely action, and project characteristics

- Change of material Source
- Inadequate design and site information
- Commencement and Delay information
- Unforeseen physical / Site condition resulting to variation
- Strikes, Bandh, Riot (disturbance) or Disorder
- Delay in decision making and settlement of dispute
- Possession of site and Access to site
- Unusual weather condition and Inflation
- Unavailability of fuel and Construction material

Problematic Areas for the claim and disputes

- Engineer doesn't work impartial and do not fulfill their responsibility promptly.
- Contractors generally do not fulfill or are reluctant to perform contractual obligations.
- Employers are not prompt in decision making for any problems.
- Employers are not very serious toward fulfillment of their contractual obligation.
- Incorrect and inconsistent Drawing.

Dispute/ Claims Resolution Practices in Nepal

- Due to small size of construction industry of Nepal, the problems associated with disputes are not so similar to developed countries.
- A common problem generally found in Nepalese context is launching many claims but abandoned at last.
- Main reason of such abandonment is due to Employer dominated contact documents, Contractor's right minimally protected and low level of knowledge regarding contractual rights and obligation among the contracting parties.
- Neither employer nor contractor gives adequate attention about status of contract documents before entering into the contract Which, generates adequate ground to gives rise of many problems during contract execution.
- Due to no adequate provision incorporated in contract to tackle the probable situation liable to dispute, its resolution seems very difficult.
- Party-initiating disputes, a contractor has only two options these are:
 - Abandon the claims or disputes or
 - Go to litigation in court.
- Court Process being contractor is compelled to choose former one other very time consuming wise he suffers of payment delay of due amount.
- The main reason of delay was improper provision of disputes resolution in contract clause.
- The clause prevented to enter into arbitration process unless the work is completed.

Recommendation to Reduce Disputes in Nepal

- Proper Site Investigation: Claims arising from unforeseen physical conditions can be reduced by comprehensive site investigation during the phase of details design preparation.
- Risk and Budget: The employer / executing agency should prepare to bear all risk and allocate with add proper budget in contingencies for the issues arises from disputes / claims.
- Realistic BoQ & Periods: Consultants (i.e., Engineer) should ensure that BOQ and contract periods, which specified in the bid documents, are realistic and take account of existing site conditions.

- Facilitate regular execution work and make prompt decisions: Consultants (i.e., Engineer) should provide any information with corrected drawings timely on site to facilitate regular execution work and make prompt decisions regarding the technical and contractual issues by taking employer approval where necessary in specified time as required.
- Organize a kick off meeting: Consultants (i.e., Engineer) should organize a kick off meeting with contractors to confirm material availability, constructability and other constraints flagged up by contractors before their site mobilization.
- Better to establish a dispute settlement unit should be established to amicably (negotiation) settle any disputes before referring to contractual authority.
- Regular Management and Site Meetings involving employer, engineer and contractor. The time periods may be once a week, two weekly or monthly meetings among them.
- Recording of every minute of meeting and issues for the future reference regarding EoT, Price Adjustment, determine compensating events and even force majeure etc.
- Strictly adhere the Work Schedule and make contract administrator / coordinator responsible for non-performing of contract and punishing the contractor as per agreement.

सार्वजनिक खरिद तथा वित्तीय उत्तरदायित्व सम्बन्धी कानूनी व्यवस्था

सार्वजनिक खरिद

सार्वजनिक खरिद, सरकारी निकायले गर्ने खरिद मा स्वीकार्य विधि र मापदण्डको प्रयोग संग सम्बन्धित छ। सार्वजनिक निकायहरूले आफ्नो जिम्मेवारी पूरा गर्न, जनतालाई सेवा प्रवाह गर्न एंव देश विकासका कायहरू सञ्चालन गर्नका लागी आवश्यक पर्ने वस्तु तथा सेवा एंव निर्माण कार्यको सरकारी कोष प्रयोग गरि प्राप्त गर्ने तरिका नै सार्वजनिक खरिद हो। यो निश्चित विधि, प्रक्रियाबाट गरिन्छ जसको पालना गर्न सार्वजनिक निकायको कर्तव्य हो। Value for Money यसको मूल मर्म हो।

सार्वजनिक खरिदका उद्देश्य

- आवश्यक वस्तु, सेवा वा निर्माण कम मूल्यमा, अपेक्षित समयमा स्थानमा प्राप्त गर्ने,
- सार्वजनिक निकायका काम कारवाहिलाई सबैको स्वीकारयोग्य बनाउने,
- सार्वजनिक निकायका काम कारवाहिमा इच्छुक सबैलाई सहभागी गरीउने अवसरको शृजना गर्ने
- सार्वजनिक निकायलाई कानून, विधि, प्रक्रियमा वाँच्नु र एकरूपता कायम गरीउने,
- सरकारी सोतवाट अधिकतम उपलब्धी हासिल गर्ने,
- सार्वजनिक स्रोतको दुरुपयोग रोकी सुशासन कायम गरीउने।
- यसमा संलग्न निकायहरूको क्षमता वृद्धि गरि अभ बढि पारदर्शी, विश्वसनीय बनाउनु एंव गुणस्तरीय कार्य गर्ने,
- निजि क्षेत्रलाई प्रतिस्पर्धि गरीई राज्यका काम कारवाहिमा सहभागि गरीउने,
- सार्वजनिक खरिदको माध्यमबाट आर्थिक क्रियाकलाप वृद्धि गरि आर्थिक वृद्धि, विकास र रोजगारि शृजना गर्ने,
- स्वदेशी उद्योग, व्यवसायको संरक्षण प्रवर्धन (स्वदेशी उद्योग सेवा प्रदायकबाट नै १५ प्रतिशत महँगो भए पनि खरिद गर्नुपर्ने, निश्चित रकमसम्म स्वदेशी व्यवसायीबाट नै खरिद गर्नपर्ने विदेशी कम्पनीले नेपाली व्यवसायीलाई साझेदार बनाउनु पर्ने, एजेन्ट राख्नु पर्ने),
- जनसहभागिता बढाउने (उपभोक्ता समिति),
- राज्यको आवश्यकता, अवसर पत्ता लगाई त्यसको सम्बोधन गर्ने,

- अन्तर्राष्ट्रीय प्रविधि र व्यावसायिकता भित्रयाउने,
- जनतालाई सहज, सुपथ मूल्यमा गुणस्तरीय वस्तु तथा सेवा उपलब्ध गरीउने ।

सार्वजनिक खरिदको आवश्यकता

- भौतिक पूर्वाधाराहरूको निर्माण गरी देश विकासको जिम्मेवारी पूरा गर्न,
- सरकारले जनता संग गरेका वाचा र जनताका आशा वितरण गर्न,
- सरकारले आफ्नो स्रोत र क्षमता, अन्तर्राष्ट्रीय परिवेश लगायतका अवस्थामा लिनु पर्ने कानूनी तथा नीतिगत व्यवस्थाको अध्ययनका लागी सार्वजनिक खरिद प्रयोग गरि अध्ययन परामर्श गर्न
- देशमा रहेका प्राकृतिक स्रोतको राष्ट्र र जनताको हितमा प्रयोग गर्न,
- सरकारी काम कारवाहिका लागि आवश्यक पर्ने वस्तु तथा मालसामान प्राप्त गर्न,
- सार्वजनिक निकायको दैनिक कार्य सञ्चालन गर्न,
- सार्वजनिक कार्यमा गुणस्तरीयता कायम गरि सार्वजनिक स्रोतको सदुपयोग गर्न,
- सरकारको आर्थिक विकासको लक्ष्य प्राप्त गर्न,
- सार्वजनिक खरिदका माध्यमावाट आर्थिक क्रियाकलापमा वृद्धि गरि रोजगारि शृजना गर्न,
- निजी क्षेत्रलाई आर्थिक गतिविधिमा समावेश गरीउन,
- देशको स्रोत साधनको प्रयोग पारदर्शी, विश्वसनिय, स्वीकारयोग्य रूपमा गरि समझ राष्ट्र निर्माण गर्न ।

सार्वजनिक खरिदका सिद्धान्त

- **समानताको सिद्धान्त :** यस सिद्धान्तअनुसार सार्वजनिक निकायहरूले गर्ने खरिदमा सेवा दिन इच्छुक जुनसुकै व्यक्ति तथा संस्थाले विना भेदभाव सहभागी हुने अवसर पाउनुपर्दछ भन्ने हो किनकी राज्य स्वैको हो ।
- **Value for Money :** सार्वजकि निकायको आवश्यकता, गुणस्तर र परिमाणमा कम नगरिकन स्वैभन्दा कम मूल्यमा सेवा प्राप्त गर्न पर्दछ भन्ने यस सिद्धान्तको जोड हो । सार्वजनिक स्रोतको अधिकतम प्रयोग यसको सार हो ।
- **पारदर्शीताको सिद्धान्त :** सरकारका स्वै क्रियाकलाप पारदर्शी भएमा मात्र सरकारवाट गलत कार्य हुनु, सकैन, पारदर्शीताले विधि विधान र प्रक्रिया एवं प्राप्ति माथि जनता तथा सरोकारवालाहरूको नियन्त्रण एंव जानकारीगरीउने हुँदा खरिद प्रक्रिया पारदर्शी रूपमा सम्पर्नेन हुन पर्दछ भन्ने यसको सार हो ।
- **जवाफदेहिताको सिद्धान्त :** यो सिद्धान्त सार्वजनिक स्रोत परिचालन गर्ने पदाधिकारी संग सम्बन्धित छ । उसले स्रोत परिचालन तथा खर्चको वारेमा यसका सरोकारवालाहरूले मागेको जानकारीदिई कार्यको औचित्य सावित गर्नपर्दछ । यसले जिम्मेवार बनाउँछ ।
- **नैतिकताको सिद्धान्त :** सार्वजनिक स्रोतको प्रयोगमा कुनै दुराशय हुन नहुने, यसका प्रयोगकर्ताहरू कानूनसंग मात्र नभएर आफै संग, धर्म, संस्कृति, परम्परा मूल्य मान्यता समेतलाई विचार गरि नैतिकवान हुनु पर्दछ । यसले स्रोतको दुरुपयोगमा नियन्त्रण गर्दछ ।
- **प्रतिस्पर्धाको सिद्धान्त:** यस सिद्धान्तले सार्वजनिक कार्यमा निजि क्षेत्रलाई प्रतिस्पर्धात्मक कार्यमा ल्याउने कार्य गरि उसको कार्य क्षमताको विस्तार गर्ने, अन्य प्रतिस्पर्धी तयार गरि कार्यमा विलम्ब हुन नदिने,

गुणस्तर कम हुन नदिने एंव अर्थतन्त्रलाई चलायमान राख्नु पर्दछ भन्ने सिद्धान्तकै धारामा आधारित छ ।

- **विश्वसनीयताको सिद्धान्त :** यसले सार्वजनिक स्रोतको प्रयोग जनता एंव यसका सरोकारवालाले, सरकारले ठीक ढंगले गरेको छ भन्ने विश्वास योग्य बनाउने करामा केन्द्रित छ ।
- **विभेदरहितताको सिद्धान्त:** सार्वजनिक कोषको प्रयोग गरि हुने खरिद कार्यमा यसका इच्छुक कसैलाई पनि विभेद गर्न हुदैन भन्ने यस सिद्धान्तको सार हो ।

सार्वजनिक खरिद ऐन २०६३ को दफा २ ले खरिद भन्नाले सार्वजनिक निकायले यस ऐन बमोजिम कुनै मालसामान, परामर्श सेवा वा अन्य सेवा प्राप्त गर्ने वा कुनै निर्माण कार्य गर्ने वा गराउने कार्य सम्फन्नु पर्दछ । त्यसैगरि सार्वजनिक निकाय भन्नाले:

- संवैधानिक अङ्ग वा निकाय, अदालत, नेपाल सरकारका मन्त्रालय, सचिवालय, आयोग, विभाग वा सो अन्तर्गतका अन्य जुनसुकै सरकारी निकाय,
 - नेपाल सरकारको पूर्ण वा अधिकांश स्वामित्व वा नियन्त्रणमा रहेको संस्थान, कम्पनी, बैंक वा समिति वा प्रचलित कानून बमोजिम सार्वजनिक स्तरमा स्थापित वा नेपाल सरकारद्वारा गठित आयोग, संस्थान, प्राधिकरण, निगम, प्रतिष्ठान, बोर्ड, केन, परिषद् र यस्तै प्रकृतिका अन्य संगठित संस्था,
 - नेपाल सरकारद्वारा संचालित वा नेपाल सरकारको पूर्ण वा अधिकांश अनुदान प्राप्त विश्वविद्यालय, महाविद्यालय, अनुसन्धान केन्द्र र यस्तै प्रकृतिका अन्य प्राज्ञिक वा शैक्षिक संस्था,
 - प्रदेश र स्थानिय तह,
 - विकास समिति ऐन २०१३ बमोजिम गठित विकास समिति
 - नेपाल सरकारको ऋण वा अनुदानमा संचालीत संस्था र
 - नेपाल सरकारले नेपाल राजपत्रमा सूचना प्रकाशन गरी सार्वजनिक निकाय भनी तोकेको अन्य संस्था
- सार्वजनिक खरिद ऐन, २०६३ का उद्देश्यहरु
- सार्वजनिक खरिद कार्यविधि, प्रकृया तथा निर्णयः खुला, पारदर्शी, वस्तुनिष्ठ र विश्वसनीय बनाउने
 - खरिद प्रकृया : प्रतिस्पर्धा, स्वच्छता, इमान्दारीता, जवाफदेहीता र विश्वसनीयता प्रवर्धन
 - सार्वजनिक खर्चको अधिकतम प्रतिफल हासिल गर्ने : मितव्ययी तथा विवेकपर्ण ढंगबाट खच गर्ने कार्य प्रणालीको स्थापना गर्ने

सार्वजनिक खरिद प्रक्रियाका चरणहरु

खरिदको प्रकृति र लागत अनुमानअनुसार खरिदका चरणहरू हुन्छन् । सामान्यतया निम्न चरणहरु हुन्छन् ।

१. खरिद आवश्यकता पहिचान

- आगामी दिनमा सार्वजनिक निकायको उद्देश्य र लक्ष्य पूरा गर्ने के खरिद गर्नुपर्छ भनी पहिचान गर्ने र यदि रु. १० करोड माथिको खरिद आगामी दिनमा गर्नुपर्ने छ वा आयोजना हो भने खरिद गुरुयोजना बनाउने ।

२. वार्षिक बजेट निर्माण

- वार्षिक बजेट तर्जुमा गर्दा आगामी वर्ष खर्च गर्नुपर्ने के-के छन भन्ने कराको आंकलन गरी बजेटमा समावेशगर्नुपर्ने र वार्षिक खरिद योजना समेत बनाई सँगै पेश गर्नुपर्ने ।

३. विस्तृत डकुमेन्टस् तयार गर्ने

- खरिदको प्रकृतिअनुसार आवश्यकता पूरा हुने गरी डिजाइन तयार गर्ने, विवरण (Specification) बनाउने, लागत अनुमान तयार गर्ने ।

४. खरिदका भेण्डरलाई आफ्नो सक्षमता, प्रस्ताव तथा दररेट पेश गर्न आहवान

- खरिदको प्रकृतिअनुसार पर्वयोग्यता देखिने प्रमाण, बोलपत्र, प्रस्ताव, दरभाउपत्र पेश गर्न सार्वजनिक सूचना गरी वा मौजुदा सूचीवाट माग गर्ने कार्य ।

५. मूल्यांकन

- प्राप्त हुन आएका डकुमेन्टसको आधारामा पूर्व योग्यताका प्रमाणहरू, बोलपत्र, प्रस्ताव, दरभाउपत्रको मूल्यांकन गरी योग्यता छनोट गर्ने कार्य ।

६. सूचना

- बोलपत्र वा प्रस्तावदाताहरूलाई कसको बोलपत्र वा प्रस्ताव स्वीकृत गरी सम्झौता गर्न चाहेको भनी जानकारी गरीउने ।

७. वार्ता तथा सम्झौता

- कार्यान्वयनसंग सम्बन्धित विभिन्न पक्षसँग वार्ता गरी योग्यतम ठहरिएको बोलपत्रदाता वा प्रस्तावदाताको बोलपत्र प्रस्ताव स्वीकृत गरी सम्झौता गर्ने ।

८. सम्झौता व्यवस्थापन र प्रशासन

- सम्झौताअनुसारको कामको सुपरीवेक्षण ।
- मालसामान, निर्माण वा सेवा प्राप्तिको परिमाण र गुणस्तरको मापर्ने र प्रमाणीकरण ।
- प्रगति अनुगमन ।
- समस्या समाधान बैठक ।

९. भुक्तानी

- सम्झौताअनुसार काम भएको प्रमाणीकरणको आधारामा बिल भुक्तानी ।

खरिद सम्बन्धी आचारसंहिता (दफा ६१)

- क) स्वच्छ, प्रतिस्पर्धा हुने गरी निष्पक्ष व्यवहार गर्ने,
- ख) सार्वजनिक हित हुने गरी खरिद कार्य गर्ने,
- ग) स्वार्थ बाभिने गरी खरिद कार्य नगर्ने,
- घ) बोलपत्रदाताको संवेदनशील तथ्य गोप्य राखिदिने,
- ड) आफ्ना पदमा रही खरिद कार्यमा संलग्न हुँदा जोसंग खरिद गरिएको छ, त्यो कम्पनीसंग कनै रूपमा सेवा निवृत्त भएको दुई वर्षसम्म काम नगर्ने,
- च) आफ्नो नातेदार खरिदमा भेण्डरको रूपमा संलग्न भएका छन् भने खरिद प्रक्रियाको महत्वपर्ण चरणमा संलग्न नहुने,
- छ) कानून विपरीत हुने काम नगर्ने,
- ज) भ्रष्टाचारजन्य तथा जालसाजीपूर्ण काम नगर्ने,
- झ) मिलेमतो तथा गुटबाजीमा संलग्न हुन नहुने ।

यदि खरिद कानूनले गर्न पर्ने भनेको कार्य नगरेको वा आचरण विपरीत हुने कार्य गरेको अवस्थमा विभागीय कारवाही गर्नु पर्ने हुन्छ ।

खरिद गरिनु पर्ने कुराहरु

नेपालको सार्वजनिक खरिद ऐन २०६३ र नियमावली २०६४ ले सार्वजनिक निकायले गर्ने खरिदलाई निम्न ४ वर्गमा वर्गीकरण गरेको छ ।

● मालसामान

- ✓ भौतिक वस्तु - सामान्य स्टेशनरी सामान, सवारी साधनदेखि कार्यालय सञ्चालन गर्न चाहिने, वा सेवा प्रदान गर्न चाहिने, वस्तुहरू । यिनको भौतिक अस्तित्व हुने हुँदा इन्द्रियद्वारा यिनको गुणस्तर, आकार प्रकार जाँच्न, परख गर्न सकिने हुन्छ ।

● निर्माण

- ✓ यो पनि सेवा नै हो तर यसको नतिजाको रूपमा भौतिक संरचना जस्तै सडक, पुल, भवन नहर, जल विद्युत आयोजना तयार हुन्छन् ।

● परामर्श सेवा

- ✓ कुनै सार्वजनिका निकायसंग रहेको जनशक्तिमा ज्ञान वा सीप नरहेको, समय अभावका कारण कुनै काम गर्न नभ्याउने वा कुनै बाह्य व्यक्तिबाट कुनै काम गराउँदा निष्पक्ष वस्तुगत हुनसक्ने देखिएमा बाह्य संस्था वा व्यक्तिद्वारा सो काम गरीउन सकिनैछ । परामर्श सेवाको देखिने रूपको रूपमा कुनै निर्णय लिनमा सधाउने दस्तावेज बन्दछ वा क्षमता अभिवद्धिको लागि तालिम दिइन्छ ।

● अन्य सेवा

- ✓ सवारी साधन, उपकरण वा मालसामान भाडामा लिने, ढावानी गर्ने वा मालसामान मर्मत सम्भार गर्ने जस्ता कार्य पर्दछन् ।
- ✓ यसमा बौद्धिक रूपमा गरिने कार्य बाहेक अन्य खालका सेवा पर्दछन् । जस्तै - कार्यालयको सुरक्षाको लागि सेक्युरिटी गार्ड, माली, फोटोकपी वा सेक्रेटरियल सेवा, सफाई सेवा, यातायात, ढावानी जस्ता सेवा पर्दछन् । यसखाले सेवाबाट या प्रत्यक्ष रूपमा सेवा प्रवाह नै गरीइन्छ, या सेवा प्रवाह गर्ने कार्यमा सहयोग प्याइन्छ ।

खरिद विधिमा प्रभाव पार्ने तत्वहरु

- खरिद गरिने वस्तु वा सेवा
- लागत अनुमान
- भेण्डरको प्रकृति (सरकारी निकाय, उपभोक्ता वा निजी व्यवसायी)
- भेण्डरको योग्यताको परिक्षण गर्नुपर्ने वा नपर्ने

खरिद विधि

(क) निर्माण, मालसामान र अन्य सेवा

- अन्तर्राष्ट्रिय रूपमा खुला बोलपत्र आहवन गरि
 - ✓ यदि कुनै वस्तु वा सेवा देशभित्रका उत्पादकबाट प्राप्त हुन नसक्ने भए अन्तर्राष्ट्रिय विज्ञापन गर्न सकिने । वस्तु खरिदको लागि विदेशी उत्पादक वा उत्पादकले पनि भाग लिन सक्नै तर नेपाली वस्तुलाई १५% सम्म बढी मूल्य परे पनि प्राथमिकता दिनुपर्ने ।

✓ रु ५ अर्बा रुपियाभन्दा माथिको निर्माण कार्य

- राष्ट्रिय रूपमा खुला बोलपत्र आहवन गरी
- सिलवन्दी दरभाउपत्र आहवन गरी ।
- रु .२० लाख सम्म मालसामान, निर्माण र अन्य सेवा तथा रु २० लाख सम्मको परामर्श सेवा
- सोभै खरिद
- ✓ सार्वजनिक खरिद नियमावली, २०६४ को नियम ८५(१) (क) मा रु .५ लाखसम्म लागत अनुमान गरिएको छ भने सोभै खरिद गर्न सकिने प्रावधान राखिए पनि नियम ८५ (४) मा “सार्वजनिक निकायले एक लाख रुपैयाँ भन्दा बढी रकमको सोभै खरिद गर्दा मौजदा सूचीमा रहेका कम्तीमा ३ वटा आपूर्तिकर्ता निर्माण व्यवसायी, परामर्शदाता वा सेवा प्रदायकबाट लिखित रूपमा दरभाउपत्र वा प्रस्ताव माग गरी खरिद गर्न पर्नेछ ।”
- उपभोक्ता समिति तथा लाभग्राहि समूदाय वाट निर्माण कार्य
- ✓ रु. १ करोडसम्मको निर्माण कार्य उपभोक्ता समितिमार्फत गर्न सकिने
- अमानत खरिद
- ✓ एकपटकमा रु. १ लाखसम्मको निर्माण कार्य वार्ताबाट गरीउन सकिने
- एकमुष्ट दर विधिवाट नियम १क
- क्याटलग सपिङ्ग विधि नियम ३१ख
- ✓ रु. ६० लाखसम्म कुनै सामान खरिद गर्न पर्दा सामानको उत्पादक वा अधिकत विक्रेताले आफ्नो ब्रोसर वा मूल्य सूचीमा लेखेको दररेटमा किनैने भए उस्तै खालका विक्रेता विच प्रतिस्पर्धा गरीई गर्ने ।
- सीमित बोलपत्र विधि नियम ३१ग
- ✓ यदि कुनै वस्तु वा सेवाको उत्पादक निकै कम आपूर्तिकर्ता छन् भने तिनकाबिच मात्र प्रतिस्पर्धा गराउने ।
- नयाँ लिने पूरानो दिने नियम ३१५घ
- ✓ पुराना मालसामान दिई नयाँ किन्ने तरिका
- विशेष परिस्थितीमा गरिने खरिद ।
 - ✓ ऐनले “ विशेष परिस्थिति ” भन्नाले सुख्खा, अनावृष्टि, अतिवृष्टि, भूकम्प, बारी, पहिरो, आगलागी जस्ता प्राकृतिक वा दैवी प्रकोप तथा आकस्मिक वा अप्रत्याशित विशेष कार वाद सृजित परिस्थितिलाई व्याख्या गरेको छ । ऐनको दफा टट मा विशेष परिस्थितिमा खरिद गर्ने सम्बन्धी व्यवस्था रहेको छ जस अनुसार “खरिद ऐनमा अन्यत्र जनसूकै कुरा लेखिएको भए तापनि विशेष परिस्थिति उत्पन्न भई तत्काल खरिद नगर्दा सार्वजनिक निकायलाई थप हानि नोक्सानी हुनु, अवस्था आई परेमा सार्वजनिक निकायले तत्काल खरिद गर्न वा गरीउन सक्नेछ र यस्तो परिस्थितिमा खरिद गर्ने सम्बन्धमा अन्य व्यवस्था तोके बमोजिम हुनेछ ” भन्ने व्यवस्था रहेको छ ।

(ख) परामर्श सेवा

- प्रतिस्पर्धात्मक प्रस्ताव माग गरि
 - ✓ राष्ट्रिय स्तरको प्रतिस्पर्धात्मक प्रस्तावः रु २० लाखभन्दा माथि रु. १० करोडसम्म लागत अनमान भएको परामर्श सेवा
 - ✓ अन्तरराष्ट्रिय स्तरको प्रतिस्पर्धात्मक प्रस्तावः रु. १० करोडमाथि
- सोभै खरिद
- वर्ता

खरिद सम्बन्धी कानूनी तथा संस्थागत व्यवस्था

कानूनी व्यवस्था

- सार्वजनिक खरिद ऐन, २०६३
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नेपालमा सार्वजनिक खरिदको स्थिति मूल्यांकन

सार्वजनिक खरिद सम्बन्धमा सार्वजनिक खरिद अनुगमन कार्यालयको वार्षिक प्रतिवेदनमा आउने स्थितिले सैद्धान्तिक र व्यवहारिक स्थितिको जानकारी हुने भए पनि यो सबै खरिदको मूल्यांकुनैमा हुदैन। खरिद ऐनको परिपालनाका सम्बन्धमा महालेखा परीक्षकको प्रतिवेदन मा आउने विषयहरूले नेपालको वार्षिक रूपमा खरिद

प्रक्रियाको स्थिति देखिन्छ । महालेखा परीक्षकको र सार्वजनिक खरिद कार्यलयको वार्षिक प्रतिवेदनका अंश हेर्दा हाम्रो खरिद स्थितिको कमजोर अवस्था यस्तो छ :

- सार्वजनिक निकायहरुमा सार्वजनिक खरिद बुझने जनशक्तिको अभै कमी छ
- कर्मचारी तथा पदाधिकारीको Interest ले लागत अनुमान, Specification, Packing मा नै प्रभाव पारी स्रोतको दुरुपयोग बढेको छ ।
- निजी क्षेत्रको व्यावसायिकता त कमजोर छ नै, इमानदारिता पनि कमजोर देखियो ।
- कानून कार्यान्वयनमा सरकारी पदाधिकारी कमजोर देखिए, ठेक्का लिने, काम नगर्नेलाई कारबाहि गर्ने, कालो सुचीमा राख्ने कार्य अगाडि बढाउने कार्य हुनै सकेन भने पनि हुने देखियो
- म्याद थप, भेरियसन र मूल्यवृद्धि जस्ता विषयमा सार्वजनिक पदाधिकारीले कानूनको मर्म अनुसार कार्य नगरि अधिकार र स्रोतको दुरुपयोग गरेको पाइएको छ ।

नेपालको सार्वजनिक खरिदमा रहेका समस्याहरु

- खरिद सम्बन्धी निकायमा छुटै विशेषज्ञ सेवाको विकास हुनु, नसकेको ।
- एकातर्फ विश्वसनीय लागत अनुमान तयार नगर्ने तथा अर्कोतर्फ स्पेशिफिकेशन तयार गर्न प्रतिस्पर्धा सीमित हुनु, गरी एक वा दुई ब्राण्डलाई मिल्ने गरी तयार गर्ने प्रवत्ति पछिल्ला वर्षहरुमा बढ़ै गएको देखिन्छ ।
- आवश्यक पर्नेभन्दा बढी योग्यता, क्षमता, गुण (Feature) भएका विवरण बनाउन् । यसले खरिद गरिने कुरा महँगो बनाउँछ, प्रतिस्पर्धा सीमित गराउँछ ।
- सार्वजनिक खरिद अनुगमन कार्यलयको संस्थागत क्षमता कमजोर, न्युन कर्मचारी र स्रोत साधन ।
- सार्वजनिक खरिद ऐन काननका विरोधाभाष तथा अस्पष्टताहरु ।
- सार्वजनिक निकायहरुमा योजनावद्व र रणनीतिमा आधारित खरिद पद्धति स्थापना हुन नसक्नु ।
- खरिद महाशाखा, शाखा इकाई अवधारणाको प्रभावकारी कार्यान्वयन नहुनु ।
- प्रतिस्पर्धालाई सीमित गर्ने गरि स्लाइसिङ प्याकेजिङ गर्ने प्रतिमा वृद्धि हुदै जानु ।
- निश्चित ब्रान्ड सग मात्र मिल्ने गरि स्पेशिफिकेशन तयार गर्ने प्रतिमा वृद्धि हुदै जानु ।
- आचरण सम्बन्धी व्यवस्थाको पालना प्रभावकारी रूपमा कार्यान्वयन नहुनु ।
- बोलपत्रमा मिलोमतो गरि ठेक्का पार्ने, बजार कब्जा गर्ने कार्य बढ़ै जानु ।
- ठेक्का, खरिद सम्झौताको कायान्वयन पक्ष कमजोर र समस्याग्रस्त हुनु ।
- बोलपत्रको शुरुवात चरण भन्दा कार्यान्वयनको चरणमा वढि समस्याभएको जसले कार्य सम्पर्नेन नहुनु ।
- निर्माण व्यवसायीहरुमा व्यावसायिकताको विकास अपेक्षित हुन नसक्नु ।
- खरिद कायमा संलग्न कर्मचारीहरुमा सार्वजनिक खरिद सम्बन्धी ज्ञान सिपको कमी हुनु ।
- न्यून मूल्य कबोल गर्ने (Low Bidding) लाई नदिई अन्यलाई दिंदा काननी भन्नेट व्यहोर्नु पर्ने हुँदा उसैलाई दिने गरिएको, जसले कामै नहुने, समयमा नहुने र गुणस्तरीय नहुने स्थितिको शृजना भएको ।

- पेशकी लिने, कार्य नगर्ने प्रवृत्ति, यसको प्रयोगको अध्ययन गरि सुधारा नभएको र आवश्यक कारबाहि हुन नसकेको ।
- सार्वजनिक निकायका पदाधिकारी र कर्मचारीहरुमा निर्णय क्षमता र नैतिकता समेत कमजोर उपभोक्ता समिति वा लाभग्राहिका कार्य उद्देश्य अनुसारको गुणस्तरीय नभएको, उनीहरुले आफ काम लिने तर काम निर्माण व्यवसायीवाट गरीउने विकति बढेको यसले गर्दा कार्य भन गुणस्तरीय नभाएको र अनियमितता मौलाएको ।
- आवश्यक संख्यामा स्वदेशी आर्तिकता तथा निर्माण व्यवसायी देशभित्र नहुँदा प्रतिस्पर्धा कमजोर भएको ।
- तोकिएको समयमा काय सम्पर्ने नहदा समय र लागत बढी हुने र प्रतिफल कम हुदै गएको ।
- औचित्य र आधारा विना परम्परागत रूपमा म्याद थप कार्य हुदै गएको ।
- कमजोर र लापरवाहिपण लागत अनुमानले भेरिएसन हुने गरेको ।
- बोलपत्रमा योग्यताका आधारा तयार गर्दा देखि नै सार्वजनिक पदाधिकारीले आचरण विपरित कार्य गरी मिलोमतोलाई प्रश्रय दिने गरेका कारण खरिद प्रक्रियामा लागत बढने, समयमा नहुने गुणस्तरीय कार्य नहुने स्थिति आएको ।
- कमजोर आयोजना व्यवस्थापन, कमजोर कर्मचारी व्यवस्थापन ।
- **Right Man in Right Place** नभएको ।
- बोलपत्र छल्ने उद्देश्यले खरिद कार्य टुक्रयाइ कार्य गर्ने प्रवृत्ति यसले अनियमिततालाई बढोत्तरि गरेको छ ।
- आयोजना स्थलका स्थानीय वासिन्दाका अनावश्यक माग ।
- कमजोर सुरक्षा व्यवस्थाले व्यवसायीहरुको मनोवल कमजोर भएको ।
- स्थानीय निर्माण सामग्रीको ढुवानीमा हुने अवरोध एवं आयतित सामग्री पर्याप्त नपाइनु ।
- उच्च स्तरको प्राविधिक र व्यवस्थापक एवं मध्यम स्तरका प्राविधिक कर्मचारी कामदारको अभाव ।
- विश्व स्तरमा प्रयोग भएका नवीन र असल खरिद प्रक्रिया अवलम्बन नहुनु ।
- खरिद चरणमा आएका विवादको छिटो समाधान हुन नसकेको ।
- अनुगमनकारी निकायको अनावश्यक हस्तक्षेपले असल नियतले कार्य गर्ने मनाशय भएका कर्मचारी र व्यवस्थापक पनि हतोत्साहित भएका ।

सार्वजनिक खरिदलाई व्यवस्थित बनाउन अवलम्बन गर्नुपर्ने उपायहरु

- कानूनको परिपालनमा जोड दिने । सार्वजकि खरिद अनुगमन कार्यालयको संस्थागत क्षमता विकास गर्ने ।
- विशेषज्ञ कर्मचारी समूह बनाउने यस समहवाट मात्र सार्वजकि खरिद कार्य सञ्चालन गर्ने ।
- सार्वजनिक खरिद **Traning Academy** बनाउन ।
- सूचना प्रविधिमा आधारित खरिद प्रणाली लागु गर्ने ।
- लागत अनुमान र बोलपत्र मल्यांकुनैलाई बस्तुनिष्ठ र पारदर्शी बनाउने ।
- नियामक निकायको क्षमता अभिवद्धि गर्ने ।

- सूचना प्रविधिमा आधारित अनुगमन गर्ने, तेस्रो पक्षवाट अनुगमन गर्ने ।
- विश्वमा प्रचलित आधिकारिक खरिद प्रणाली अवलम्बन गर्ने ।
- ऐन नियममा भएका अस्पष्टता हटाउने ।
- खरिद कार्यमा संलग्न कर्मचारीको मनोबल वढि गर्न उचित सविधा दिने, खरिद प्रक्रियामा जिम्मेवार बनाई उचित दण्ड र प्रस्कारको प्रयोग गर्ने ।
- आयोजनास्थलमा असान्दर्भिक माग राख्ने र खरिद प्रक्रियामा अवरोध गर्ने उपर कडा कारबाहिको नीति लिने ।
- अन्तरसरकारी निकाय समन्वय लाई आयोजना मैत्री बनाउने ।
- ५० प्रतिशत भन्दा बढी समय थप गर्दा पनि कार्य सम्पर्नेन नहुने आयोजनका हकमा त्यस्ता आयोजनाको विशेष अध्ययन गरि कैफियत देखिएका पदाधिकारी र पर्तिकता तथा निर्माण व्यवसायीलाई तत्काल कारबाहि गर्ने ।
- सार्वजनिक खरिदका प्रत्येक चरणलाई पारदर्शी बनाउने ।
- Right Man in Right Place को अवधारणा कार्यान्वयन गर्ने ।
- बोलपत्रसम्बन्धी कागजातमा स्तरीयता र एकरूपता कायम गर्ने ।
- सार्वजनिक पदाधिकारी तथा निजी क्षेत्र वैका लागी आवश्यक आचारसंहिता निर्माण गरी कडाईका साथ लागू गर्ने ।
- कर्मचारीको प्राविधिक र व्यवस्थापकीय क्षमता विस्तार गर्ने ।
- अनुगमन र सुपरिवेक्षणलाई प्रभावकारी बनाउने ।
- सबै बोलपत्र विद्युतिय माध्यमवाट मात्र खरिद हुने व्यवस्था अनिवार्य गर्ने ।
- आयोजना प्रमखले मासिक रूपमा अनुगमन गरी आयोजना स्थलमा प्रशासनिक तथा प्राविधिक कर्मचारी र उपकरण उपलब्ध भए नभएको माथिल्लो निकायमा पेश गर्ने अनिवार्य व्यवस्था गर्ने ।
- सार्वजनिक निर्माण कार्यको स्थानीय एवं सरोकारवाला नागरिकबाट पनि अनुगमन गराई प्रतिवेदन लिने ।
- सार्वजनिक खरिद कानूनका सम्बन्धमा प्रत्येक २ वर्षमा र बोलपत्र सम्बन्धी कागजातमा समय समयमा Review गरि सुझावलाई अद्यावधिक गर्ने ।

Framework Contract

Definition

A framework is an agreement with suppliers/contractors/service providers to establish terms governing contracts that may be awarded during the life of the agreement. In other words, it is a general term for agreements that set out terms and conditions for making specific purchases (call-offs) contracts. A framework normally covers the provision of a generic group of goods, works or services (or a combination), for example:

- Goods – office supplies, furniture etc.,
- Services – design consultancy, supervision consultancy etc.,
- Civil Works – construction of buildings, Bridge etc.

A procurement framework is an agreement put in place with a provider or range of providers that enables buyers to place orders for services without running lengthy full bidding exercises. Frameworks are based on large volume buying. The master agreement is a document agreed between the parties that sets out standard terms that apply to all the transactions entered into between those parties. Each time that a transaction is entered into, the terms of the master agreement do not need to be renegotiated and apply automatically. So, a framework agreement is an 'umbrella agreement' that sets out the terms (particularly relating to price, quality and quantity) under which individual contracts (call-offs) can be made throughout the period of the agreement (normally a maximum of 5 years).

A frame agreement is a form of collaboration agreement that involves the establishment of a common protocol and set of standard terms on which a succession of task agreements may be based. A framework is an agreement with suppliers to establish terms governing contracts that may be awarded during the life of the agreement. In other words, it is a general term for agreements that set out terms and conditions for making specific purchases (call-offs) contracts. PE's normally have one 'framework' for each generic group and have a 'framework agreement' with more than one supplier under each framework. A call-off contract specifies terms, conditions and prices with suppliers of goods and services. These umbrella agreements may be used for long term duration of time up to 5 years, and the contract is legally binding. Procurement practices of some countries illustrates that a purchase order is a formal request to a vendor to supply specific goods or services under specified conditions may form a contract, but in other many countries formal contract formed to have a call-off for purchase. Here is an example of procurement framework with two agreements and four contracts. In this example it should be consider that each school building construction project called-off under the agreement has its own contract.

The FA itself may be a contract, but only if this agreement creates an obligation to procure and supply. However, a FA is more likely to not be a contract itself, but merely an agreement about the terms and conditions that would apply to any order placed during its life. In this case, a contract is made only when the order is placed and each order is a form of separate contract.

General conditions for use of framework contract

- Acquire goods, services when the exact times (when required basis or urgent basis) or quantities for future deliveries are not known at the time of contract award.
- Permit stocks to be maintained at minimum levels.
- When procurement is expected to arise on an indefinite or repeated basis during a given period of time.
- Any type of disaster management regarding the logistic supplies.

Framework Setup

Frameworks can be set up by individual contracting authorities (PEs), a contracting authority acting on behalf of a number of other contracting authorities or a central purchasing authority acting on behalf of a sector or group of contracting authorities. When a framework is being established on behalf of a group of contracting authorities or a central purchasing authority, the authorities which

are party to it must be made clear. This can be done either by listing the authorities in the IFB notice or framework bidding documents (FBD) or describing them in a way that makes the scope and range of the framework clear to market operators. For instance, it would probably be acceptable to describe a framework as applying to “all central Government Departments and Offices” or “all Local Authorities in the province of....” in the IFB, and for greater clarity, listing the relevant authorities (PEs) in the framework bidding documents. On the other hand, for example, describing a framework as “open to all public bodies” would not be sufficiently clear and transparent and cannot work transparently. However, open bid competition is a very common and transparent method for framework solicitation, limited and restricted bid procedures can be used as per the requirements.

But such all framework structures shall advertised using the standard IFB and when publishing, the PE must indicate: (i) that the intention is to establish a framework, (ii) whether the framework is single supplier or multi-supplier and if latter number of suppliers it intends to include (open or close framework), (iii) the duration of the framework (Single year or multi-year framework) (iv) an estimate of the total value or quantity of purchases expected to be made for the duration of the framework, (v) procedures being used (open bid, restricted bid, limited bid etc.), and (vi) a group of contracting authorities or a central purchasing authority (single/multi PEs). Firms awarded to FAs have no guarantee of any call-off contracts, so that the number of firms awarded FAs should be proportionate to the anticipated demand. This allows all FA firms an opportunity to be awarded a call-off contract. Similarly, FAs shall only be used between the PEs and FA firms, but if several PEs have established a FA together, a lead PE can be appointed to act on behalf of other PEs. Once a FA is established, PEs doesn't need to open advertisement for individual call-off contracts.

Classified Framework Procedures

There are different ways to apply framework procedures as per the requirement of PEs. Open and closed framework and single or two stage framework procedures or single/multiple suppliers are very common into practice. It is the requirements of PEs that can identify itself a proper option among these procedures. Solicitation in the context of the procurement methods applied, variety of requirements of PEs, terms and conditions applied and availability of suppliers or contractors or consultants may identify proper method of framework itself.

1.1 Open/Close Frameworks

By means of open bid proceedings or other restrictive procurement methods both open and closed framework procedures can be applied, but consideration of transparency and competition is must. Generally, open framework agreements are based on the notion that in each stage of proceedings bidders shall have a right to bid. 'Open framework agreement' means a FA to which a supplier (or suppliers) or contractor (or contractors) in addition to the initial parties may subsequently become a party or parties. For the purpose PE may establish and maintain an open FA online too. But in a closed framework procedure only initial bidder can participate in the competition. A 'closed framework agreement' means a FA to which no supplier or contractor that is not initially a party to the framework agreement may subsequently become a party. So in the closed framework scenario a procurement contract under a FA may be awarded only to a supplier or contractor or consultant that is a party to

the framework agreement initially. Due to the reason, all bidders shall not have equal and continuous opportunity to present their bids in close FA system.

1.2 Single/Double stage

FA Procedure Generally, 'Framework agreement procedures' means a procedure conducted in two stages: a first stage to select a supplier (or suppliers) or contractor (or contractors) to be a party (or parties) to a FA with a PE, and a second stage to award a procurement contract under the FA with a supplier or contractor. Similarly, a 'framework agreement' means an agreement between the PE and the selected supplier (or suppliers) or contractor (or contractors) concluded upon completion of the first stage of the FA procedure. 'Framework agreement procedure with second stage competition' means a procedure under a open FA or closed FA with more than one supplier or contractor in which certain terms and conditions of the procurement that cannot be established with sufficient precision when the FA is concluded are to be established or refined through a second stage competition. Whereas, 'Framework agreement procedure without second stage competition' means a procedure under a closed FA in which all terms and conditions of the procurement are established when the FA is concluded.

1.3 Single/Multiple

PE Frameworks A FA is required for one PE and is awarded; following the selection process, on the "most economically advantageous" or "lowest price" basis to a single supplier or contractor is a single-to-single FA. In this simple framework procedure single PE and single supplier or contractor selected. And the PE calls-off its requirements, during the period of the framework, on the basis of the terms agreed when the framework was set up. But if a FA is required to cover a number of PE's needs over subsequent effective years the procedure may slightly different. In this case, following the IFB notice and the selection process, based on financial, economic and technical capacity, bids are evaluated on the "most economically advantageous" or "lowest price" basis for entry into the framework contracts for multiple PEs. The PE's authority proceed to the supplier within the framework whose offer is the "most economically advantageous" or "lowest price", based on the original award criteria, for each call-off required throughout the five years. As the terms do not need to be refined or supplemented in this case, the PE may not need to use the mini-competition option.

2 Framework for Goods and Supplies

As we discuss above, a FA is required for one authority and is awarded, following the selection criterion, on the "most economically advantageous" or "lowest price" basis to a single supplier. Then the concerned authority of PE can calls-off its requirements, during the period of the framework, on the basis of the terms agreed when the framework was set up. But if a FA is required to cover a number of different products involves different supplier or contractor for PE's needs even in a single year or over subsequent effective years, following the IFB notice and the selection process, based on financial, economic and technical capacity, different bids are evaluated on the "most economically advantageous" or "lowest price" basis for entry into the framework contracts for each requirement to different suppliers or contractors. For example, a number of suppliers can be included in the framework to supply a variety of paper types – plain, lined, recycled, colored, etc. – over the five-year period. The PE's authority proceeds to the supplier within the framework whose offer is the "most economically advantageous" or "lowest price", based on the original award criteria, for each call-off required throughout the five years. As the terms do not need to be refined or supplemented

in this case, the concerned authority of the PE may not need to use the mini-competition option. An alternative approach might be to award a framework to a single supplier for each region or product or for rotation supply. In some instances, a conventional bidding process specifying a need, inviting and evaluating bids and awarding contracts to the best bidder in accordance with the award criteria may be suitable for establishing a single supplier or multi-supplier framework.

3 Framework for Consulting Services

If a FA is required for a range of consultancy services, a notice is issued and candidates for the framework are short-listed on the basis of financial, economic and technical capacity – including track record and ability. Proposals are then evaluated on the “most economically advantageous” or “highest ranked” basis, including quality and cost-based selection systems. A number of companies may be included in the framework, covering the range of consultancy services required on the basis of hourly rates for different grades of staff form part of the agreed terms. When there is a need to call-off specific services, within the framework, the contracting authority holds a mini-competition with all service providers capable of meeting that need for the category of services required in order to establish which company provides the “most economically advantageous” or “highest ranked” offer for the particular mix of grades/rates required.

4 Framework for Civil Works

In the case of minor civil works, a framework can be awarded to several contractors on NCB basis, following selection process and award criteria on the “most economically advantageous” or “lowest price” basis. These small contractors provide a range of services within categories, such as building, plumbing and electrical services. Hourly rates, call-out charges and levels of quality are set under the framework agreement. When a call-off is required, the PE's authority proceeds to the contractor providing the “most economically advantageous” or “lowest priced” offer, on the basis of the original award criteria, for the particular need of minor civil works. There is no need for a mini competition in this case, as the terms do not need to be refined. An alternative approach might be to award a framework to a single contractor for each region. If a framework is needed for units to be constructed as part of a major civil works, following the IFB notice and a selection process, based on financial, economic and technical capacity, a framework is awarded to a small number of prime contractors for units to be constructed as necessary throughout the period of the agreement. The kinds of units in question might include prison cells, categories of hospital beds (e.g., acute, accident and emergency etc.) garages etc., where there is a standard size, design or requirement. The awards are made on the basis of the particular mix of quality/unitary prices to meet the need. At the call-off stage, a mini-competition is held and bids are invited from all contractors capable of meeting the requirement for the specific units, with the call-off awarded to the contractor providing the “most economically advantageous” or “lowest price” bid for the units required. If a framework is required for the construction of standard building units or office space in various locations over a five-year period, following the IFB notice and the selection process, based on financial, economic and technical capacity, a framework is awarded to a number of prime contractors on “the most economically advantageous bid” or “lowest evaluated bid” basis. Each of the prime contractors must have the skills and supply chains necessary to undertake the different aspects of the construction work during the

period of the framework. A decision is made, at each call-off, as to whether a mini-competition is needed – based on whether the terms need to be refined. If a mini-competition is necessary, bids are invited from all prime contractors capable of meeting the particular need. Call-offs under the framework, which may be awarded any time up to the end of the agreement itself, can continue beyond the period of the agreement until the work is completed.

5 Benefits of framework arrangements

FA can provide many benefits to the PEs. In FA proceedings, all arrangements with suppliers need to be managed once they have been put in place, by seeking end-user's and buyer's feedback, as well as through feedback from the suppliers. Performance measurement of procurement proceedings can be so easier never been before. Reviews can be undertaken regularly within a FA for continuous improvements. This is particularly important when setting up FA on behalf of a large organization. Some direct benefits we can observe as follows:

5.1 Buying through multi-user FAs is a good idea because:

- Frameworks are a pre-competited route to market providing a vehicle to centralize procurement spending,
- It enables e-procurement, credit cards and other electronic instruments,
- It avoids duplication by buying through one PE on behalf of other PE,
- Suitable business method for firms,
- It can be used as variety control or standardization,
- Shared procurement expertise and resources, and
- Shared risk and contract management.

5.2 Frameworks reduce administrative burden:

- Time and cost compared to running a full procurement procedure each time (and helps to ensure legal compliance). FA is saving time at a critical stage of a project, as the buyer can firm up the requirement at the appropriate time and simply call-off rather than having to go through a competitive bid process that could cause unnecessary delays to the project.
- The requirement has been advertised and capable suppliers have been identified through competitive procurement, so at mini-competition there may be fewer bids to evaluate for each requirement - particularly if the framework is divided into distinct lots.
- At mini-competition it should be easier to compare bids, particularly where the framework is divided into distinct lots, because the products and services making up those lots will normally have been defined and categorized when the framework was established.
- Flexibility: use of FAs is not mandated and authorities are free to use these agreements where they provide value for money or to go elsewhere if they do not (but when taking into consideration the potential savings of going elsewhere you would of course need to factor in the potentially considerable cost of running another procurement exercise).
- Security of supply (on multi-supplier agreements) - if one supplier on a framework runs into difficulty there would still be other suppliers who are capable of delivering the requirement.
- It avoids re-work on purchasing.

5.3 Framework creates aggregate demand:

- Larger volumes are more attractive to suppliers and can achieve lower unit costs
- Leverage/economies of scale through aggregation can be achieved,

- Smaller organizations working together will gain benefits usually only achievable by large organizations,
- Lower bid costs are incurred by suppliers, and passed on to buyers, and
- Opportunities to standardize goods, services and operations across framework users to further reduce costs. However, these advantages can only be achieved where public purchasers have an understanding of the market in which they are operating, and how competitive pressures works in that market, to enable them establish the appropriate conditions for the framework to operate.
- The value for money advantages of centralized procurement without the associated level of bureaucracy.
- A mutually beneficial longer term working relationship can be established with the supplier.

5.4 Benefits to the supplier

- Long-term approach to business development planning also in terms of stock level and continuity of supply.
- Long-term mutually beneficial working relationship can be established with the contracting authority.

6 Syndrome of Mini-competition

All the terms may not be precisely specified at the time of establishing the initial framework. There is now a provision where by sub competitions or “mini competitions” may be used to determine the most competitive supplier for a particular requirement among framework participants. An appropriate timeframe must be allowed for the submission of bids for the mini-competition. This timeframe is not prescribed but it must be reasonable and have regard to the complexity and time required to prepare a bid for submission. The bids received are then evaluated and contracts awarded on the basis of award criteria indicated under the rules of the framework. It is also permissible to use an electronic reverse auction, Best and Final Offer competition (BAFO) and competitive negotiation¹⁹ conducted under the provisions of technical notes provided and the corresponding national implementation measures, among the competing participants to determine the 'most economically advantageous' or 'lowest evaluated' offer.

FA procedure with second stage competition means a procedure under an open FA or a closed FA with more than one supplier or contractor in which certain terms and conditions of the procurement that cannot be established with sufficient precision when the FA is concluded are to be established or refined through a second stage mini competition. The institution would have to be quantifiably certain that the figure arrived at can be fully justified and have the calculations ready at the start of the process should it ever come into question. The most prudent line would be to include the figure within the mini-competition document to seek avoidance of a challenge around the introduction of additional evaluation criteria at a later stage and this influencing the final decision. Doing so may inevitably reduce the appetite of bidders to win the business and the incumbent may feel they don't have to sharpen their pricing model quite so tightly to retain the business. It would therefore be advisable to weigh up the pros and cons of its inclusion very carefully before commencement.

7 Legislative Provisions of FA in Nepal

Present PPA does not provide the clear ground of FA, whereas Clause 2(R) of PPR defines it as a form of contract only applicable to the procurement of goods and other services. This clause and Annex-3 of the PPR contains the following provisions for Framework or Unit Rate Contract:

- PE may form a framework or unit rate contract arrangements to procure goods and other services from one or more suppliers under the stipulated terms and conditions, rates and time.
- This Contract shall contain minimum and maximum quantity of goods and other services.
- Duration of this contract normally shall be of one year.

Clause 85(2) of this PPR states that the procurement of civil works, goods and consulting services within the preferred limits of cost estimate can be done through framework agreement. Prior to the 3rd amendment of the PPR, this provision for FAs existed only in the direct purchase modality of procurements of Goods and other services. Third amendment of PPR limits its scope relating it to use of standing list as per the Clause 85(4) of PPR. This mandatory use of the provision restricts its use in practice. These typical provisions were supposed to be used for “single sourcing” of commonly procured supplies or services as needs arose repeatedly in a given period of time. However, no PE's have been found using these provisions, 3rd amendment of PPR again adds the provisions relating the process of FA for commonly used in civil works, supplies and services items through a separate organization called Public Procurement Service Office (PPSO)²⁰. Clause 145ka of PPR has following provisions relating to FA

- Government of Nepal may establish PPSO, a central level organization, in order to assist centralized PEs as defined by PPA for the procurement of goods and selection of suppliers (through FA??).
- Government of Nepal, through Gazette notification, shall identify the list of goods that can be procured from a supplier or suppliers selected by PPSO under the framework arrangements. This FA shall be through MOU between PEs and PPSO.
- PPSO shall have following duties to perform:
- To collect procurement needs from centralized PEs and MOU with them (Framework),
- To analyze the procurement needs and prepare technical specifications, cost estimates and bidding documents on the basis of analysis (Framework Arrangement),
- To issue IFB notice and select suppliers (Framework Agreement),
- To notify PEs for procurement (Framework contract) as per agreed terms and conditions (framework agreement),
- PPMO shall issue separate Procurement Guidelines for Government Procurement Services (Framework Arrangements).
- PEs may select the cheaper rate of market than the framework rates if it occurs. However, PPSO is not yet established and prescribed framework arrangements have not been initiated yet. So due to the reason, again 4th amendment of PPR have been made and authorized central level PEs to use framework agreements as per standard framework bidding documents approved by PPMO. These provisions are indicative arrangements for framework and quite unclear to use in practice. Nevertheless, FA can be used effectively in the following areas of procurement management in Nepal:
- Procurement of Goods like: medical supplies, medicines, Office supplies, Furniture, Fixture, vehicle servicing items, computers and IT related items and small cash and carry items;
- Procurement of Civil Works like: Repair and maintenance works, fixed rate items, lump sum contract, sanitation supplies, electrical supplies, drawings and designs etc. Procurement of Consultants like: Accounting and auditing, system design, software, repair and maintenance of software applications, system security, hourly rate services etc.;

- Procurement of Other Services like: transportation, house rent, office security, lease of assets, contract services, appointment of agents, canteen services, equipment maintenance contracts, relief logistic in case of disaster such as flood and landslides etc.

Nutshell

FAs are agreements with contractor or suppliers or service providers which set out umbrella terms and conditions under which specific purchases (call-offs) contracts can be made during the terms and timeframe of the agreement. For the purpose, PPR should have to define FA as ‘an agreement between one or more contracting authorities (PEs) and one or more economic operators (contractor or suppliers or service providers), and the purpose of which is to establish the terms governing call-off contracts to be awarded during a given period of time, in particular with regard to right price and, where appropriate, the right quantity. Framework procedures and/or FAs may not suitable for all procurements. A carefully planned framework arrangement that is used well can bring many benefits for the economy and save time/money through being able to call off requirements. Conversely, a poorly planned framework that is used incorrectly can create issues for buyers and suppliers and is at risk of challenge. The new amendment of PPA/PPR only takes on board while the clear definition and procedures of framework arrangements introduces strong provisions designed to ensure that they are awarded in an open, transparent and competitive manner. For the purpose, PPMO should have to define, firstly, whether the framework agreement as an open or close agreement between one or more contracting authorities(PEs) and one or more economic operators (bidders), secondly, to establish the standard terms and conditions for governing call-off contracts to be awarded during a given period of time, thirdly, duration of the framework agreements, fourthly the procedures and the anticipated frequency of mini-competition, and lastly but not least, whether the award of procurement contracts (call-offs) under the FA will be to the 'lowest price' or 'most advantageous' notion. These are some fundamental provisions required for the effective use of framework arrangements to be a panacea. Therefore, government need to develop e-portal for the implementation of this procurement model as soon as possible.

अन्तरसरकारी वित्तीय हस्तान्तरण, अनुदान तथा राजस्व बाँडफाँड र मृष्ण व्यवस्थापन

वित्तीय संघीयता

- कर लगाउने (Taxing), खर्च गर्ने (Spending) र नियमन गर्ने (Regulating) अधिकारलाई सरकारका तीन तहबिच बाँडफाँट गर्ने कार्यलाई वित्तीय संघीयता भनिन्छ ।
- नेपालको सन्दर्भमा संघ, प्रदेश र स्थानीय तहबिच वित्तीय शक्तिको बाँडफाँड र समायोजनलाई वित्तीय संघीयता भन्ने गरिन्छ ।
- वित्तीय शक्ति भन्नाले कामको तय गर्ने (Defining Functions), कामको लागि आवश्यक स्रोत जुटाउने (Revenue Generating), काम गर्न खर्च गर्ने (Spending), यस सम्बन्धी कामको प्रशासन तथा नियमन गर्ने (Regulating) कार्य सम्झनु पर्दछ ।

वित्तीय संघीयताका आयामहरु

(क) खर्चको जिम्मेवारी

संघीयता अवलम्बन गरेका विश्वका सबै देशहरुमा खर्चको जिम्मेवारी कानूनद्वारा स्पष्ट गरिएको हुन्छ। नेपालको सन्दर्भमा नेपालको संविधानले संघ, प्रदेश र स्थानीय तहको अधिकार प्रयोगको लागि अलग अलग आर्थिक कार्यप्रणालीलाई व्यवस्थित गरी संघीय संचित कोष, प्रदेश संचित कोष र स्थानीय संचित कोष समेत तिनै तहको स्रोत परिचालन, कोष व्यवस्थापन, खर्च निकाशा पद्धति जाँच परीक्षण लगायतका वित्त व्यवस्थापन कार्यहरुलाई संवैधानिक प्रत्याभूति प्रदान गरेको छ।

(ख) राजस्व

- तीनै तहका सरकारको संविधान र अन्य प्रचलित कानून बमोजिम वित्त व्यवस्थापन गर्न राजस्व महत्वपूर्ण स्रोत हो।
- आयकर, मू.अ.कर, उत्पादनमा लार्ने अन्तःशुल्क एवं वैदेशिक व्यापारमा लार्ने भन्सार महसुल उठाउने अधिकार संघको हुन्छ।
- प्रदेशको एकल अधिकार कृषि आयमा लार्ने कर हो।
- प्रदेश र स्थानीय तहहरुको अधिकारमा सवारी साधन कर, घरजग्गा रजिष्ट्रेशन शुल्क, विज्ञापन कर र मनोरञ्जन कर लागइन्छ।
- स्थानीय तहले मात्र लगाउने कर सम्पत्ति कर, घरवहाल कर भूमिकर हुन।
- तीनै तहका सरकारले प्रदान गर्ने सेवामा शुल्क, दस्तुर, दण्ड र जरिवाना लिन सक्ने व्यवस्था छ।

(ग) वित्तीय हस्तान्तरण

प्रदेश र स्थानीय तहको नेपाल सरकारबाट प्राप्त हुने वित्तीय हस्तान्तरण प्रमुख स्रोत हो। यस अन्तर्गत समानीकरण अनुदान, ससर्त अनुदान, विशेष अनुदान, समपुरक अनुदान रहेका छन्।

(घ) ऋण लिने अधिकार

- नेपालको संविधान बमोजिम वैदेशिक सहायता र ऋण लिने अधिकार नेपाल सरकारको हो।
- नेपाल सरकारको स्वीकृतिमा प्रदेशले पनि लिन पाउने व्यवस्था छ।
- अन्तर सरकारी वित्त व्यवस्थापन ऐन, २०७४ ले वैदेशिक सहायता परिचालनका क्षेत्रहरु स्पष्ट तोकेको छ।

अन्तरसरकारी वित्तीय हस्तान्तरण

नेपालको संविधानको धारा ६० मा नेपाल सरकारले चार प्रकारका अनुदानका माध्यमबाट प्रदेश स्थानीय तहमा वित्तीय हस्तान्तरण गर्ने व्यवस्था रहेको छ। प्रदेश सरकारले पनि स्थानीय तहलाई का हस्तान्तरण गर्नुपर्ने व्यवस्था गरिएको छ।

१. वित्तीय समानीकरण अनुदान

- नेपालको संविधानको धारा ६०(४) बमोजिम नेपाल सरकारले प्रदेश र स्थानीय तहलाई खर्चको आवश्यकता र राजस्व क्षमताको आधारामा र धारा ६०(५) मा प्रदेशले नेपाल सरकारबाट प्राप्त अनुदान र आफ्नो स्रोतबाट उठाने राजस्वलाई मातहतको स्थानीय तहको खर्चको आवश्यकता र राजस्व क्षमताको आधारामा प्रदेश कानून बमोजिम वित्तीय समानीकरण अनुदान वितरण गर्ने व्यवस्था छ।

- प्रदेश र स्थानीय सरकारलाई प्रदान गरिने समानीकरण अनुदानको सिफारिस राष्ट्रिय प्राकृतिक स्रोत तथा वित्त आयोगले गर्ने प्रावधान छ ।
- वित्त आयोगले प्रदेश र स्थानीय तहले प्राप्त गर्ने न्यूनतम अनुदान समेत सिफारिस गर्नुपर्ने व्यवस्था गरेको छ । वित्तीय समानीकरण अनुदानबाट प्रदेशले संविधानको अनुसूची ६ र स्थानीय तहले अनसचि द बमोजिमका एकल अधिकार सूचिमा रहेका कार्यहरु गर्दछन् ।
- यसको लागि राजस्वको क्षमता र खर्चको आवश्यकता वीचको अन्तर पहिचान गर्न जरुरी छ ।
- वित्त आयोग ऐन, २०७४ बमोजिम समानीकरण अनुदानका लागि लिनुपर्ने आधाराहरु निम्नानुसार रहेका छन्:
 - ✓ प्रदेश तथा स्थानीय तहमा रहेको शिक्षा, स्वास्थ्य, खानेपानी जस्ता मानव विकास सूचकाङ्क
 - ✓ अन्य प्रदेश वा स्थानीय तहको सन्ततिलित विकासको अवस्था
 - ✓ प्रदेश र स्थानीय तहमा रहेको आर्थिक, सामाजिक वा अन्य कुनै प्रकारको विभेदको अवस्था
 - ✓ प्रदेश र स्थानीय तहको पूर्वाधारा विकासको अवस्था र आवश्यकता
 - ✓ प्रदेश र स्थानीय तहले जनतालाई पुन्याउनुपर्ने सेवा
 - ✓ प्रदेश तथा स्थानीय तहको राजस्वको अवस्था र उठाउन सक्ने क्षमता
 - ✓ प्रदेश तथा स्थानीय तहको खर्चको आवश्यकता

२. ससर्त अनुदान

- यो अनुदान नेपाल सरकारले प्रदेश र स्थानीय तहलाई र प्रदेशले स्थानीय तहलाई उपलब्ध गराउँछ । प्रदेश र स्थानीय सरकारको राष्ट्रिय नीति तथा कार्यक्रम, मानक, पूर्वाधाराको अवस्था अनुसार ससर्त अनुदान उपलब्ध गरीउन राष्ट्रिय प्राकृतिक श्रोत तथा वित्त आयोगले अध्ययन अनुसन्धान गरी आधार तयार गर्नुपर्ने संवैधानिक व्यवस्था छ ।
- यस्तो अनुदान क्रियाकलाप, आयोजना वा कार्यक्रमसँगै आवद्ध गरी तिनमा खर्च गर्नुपर्ने रकम किटान गरेर उपलब्ध गरीइन्छ ।
- यो अनुदान आवद्ध र ससर्त हुन्छ ।
- यस्तो अन्दान संविधानमा उल्लेखित साभा अधिकारका सचिमा रहेका कार्यहरु गन उपलब्ध हुन सक्छ । सामान्यतया देहायका कार्यहरुका लागि प्राप्त हुन्छः
 - ✓ राष्ट्रिय नीति कार्यान्वयन गर्न
 - ✓ राष्ट्रिय मानकको पालना गर्न
 - ✓ पूर्वाधारको अपर्याप्ततालाई पूर्ति गर्न
 - ✓ नेपाल सरकारले विभिन्न समयमा गरेका राष्ट्रिय र अन्तर्राष्ट्रिय प्रतिवद्धताहरु पूरा गर्न
 - ✓ तीनै तहको सरकारको सहकार्यबाट पूरा गरिनु पर्ने राष्ट्रिय लक्ष्य हासिल गर्न
 - ✓ संविधानको अनुसूचि ७ र ९ मा भएका कार्यहरु प्रदेश वा स्थानीय तह वा दबै तहबाट सम्पन्न गर्न
- ससर्त अनुदान उपलब्ध गराउँदा नेपालको संविधानको धारा २५१(१) को खण्ड (ग) र वित्तीय समानीकरण अनुदान प्रदान गर्दाका आधाराहरु लिनुपर्ने व्यवस्था गरिएको छ ।
- ससर्त अनुदानको रकम तोकिएकै काममा खर्च गर्नुपर्ने हुन्छ र सो वर्ष खर्च हुन नसकेमा सो काम सम्पन्न गर्ने गरी अर्को वर्ष उपलब्ध हुन सक्छ ।

- अन्तर सरकारी वित्त व्यवस्थापन ऐन, २०७४ अनुसार ससर्त अनुदान प्रदान गर्दा नेपाल सरकारले योजना कार्यान्वयन गर्ने सम्बन्धमा आवश्यक सर्त तोक्ने सक्ने र सम्बन्धित प्रदेश तथा स्थानीय तहले त्यस्तो सर्त पालना गर्नुपर्ने व्यवस्था छ ।
- प्रदेशले प्रदेश कानून बमोजिम स्थानीय तहलाई ससर्त अनुदान उपलब्ध गरीउनु पर्ने व्यवस्था छ ।

३. सम्पूरक अनुदान

- सम्पूरक अनुदान मागमा आधारित हुन्छ ।
- यस्तो अनुदान प्रदेश वा स्थानीय तहले आफुले सञ्चालन गर्ने भौतिक पूर्वाधारासँगै सम्बन्धित आयोजनाहरूका लागि अपुग हुने स्रोत परिपूर्ति गर्न प्रदेश तथा स्थानीय तहले माग गरेमा निश्चित प्रक्रियाका आधारामा उपलब्ध हुन्छ ।
- यसका लागि माग गर्ने पक्षले आफुले व्यहोर्न सक्ने सीमा सम्मको स्रोत आफै व्यवस्था गर्न पर्दछ ।
- अन्तर सरकारी वित्त व्यवस्थापन ऐन, २०७४ ले सम्पूरक अनुदान उपलब्ध गराउने प्रक्रियाको व्यवस्था गरेको छ भने नेपाल सरकारले कार्यविधि निर्धारण गरेको छ ।
- सम्पुरक अनुदान कुनै योजनाको कुल लागतको अनुपातको आधारामा प्रदान गरिन्छ ।
- सम्पुरक अनुदानका आधाराहरू
 - ✓ योजनाको सम्भाव्यता
 - ✓ योजनाको लागत
 - ✓ योजनाबाट प्राप्त हुने प्रतिफल वा लाभ
 - ✓ योजना कार्यान्वयन गर्न सक्ने वित्तीय वा भौतिक क्षमता
 - ✓ योजनाको आवश्यकता र प्राथमिकता

४. विशेष अनुदान

- केहि विशिष्ट प्रकृतिका कार्यहरू गर्न प्रदेश र स्थानीय तहको अन्य स्रोत अपर्याप्त हुने भएको अवस्थामा यस्तो अनुदान उपलब्ध हुन्छ ।
- अन्तर सरकारी वित्त व्यवस्थापन ऐन, २०७४ अनुसार शिक्षा, स्वास्थ्य, खानेपानी जस्ता आधाराभूत सेवाको विकास र आपूर्ति, अन्तर प्रदेश वा अन्तर स्थानीय तहको सन्तुलित विकास र आर्थिक सामाजिक वा अन्य कुनै प्रकारले विभेदमा परेको वर्ग वा समदायको उत्थान वा विकासका लागि विशेष अनुदान उपलब्ध गरीइने व्यवस्था रहेको छ ।
- सम्पूरक अनुदान भौतिक पूर्वाधाराका लागि मागमा आधारित भएर र विशेष अनुदान सामाजिक पूर्वाधाराका लागि सञ्चालन गरिने आयोजना वा कार्यक्रमका लागि उपलब्ध हुनु, व्यवस्था रहेको छ ।

राजस्व बाँडफाँड

संघीय संरचनामा ३ तहको सरकारको वित्तीय स्रोतको बाँडफाँड गर्ने प्रयोजनको लागि नेपालको संविधान, अन्तरसरकारी वित्त व्यवस्थापन ऐन, २०७४ र राष्ट्रिय प्राकृतिक स्रोत तथा वित्त आयोग सम्बन्धी व्यवस्थाहरू रहेका छन् ।

- नेपालको संविधानको धारा ६० मा नेपाल सरकारले संकलन गरेको राजस्व संघ, प्रदेश र स्थानीय तहलाई न्यायोचित वितरण गर्ने व्यवस्था मिलाइने प्रावधान छ ।
- अन्तर सरकारी वित्त व्यवस्थापन ऐन, २०७४ को दफा ६ मा नेपाल सरकारले संकलन गर्ने राजस्व मध्ये मूल्य अभिवद्धि कर र आन्तरिक उत्पादनबाट उठेको अन्तःशुल्क रकम ७० प्रतिशत नेपाल सरकारलाई १५ प्रतिशत प्रदेशलाई र १५ प्रतिशत स्थानीय तहलाई बाँडफाँड गरिने व्यवस्था छ ।
- प्रदेशलाई छुट्टाइएको १५ प्रतिशतलाई १०० प्रतिशत मानी सात प्रदेशहरुमा र स्थानीय तहलाई छुट्टाइएको १५ प्रतिशतलाई ७५३ स्थानीय तहहरुमा बाँडफाँड गर्नको लागि राष्ट्रिय प्राकृतिक स्रोत तथा वित्त आयोग ऐनको दफा १५ मा देहायका आधाराहरुमा राजस्व बाँडफाँडको आधारा र ढाँचा तयार गर्ने दायित्व राष्ट्रिय प्राकृतिक स्रोत तथा वित्त आयोगको रहेको छ ।
 - ✓ जनसंख्या र जनसांख्यिक वितरण विशेष अवस्था
 - ✓ क्षेत्रफल
 - ✓ मानव विकास सूचकाङ्क
 - ✓ खर्चको आवश्यकता
 - ✓ राजस्व संकलनमा गरेको प्रयास
 - ✓ पूर्वाधारा विकास
 - ✓ विशेष अवस्था
- प्रदेश र स्थानीय तहको साभा अधिकारमा रहेका राजस्व पनि बाँडफाँड हुने, हुँदा सोको बाँडफाँड गर्ने कार्य पनि वित्त आयोगले गर्दछ ।
- यसरी बाँडफाँड गरिएको राजस्व प्रदेश र स्थानीय विभाज्य कोषमा जम्मा गरी सो कोषबाट आयोगले सिफारिस गरेको आधारा र ढाँचामा प्रदेश सञ्चित कोष र स्थानीय सञ्चित कोषमा जम्मा हुने, गरी मासिक रूपमा उपलब्ध गराउने व्यवस्था गरिएको छ ।

प्राकृतिक स्रोतबाट प्राप्त हुने रोयल्टीको बाँडफाँड

- नेपाल सरकार, प्रदेश र स्थानीय तहवीच संघीय कानून बमोजिम प्रकृतिक स्रोतबाट प्राप्त हुने रोयल्टीको बाँडफाँड गर्न विभाज्य कोष खडा गरी ३ तहका सञ्चित कोषहरुमा वार्षिक रूपमा रकम जम्मा गर्नु पर्छ ।
- नेपाल सरकारले वित्त आयोगको सिफारिसमा प्राकृतिक स्रोतको उपयोगबाट प्रभावित हुने प्रदेश र स्थानीय तहलाई प्रभावित भएको अनुपातमा समन्याधिक रूपमा बाँडफाँड र वितरण गर्ने व्यवस्था गरेको छ ।
- पर्वतारोहण, विद्युत, वन, खानी तथा खनिज र पानी तथा अन्य प्राकृतिक स्रोतबाट प्राप्त हुने रोयल्टी बाँडफाँड गर्दा नेपाल सरकारलाई ५० प्रतिशत प्रदेशलाई २५ प्रतिशत र स्थानीयतहलाई २५ प्रतिशत हुने, व्यवस्था छ ।
- यसरी राजस्वको बाँडफाँडको रकम सबै प्रदेश र स्थानीय तहले प्राप्त गर्दून भने रोयल्टी प्रभावित प्रदेश र स्थानीय तहले मात्र पाउँछन् ।

वैदेशिक सहायता

- नेपालको संविधानको धारा ५९(६) ले देशको समष्टिगत आर्थिक स्थायित्व हुनेगरी वैदेशिक सहायता र ऋण लिने अधिकार नेपाल सरकारलाई दिएको छ ।
- संविधानको अनुसूचि ६ मा प्रदेशलाई केन्द्र सरकारको सहमतीमा वैदेशिक अनुदान र सहयोग लिने अधिकार रहेको छ तर ऋणको अधिकार भने छैन ।
- स्थानीय तह अफैलाई कुनै पनि प्रकारको वैदेशिक सहायता प्राप्त गर्ने र परिचालन गर्ने अधिकार छैन ।
- अन्तर सरकारी वित्त व्यवस्थापन ऐन, २०७४ मा नेपाल सरकारले प्रदेश तथा स्थानीय तहबाट कार्यान्वयन हुने योजना तथा कार्यक्रमका लागि वैदेशिक अनुदान वा सहयोग लिन सक्ने छ । यसबाट प्रदेश तथा स्थानीय तहका लागि स्रोतको व्यवस्थापन गर्दा नेपाल सरकारले वैदेशिक सहायता परिचालन गर्न सक्ने देखिन्छ ।

आन्तरिक ऋण

- नेपालको संविधानको धारा ५९(७) मा संघ, प्रदेश र स्थानीय तहको बजेट घाटा व्यवस्थापन तथा अन्य वित्तीय अनुशासन सम्बन्धी व्यवस्था संघीय कानून बमोजिम हुनेछ भन्ने व्यवस्था छ ।
- प्रदेश र स्थानीय तहलाई वैदेशिक ऋणको अधिकार नभएकोले घाटा बजेट व्यवस्थापन गर्न आन्तरिक ऋण लिनपर्ने हुन्छ ।
- संविधानको धारा २५१ मा राष्ट्रिय प्राकृतिक स्रोत तथा वित्त आयोगले समष्टिगत आर्थिक सचकहरुको विश्लेषण गरी संघ, प्रदेश र स्थानीय तहले लिन सक्ने आन्तरिक ऋणको सीमा सिफारिश गर्ने व्यवस्था छ ।
- अन्तरसरकारी वित्त व्यवस्थापन ऐन, २०७४ मा नेपाल सरकारको पूर्व सहमतिमा राष्ट्रिय प्राकृतिक स्रोत तथा वित्त आयोगले सिफारिस गरेको सीमा भित्र रही प्रदेश तथा स्थानीय तहले आन्तरिक ऋण लिन सक्ने व्यवस्था गरिएको छ ।
- अन्तर सरकारी वित्त व्यवस्थापन ऐन, २०७४ मा नेपाल सरकार र प्रदेश सरकारले ऋणपत्र जारी गरी वा नगरी तथा स्थानीय तहले ऋणपत्र जारी नगरी आन्तरिक ऋण उठाउन सक्ने व्यवस्था गरिएको छ ।
- आन्तरिक ऋण उठाउने र व्यवस्थापन गर्ने कार्य अर्थमन्त्रालयको अनुरोधमा नेपाल राष्ट्र बैंकले गर्दछ ।
- नेपाल राष्ट्र बैंकले आन्तरिक ऋण उठाउनका लागि एक प्रकारको ऋणपत्र (विकास ऋणपत्र), तीन प्रकारका वचतपत्रहरु (राष्ट्रिय वचतपत्र नागरिक वचतपत्र र वैदेशिक रोजगार वचतपत्र) तथा चार प्रकारका ट्रेजरी विलहरु (२८ दिन अवधिको, ९१ दिन अवधिको, १८२ दिन अवधिको र ३६४ दिन अवधिको) निष्कासन गर्दछ ।
- आन्तरिक ऋणको साँवा तथा व्याजको भुक्तानीको लागि प्रत्येक वर्षको बजेटमा व्यवस्था गरिएको हुन्छ ।

नेपाल सरकारबाट प्राप्त हुन सक्ने ऋण

- अन्तरसरकारी वित्त व्यवस्थापन ऐन, २०७४ को दफा १५ मा नेपाल सरकारले प्रदेश र स्थानीय तहलाई ऋण दिन सक्ने व्यवस्था छ ।
- प्रदेश र स्थानीय तहले ऋण रकमको उपयोग, भक्तानीको तरिका तथा समय सीमा समेत उल्लेख गरी ऋणको लागि अर्थ मन्त्रालयमा अनुरोध गरेमा र उक्त अनुरोध मनासिव देखिएमा नेपाल सरकारले ऋण प्रदान गर्ने स्वीकृति तथा ऋण प्रदान गर्न सक्ने र सम्झौता बमोजिमको अवधिमा ऋण चुक्ता नगरेमा नेपाल सरकारले सम्बन्धित प्रदेश वा स्थानीय तहलाई उपलब्ध गराउने अनुदानबाट त्यस्तो ऋण रकम असुल गर्न सक्ने व्यवस्था छ ।

सार्वजनिक खरिदमा नैतिकता जालसांझी र भष्टाचार (Fraud and Corruption)

नैतिकता

- सुशासन, नैतिक सिद्धान्त तथा आचारण सम्बन्धी व्यवस्थाहरूको प्रतिकुल व्यवहार नगर्नु
- सार्वजनिक खरिदका मुलभूत मान्यता जस्तैM नैतिकता, पारदर्शिता, ईमान्दारिता, तटस्थिता, सबैको सहज पहुँच तथा सहभागिता, विभेदपूर्ण व्यवहार लगायतका विषयलाई कार्यान्वयनमा ल्याउनु
- पेशागत नैतिकता
- सबै किसिमका कार्य तथा पेशागत व्यवहारमा ईमान्दारिता
- खरिदका सबै कार्यहरूमा गोपनियता र विश्वासनियता
- अवान्धित लाभका लागि धूर्तपूर्ण व्यवहार नगर्ने प्रतिवद्धता
- प्रचलित कानून, संगठनको उद्देश्य, मूल्य एवं मान्यता परिपालना
- स्वार्थ बाङ्गिने कार्यमा संलग्न नहुने प्रतिवद्धता

नैतिकताको सिद्धान्त

- प्रचलित कानूनको सम्मान, परिपालना र ईमान्दारिता (Loyalty and respect for rules and regulations)
- नैतिकता (Integrity)
- तटस्थिता र स्वच्छता (Impartiality and fairness)
- पारदर्शिता (Transparency)
- गोपनियता (Confidentiality)
- कानून प्रतिकूल आचरणबाट उन्मुक्ति (Bad behavior)
- गैर लाभका लागि चलाखपूर्ण व्यवहार नगर्ने परिपाटीको अवलम्ब (Due diligence or Unnecessary Carefulness)

प्रचलित कानूनको सम्मान, परिपालना र ईमान्दारिता (Loyalty and respect for rules and regulations)

मा समावेश हुने कुराहरु

- संस्थाको हित अनुकूलको निर्णय (कुनै बेला अलोकप्रीय भए पनि)
- संस्थाको हित एवं उद्देश्यमा कानून र पेशागतशीपको उपयोग
- ऐन कानूनको महत्व र आवश्यकताको बारेमा जानकारी ।
- ऐन र कानूनको परिपालना हुन नसक्ने अवस्थाको आंकलन ।
- ऐन र कानूनको हरेक चरणहरूको सम्मान तथा परिपालना ।
- ऐन र कानूनको आशय अनुसारको व्याख्या र कार्यान्वयन ।

- खरिद कार्यको जिम्मेवारीको निर्वाह गर्ने क्रममा प्रभावकारी तथा दक्षतापूर्ण रूपबाट खरिद कानून एवं सो संग सम्बन्धित कानूनको कार्यान्वयन ।

नैतिकता (Integrity) मा समावेश हुने कुराहरु

- संस्थाको सिद्धान्त, मूल्य एवं मान्यतालाई आदर्श मान्ने
- व्यक्तिगत लाभको अपेक्षा विना कार्य गर्ने ।
- अवानिष्ठत राजनैतिक दवाव पन्छाउने ।
- अवानिष्ठत राजनैतिक दवाव पन्छाउने ।
- अधिकार र जिम्मेवारीको दुरुपयोग नगर्ने ।
- गैर व्यावसायिक र अनैतिक व्यवहार विरुद्ध तत्काल कारवाही ।

तटस्थता र स्वच्छता (Impartiality and fairness) मा समावेश हुने कुराहरु

- पूर्वाग्रह रहित व्यवहार, दवावरहिता र निषेधपूर्ण व्यवहार नगर्ने ।
- व्यक्तिगत तथा संस्थागत विभेदको अन्त्य गर्ने उपायको अवलम्बन ।
- सबै आपूर्तिकर्ता वा निर्माणकर्ता वा परामर्शदाताको लागि समान मापदण्ड एवं अवसरको व्यवस्था । (उदाहरणको लागि: सूचना तथा कागजात संशोधनको सूचना सबैलाई दिनु पर्ने ।)

पारदर्शिता (Transparency) मा समावेश हुने कुराहरु

- सबैले जानकारी पाउने व्यवस्था मिलाउने (अदृश्य कार्य नगर्ने) ।
- खरिदका क्रियाकलापहरु र सार्वजनिक स्रोतका उपयोगमा पारदर्शिता ।
- हरेक क्रियाकलापहरु मूल्याङ्कन योग्य र सुरक्षित हुनु पर्ने ।
- सबै क्रियाकलापहरु आन्तरिक लेखा परिक्षणको लागि सुरक्षित गर्नु पर्ने (आन्तरिक सुरक्षण) ।
- सबै क्रियाकलापहरु अन्तिम लेखा परिक्षण, विभिन्न निकायबाट गरिने अनुसन्धानको लागि सुरक्षित गर्नु पर्ने (बाह्य सुरक्षण) ।

गोपनियता (Confidentiality)

- खरिद कार्यमा अधिक होसियारी, सूचनाको गोपनियता, र बजार रणनीतिको अद्ययन ।
- तथ्याङ्क व्यवस्थापनमा गोपनियता ।
- कागजात तथारी तथा मूल्याङ्कनका प्रक्रियाहरूमा गोपनियता ।

अनुचित उपस्थितिबाट बच्ने (खराव व्यवहार)

- पर्यवेक्षकहरूले अवलोकन गरिरहेको हुन्छन् तर्फ ध्यान दिने ।
- पर्यवेक्षकले पेशागत दवाव बुझदैनन् भन्ने कुरामा सजग रहने ।
- आफूले गरेको कार्य अनुचित नदेखियोस भनेर सचेत रहने ।

उचित परिश्रम (सावधानी)

- सावधानीपूर्वक कार्य गर्ने,
- लापरवाहीपूर्ण अभ्यास र प्रविधिबाट टाढा रहने
- उचित परिश्रम गर्दै सही अभ्यास र प्रविधि बाहिर नजाने ।
- सम्भावित आपूर्तिकर्ताको परिक्षण
- निपष्टक मूल्याङ्कन मापदण्ड
- कसैको लागि सुविधाको स्थान नछोड्ने ।

नैतिक जोखिमहरू (Ethical Risks)

- स्वार्थको द्वन्द्व (Conflict of interest)
- जालसांजी वा धोखाधडी (Fraud)

- भ्रष्टाचार (Corruption)
- जबरजस्ती वा दबाव (Coercion or Pressure)
- मिलीभगत (Collusion)

स्वार्थको द्वन्द्व (Conflict of Interest)

- सम्भावित चासोको घोषणा गर्ने ।
- व्यावसायिक सीप र जानकारी व्यक्तिगत लाभको लागि प्रयोग नगर्ने ।
- वित्तीय हितहरू खुलासा गर्ने ।
- विवादित खरिद प्रक्रियामा भाग नलिने ।
- खरिद अधिकारीको विवादित स्वार्थ हुन सक्ने कुनै पनि खरिद प्रक्रियाबाट पछि हट्ने ।

जालसांजी वा धोखाधडी (Fraud)

- धोखाधडी M वस्तुगत तथ्यलाई जानाजानी, गलत प्रतिनिधित्व वा लुकाउनु ।
- खरीदमा हुने चार सामान्य धोखाधडी परिवृश्यहरू ।
- खरिद गर्ने जिम्मेवारी भएको व्यक्तिले आफ्नो रोजगारदातालाई धोका दिने ।
- आपूर्तिकर्ताहरूले आफ्ना ग्राहकहरूलाई धोका दिने ।
- आपूर्तिकर्ता र खरिदकर्ताहरूले क्रेताको नियोक्तालाई धोका दिने ।
- खरिदकर्ताहरूले आपूर्तिकर्ताको खर्चमा व्यक्तिगत लाभ उठाउने ।

भ्रष्टाचार (Corruption)

- भ्रष्टाचारः प्रतिस्पर्धात्मक छनोट प्रक्रिया वा ठेक्का कार्यान्वयनमा सार्वजनिक अधिकारीको कार्यलाई प्रभाव पार्नको लागि प्रत्यक्ष वा अप्रत्यक्ष रूपमा मूल्यवान चीजहरू प्रस्ताव गर्ने, दिने, लिने वा माग्ने अभ्यास ।
- प्रत्यक्ष भ्रष्टाचार M खरिद अधिकारीलाई नगद भुक्तानी, क्रेता वा उसको परिवारका सदस्यहरूलाई सिधै भुक्तानी गरिएको चेक, निःशुल्क वा छुट प्राप्त वस्तु वा सेवाहरू आदि ।
- अप्रत्यक्ष भ्रष्टाचार M खरिदकर्ताको परिवारको सदस्यको रोजगारी, ब्ल्याकमेल वा हिंसाको धम्की आदि ।

जबरजस्ती वा दबाव (Coercion or Pressure)

- खरिद प्रक्रियामा अरुको सहभागितालाई प्रभाव पार्न वा समझौताको कार्यान्वयनलाई असर पार्न प्रत्यक्ष वा अप्रत्यक्ष रूपमा व्यक्ति वा निजको सम्पत्तिलाई हानि पुऱ्याउने वा धम्की दिनु ।

मिलीभगत (Collusion)

- संगठनको जानकारी बिना वा दुई वा बढी आपूर्तिकर्ताहरू बीच कृत्रिम, गैरप्रतिस्पर्धी स्तरहरूमा मूल्यहरू स्थापना गर्ने वा सो को योजना वा व्यवस्था गर्ने ।

आचार संहिता (Code of Conduct)

- संगठन र पेशाहरूले आचार संहिताहरू अपनाएर आचरणका स्तरहरूलाई सम्बोधन गर्ने ।
- व्यावसायिक आचार संहिताहरू सामान्यतया: विशिष्ट परिस्थितिगत वा वर्णनात्मक सर्तहरूमा भन्दा व्यापक अवधारणात्मक सर्तहरूमा लेखिएका हुने ।
- खरीद व्यवसायीहरूले कानूनको भावना वा बृहत्तर अवधारणामा निर्देशित हुने ।
- बोलपत्रदाताहरूले खरिद प्रक्रियामा निष्पक्ष प्रतिस्पर्धा गर्नका लागि निष्पक्ष रूपमा आफ्नो कर्तव्य निर्वाह गर्ने ।
- सार्वजनिक हितमा खरिद प्रक्रिया सञ्चालन गर्ने ।
- आफ्नो काम वा आचरण वा व्यवहारबाट खरिदको स्वार्थसंग बाझिने काम नगर्ने

सार्वजनिक खरिद कार्यमा संलग्न पदाधिकारीको आचरण

- खरिद कारबाहीमा बोलपत्रदाताको स्वच्छ प्रतिस्पर्धा हुने गरी आफ्नो कर्तव्य निष्पक्ष ढङ्गले पालना गर्ने,

- खरिद कारबाहीको सञ्चालन सार्वजनिक हित हुने गरी गर्ने,
- खरिद सम्बन्धमा आफ्नो काम वा आचरण वा व्यवहारबाट स्वार्थ बाझिने कार्य नगर्ने,
- खरिद कारबाहीको सिलसिलामा आफूले थाहा पाएको बोलपत्रदाताको सम्पति सम्बन्धी जानकारी लगायतका अन्य सबै जानकारी गोप्य राख्ने,
- आफू पदमा बहाल रहेदाका बखत खरिद कारोबार गरेका व्यक्ति, फर्म, संस्था, कम्पनी र यस्तै प्रकृतिका अन्य कुनै निजी संस्थामा आफू पदबाट अवकाश भएको दुई वर्षसम्म काम नगर्ने,
- आफू संलग्न भएको खरिद कारबाहीमा आफ्ना नजिकका नातेदारहरूले बोलपत्रदाता वा प्रस्तावदाताको रूपमा भाग लिएको जानकारी हुन आएमा आफूभन्दा एक तहमाथिको अधिकारीलाई तुरन्त जानकारी दिई त्यस्तो खरिद कारबाहीबाट आफू अलग हुनु पर्ने,
- खरिद सम्बन्धी काम कारबाही गर्दा प्रचलित कानून विपरीत हुने काम नगर्ने,
- भष्टाचारजन्य वा जालसाजीपूर्ण कार्य गर्न वा त्यस्तो कार्यमा संलग्न हुन नहुने,
- प्रतिस्पर्धाको लाभबाट विजित गर्न गराउने उद्देश्यले बोलपत्र वा प्रस्ताव पेश गर्नुभन्दाअघि वा पछि मिलिमतो गर्न वा गुटबन्दीमा संलग्न हुन नहुने ।

बोलपत्रदाता वा प्रस्तावदाताको आचरण

- खरिद समझौता तथा खरिद सम्बन्धी अन्य लिखतमा उल्लेख भए अनुरूपको दायित्व पालना गर्नु पर्ने ।
- ऐन नियमावली, खरिद समझौता तथा खरिद सम्बन्धी अन्य लिखतको सर्वमान्यतामा प्रतिकूल नहुने गरी बोलपत्रदाता वा प्रस्तावदाताले खरिद प्रक्रियामा वा खरिद समझौताको कार्यान्वयनमा प्रभाव पार्ने मनसायले देहायका कार्य गर्नु वा गराउनु नहुने
- प्रत्यक्ष वा अप्रत्यक्ष रूपमा अनुचित प्रलोभन दिन वा सोको प्रस्ताव गर्ने,
- तथ्य बङ्गयाई वा झुक्याई पेश गर्ने,
- भष्टाचारजन्य वा जालसाजीपूर्ण कार्य गर्न वा त्यस्तो कार्यमा संलग्न हुन,
- बोलपत्र वा प्रस्ताव सम्बन्धी काम कारबाहीमा कुनै किसिमले संलग्न हुने अन्यको सहभागितामा हस्तक्षेप गर्ने,
- खरिद कारबाहीमा संलग्न कुनै व्यक्तिको जीउ ज्यान वा सम्पति नोक्सान गर्ने प्रत्यक्ष वा अप्रत्यक्ष धम्की दिने कार्य वा करकापजन्य कार्य गर्ने,
- बोलपत्रदाताहरू वा प्रस्तावदाताहरूबीच खरिद सम्बन्धी काम बॉडफॉट गर्ने वा बोलपत्र वा प्रस्तावको मूल्य कृत्रिम वा अप्रतिस्पर्धी तरिकाले कायम गर्ने वा अन्य कुनै तरिकाले सार्वजनिक निकायलाई खुल्ला तथा स्वतन्त्र प्रतिस्पर्धाको लाभबाट विजित गर्ने उद्देश्यले बोलपत्र वा प्रस्ताव पेश गर्नुभन्दाअघि वा पछि मिलोमतो गर्न वा गुटबन्दीमा संलग्न हुन,
- बोलपत्र वा प्रस्ताव खोलेको समयदेखि बोलपत्र वा प्रस्ताव स्वीकृतिको सूचना नदिँदासम्मको अवधिमा बोलपत्र वा प्रस्तावका सम्बन्धमा प्रभाव पार्ने उद्देश्यले सार्वजनिक निकायसँग सम्पर्क गर्न वा बोलपत्रको परीक्षण र मूल्याङ्कन प्रस्तावको मूल्याङ्कनमा कुनै किसिमले प्रभाव पार्ने कार्य गर्ने।
- कुनै खरिद कार्यको बोलपत्र सम्बन्धी कागजात वा स्पेसिफिकेशन तयार गर्ने वा खरिद कार्यान्वयनको अनुगमन गर्ने जिम्मेवारी पाएको बोलपत्रदाता वा निजसँग आबद्ध रहेको कुनै व्यक्ति वा फर्म वा संस्था वा कम्पनी वा त्यस्तो फर्म वा संस्था वा कम्पनीमा कार्यरत कर्मचारीले त्यस्तो खरिदको बोलपत्र सम्बन्धी कारबाहीमा भाग लिन नसक्ने ।

सार्वजनिक खरिदमा भष्टाचार (Corruption in Public Procurement)

- पारदर्शिता, प्रतिस्पर्धा र इमान्दारितामा आधारित प्रभावकारी सार्वजनिक खरिद प्रणाली लागू गर्न कठिन ।

- पारदर्शिता र प्रतिस्पर्धा नभएको खरिद प्रणाली भष्ट व्यवहार ।
- भष्टाचारले कलंकित भएका खरिदहरू अहिले चुनौती ।
- खरिद गर्ने निकायले करदाताको रकम खर्च गर्ने ।
- कुल गार्हस्थ्य उत्पादनको करिव १५% देखि ३०% सम्म सार्वजनिक खरिद ।
- सरकारहरूले हरेक वर्ष विभिन्न प्रकारका वस्तु, सेवा र कामहरू खरिद गर्न हजारौं अर्ब डलर खर्च गर्ने ।
- भष्टाचारको गोप्य प्रकृतिका कारण सार्वजनिक खरिदमा हुने भष्टाचारले सरकारी खर्चमा ठूलो नकारात्मक प्रभाव पारेको ।
- प्रतिस्पर्धालाई कमजोर बनाई आर्थिक विकासमा बाधा पुऱ्याउने ।
- वस्तु, सेवा र कामको लागि कृत्रिम रूपमा उच्च मूल्य तिर्न पर्ने ।
- विभिन्न अद्ययनहरूले सार्वजनिक करारको मूल्यको औसत १०% देखि २५% भष्टाचारले गुमाउन सक्ने देखाएको ।
- ठूला खरिदहरूमा भष्टाचारको हिस्सा बढी हुने अद्ययनले देखाएको ।
- भष्टाचारको रूपहरू:
 - कानूनको उल्लंघन गरी कार्य गर्ने वा अनुचित लाभ ।
 - अनुचित लाभका लागि निजी पक्षको प्रभाव स्विकार ।
 - भुक्तानीमा हिस्सा खोज्ने प्रवृत्ति ।
 - स्वार्थको द्वन्द्व ।

मुख्य पात्रहरू (Main Actors)

- घुस दिने निकाय र घुस लिने व्यक्ति ।
- समझौताको लागि प्रतिस्पर्धा गर्ने र डेलिभरी गर्ने ।
- घूस लिने व्यक्ति सामान्यतया खरिद अधिकारी ।
- घूस एजेन्ट, सल्लाहकार वा अन्य बिचौलिया मार्फत प्रवाह हुने
- खरिद अधिकारी संलग्न नभए पनि भष्टाचार हुन सक्ने ।
- बोलपत्रदाताहरू बीच मूल्य निर्धारण ।
- कलंकित राजनीतिजहरूले निर्णयलाई प्रभाव पार्ने प्रयास गर्ने सक्ने ।
- निर्माण व्यवसायी वा आपूर्तिकर्ता संघ ।
- पत्रकारहरू ।
- राजनीतिक दलहरू ।
- सार्वजनिक जीवनका अन्य व्यक्तिहरू ।

भष्टाचार हुन सक्ने अवस्था (RED FLAGS)

- बोलपत्रदाताहरूबाट प्राप्त गुनासो
- खरिदका सिमा भन्दा कम रकमका कार्यहरू गर्ने प्रवृत्ति (टुक्रा पार्ने)
- अस्वाभाविक कवोल अड्क हरूको प्रवृत्ति
- अपारदर्शी एजेन्ट शुल्क
- शंकास्पद बोलपत्रदाता (वास्तविक बोलपत्रदाता नहुनु)
- न्यूनतम मूल्याङ्कित सारभूत रूपमा प्रभावकारी बोलपत्रदाता चयन नगरिनु
- एउटै बोलपत्रदातालाई दोहोन्याउनु
- समझौता सर्त, मूल्य र मान्यतामा परिवर्तन
- खरिद समझौतामा पटक पटक परिवर्तन
- गुणस्तरहीन काम वा सेवाहरू

बोलपत्रदाताहरूबाट प्राप्त गुनासो (Complaint from Bidders)]

- बोलपत्रदाता र अन्य पक्षहरूबाट प्राप्त कुनै गुनासो
- यस्ता उजुरीहरू जालसाजी र भ्रष्टाचार बारे जानकारीको महत्वपूर्ण स्रोत
- अनुसन्धान कार्यमा सहायक हुने ।
- गुनासोहरू कुनै पनि प्रकारको योजना वा जोखिमसंग सम्बन्धित हुन सक्ने ।

खरिदका सिमा भन्दा कम रकमका कार्यहरू गर्ने प्रवृत्ति (Multiple Contracts Below Procurement Thresholds)

- खरिदका सिमाभन्दा कम वनाई धैरै संख्यामा सूचना प्रकाशन र समझौता गर्ने कार्यहरू ।
- खरिदका सिमामा पर्न वा छल्नका लागि कानूनी प्रावधानको उल्लंघन गर्ने ।

अस्वाभाविक क्वोल अंकहरूको प्रवृत्ति (Unusual Bid Patterns)

- खरिद कार्य प्राप्तिका लागि सामूहिक रूपमा एकले अर्कोलाई सहयोग गर्ने
- बोलपत्रको तयारी बोलपत्रदाताहरू समन्वयमा गरिने ।
- एक आपसमा समन्वयात्मक रूपमा सहायक, सम्बद्ध वा अधिनस्थ कम्पनीहरू पनि प्रयोग गर्ने ।
- बोलपत्रदाताहरूले एउटै फ्याक्स मेसिन प्रयोग गरेको अवस्था ।
- बोलपत्रदाताहरूको समान अन्तिम नाम, ठेगाना, फ्याक्स, टेलिफोन नम्बरहरू हुन सक्ने ।
- बोलपत्रहरूमा भएका बोली सुरक्षा नम्बरहरूले एक व्यक्तिद्वारा खरिद गरिएको हो भनेर देखिने ।
- एकै प्रकारको शैली वा अक्षर, हस्तलेखन, शब्दावली, आदि ।
- अस्वाभाविक रूपको क्वोल अंकको भिन्नता जस्तै: १%, २%, ५% ।
- क्वोल अंक लागत अनुमानभन्दा धैरै कम वा धैरै बढी र एउटा मात्र लागत अनुमान भन्दा कम हुने र अन्यको बढी हुने ।
- मूल्यहरू शून्य वा अप्राकृतिक संख्यामा हुने जस्तै: ५०,००० वा १,००,०००

अस्वाभाविक क्वोल अंकहरूको प्रवृत्ति

- बढी मूल्य उल्लेख बोलपत्रहरू अस्वाभाविक देखिने ।
- असफल बोलपत्रदाताहरू सहयोगीको रूपमा काम गर्ने ।
- पालै पालो खरिद कार्य लिने ।
- बोलपत्र मूल्यांकन प्रतिवेदन (BER) वा खरिद समझौता गर्ने र हस्ताक्षर गर्न ढिलाइ गर्नु ।
- बोलपत्र जमानत (Bid Validity) को विस्तार ।

अपारदर्शी एजेन्ट शुल्क (Seemingly Inflated Agent Fee)

- एजेन्टको शुल्क वा सामानको मूल्य बढने ।
- शुल्क भुक्तानीका लागि अनावश्यक बिचौलियाको संलग्नता गराईने ।

उदाहरण

- एक खरीद इकाईले कम्प्युटर निश्चित मूल्यमा बिचौलियालाई खरिद आदेश दिने ।
- विचौलियाले स्थानीय फर्मबाट कम मूल्यमा उपकरणहरू खरिद गरी नाफा राख्ने वा खरिदमा संलग्न कर्मचारीहरूसंग नाफा विभाजित गर्ने ।
- अन्तर्राष्ट्रिय ठेकेदारले बोलपत्र तयारी र समझौता वार्तामा सहयोग गर्न नियुक्त स्थानीय एजेन्टलाई भुक्तान गरिएको शुल्क वस्तुगत (स्रोत नखुलेको) भएमा त्यस्तो रकम घुस तिर्न प्रयोग गरिने सम्भावना हुने ।

शंकास्पद बोलपत्रदाता (Suspicious Bidder)

- बोलपत्रदाता वैध नहुन सक्ने (नक्कली बोलपत्रदाता) ।
- बोलपत्रदाताको संस्थाको परिक्षण गर्ने:

- ✓ खरिद कार्य प्राप्तिका लागि काल्पनिक कम्पनी स्थापना गरिएको हो वा होइन एकिन गर्ने ।
- ✓ संस्थाको वेबसाईट, कारोबारको लगत, टेलिफोन विवरण लगायतका प्रमाण ।
- ✓ आवश्यक प्रश्नहरू सोध्ने ।
- आयोजनाका कर्मचारीहरूबाट अवैध भुक्तानीका लागि नक्कली व्यवसायी सिर्जना गर्न सक्ने सम्भावना ।
- नाममात्रको बोलपत्रदाता अन्य बोलपत्रदातालाई छनोटका लागि सहज बनाउन र प्रतिस्पर्धाको रूप दिनको लागि उच्च मूल्यको बोलपत्र पेश गर्ने

न्यूनतम मूल्याङ्कित सारभूत रूपमा प्रभावकारी बोलपत्रदाता चयन नगरिनु (Lowest Bidder not Selected)

- न्यूनतम मूल्याङ्कित सारभूत रूपमा प्रभावकारी बोलपत्रदातालाई अनुचित वा विनाकारण चयन नगरिएको ।
- गैर आर्थिक वा आर्थिक लाभका लागि मूल्याङ्कन समितिलाई आफ्नै अनुकूलका बोलपत्रदातालाई चयन गर्न दिइने दबाव ।
- धैरै उच्च मूल्य भएको बोलपत्रदातालाई चयन गर्न अन्य बोलपत्रदातालाई हतोसाही गर्ने कार्य ।

एउटै बोलपत्रदातालाई दोहोन्याउने (Repeat Award to Same Contractor)

- एकमात्र बोलपत्रदातालाई पुरस्कृत हुने गरी कागजातको तयारी ।
- एकल बोलपत्रदातालाई मिल्ने गरी शर्तहरूको पटक पटक संशोधन ।
- सम्भव भए सम्म सूचना गोप्य राख्ने प्रयास ।
- खरिद रकमको सिमा अनुसार खरिद कार्यको लागि कागजात तयारी र सूचना प्रकाशन ।
- अस्वभाविक शर्तहरूको प्रावधान ।

सम्झौता सर्त, मूल्य र मान्यतामा परिवर्तन (Changes in Contract Terms and Valuer)

- खरिदका सर्त, मूल्य र मान्यतामा अनुचित परिवर्तन
- रकम वा सेवाहरूको प्रकारमा प्रारम्भिक सम्झौतामा परिवर्तन ।
- बोलपत्रदाताले पेश गरेको मूल्यमा संशोधन ।
- बोलपत्रदाता छनौट भए पश्चात समय र कार्यक्षेत्रमा परिवर्तन गरी सम्झौतामा हस्ताक्षर गर्ने प्रवृत्ति । (थप नाफाको लागि)
- सम्झौता लागू भए पश्चात कम मूल्य कायम भएका र कठिन प्रकृतिका कार्यहरू हटाउने प्रवृत्ति ।

खरिदका सम्झौतामा पटक पटक परिवर्तन (Multiple Contract Change Orders)

- सम्झौतामा पटक पटक परिवर्तन
- सम्झौतामा पूर्व निर्धारण भए बाहेकका आदेश जारी गर्ने कार्य ।
- नयाँ उत्पादनहरू तथा सेवाहरूको प्राप्तिको सुनिश्चितता नगर्ने प्रवृत्ति ।

गुणस्तरहीन काम वा सेवाहरू (Poor Quality Works/Services)

- निर्माण कार्य वा सामान वा सेवाहरू कम गुणस्तर हुनु ।
- गुणस्तर परिक्षण नगर्ने वा गुणस्तरहीन निर्माण वा सामान वा सेवा स्विकार गर्ने ।
- तोकिएको परिमाण भन्दा कम काम वा सामान वा सेवाहरू स्विकार गर्ने ।

Contract Delays

Introduction

Contract have completion dates. Bonus and liquidated damages are tied to completion date. Delay by the employer can frustrate liquidated damages clauses whereas, delay by the contractor can result in termination of contract and also leads on to financial matters

In general delay in construction are of three types, they are:

Excusable Delay

A delay that entitles the contractor to additional time for completion of the contract work, generally arising from causes beyond the contractor's control is excusable delay. Excusable delays may be classified further as excusable compensatory delays and excusable non-compensatory delays. Whether delay is classified as compensatory or no compensatory depends primarily on the terms of the contract.

An excusable delay can occur due to various factors, which can be classified into two categories:

- Beyond the control or without the fault of either party (Excusable non-compensatory).
- Within the owner's or his representative's control (Excusable compensatory)

In the first case, the contractor is entitled to get extension of contract performance time while the later will allow the contractor both time extension and additional cost.

When delays are excusable, the contractor will not be subject to liquidated damages, nor can the contractor be terminated for default due to such delays. Liquidated damages constitute the specified amount that a contractor will owe to the owner for non-excused late completion. Whether the contractor can recover the delay cost for an excusable delay depends on whether the delay is compensatory or non-compensatory or whether it is concurrent with other delays. Examples of excusable delays caused by different factors are:

Delay Caused by Owner

- Failure to provide a project site
- Late notice to proceed
- Failure to provide proper financing
- Failure to provide owner's furnished materials or components
- Interfering with or obstructing work on the project

Delay Caused by Architect/Engineer

- Defective plans and specifications
- Failure to provide drawings on schedule
- Delay in review or approval of shop drawings
- Delay in change orders
- Stop-work order

Delay not caused by Any Party or Participant

- Acts of God
- Act of public enemy
- Unusual delays in transportation, such as a freight embargo
- Epidemics
- Unusual weather conditions (force majeure)
- Strikes

Excusable Compensatory Delay

A delay that entitles the contractor to extended field office costs and perhaps home office costs, as well as additional project time is excusable compensatory delay.

Excusable compensatory delays are due to acts or omissions of the owner or owner's representatives. This type of delay entitles a contractor to additional compensation for costs of delays and time of project completion. A delay can be compensable solely by causing damages for the contractor. Typically, excusable compensatory delays are attributable to change order or to owner's actions that change the contracted requests.

In the contract, the compensation provision may allow extension of time or compensation for additional costs, but frequently the extension of time is the sole remedy for delays. In this case, if the contractor seeks compensation, they have to file a lawsuit for delay damage cost. Examples of excusable compensatory delay are:

Delay caused by Owner

- Failure to provide a project site
- Late notice to proceed
- Failure to provide proper financing

- Failure to provide owner furnished materials or components
- Interfering with or obstructing work on the project

Delay Caused by Architect/Engineer

- Defective plans and specifications
- Failure to provide drawings on schedule
- Delay in review or approval of shop drawings
- Delay in change orders
- Stop-work order

Excusable Non-compensatory Delay

A delay that entitles the contractor to additional time for completion of the contract work but no additional compensation is excusable non-compensatory delay. Excusable non-compensatory delays are not caused by the owner, designer, contractor, subcontractors, suppliers, or other parties in the design and construction process. Because this delay is beyond the control of any of the parties, contract and case laws generally minimize the risk to all parties by a compromise:

'The contractor's late completion will be allowed equal to the amount of delay, but no additional compensation will be awarded. Most contracts contain written statements that deal specifically with this type of delay. Examples of non-compensatory delay are:

Delay not caused by Any Party or Participant

- Acts of God
- Act of public enemy
- Unusual delays in transportation, such as a freight embargo
- Epidemics
- Unusual weather conditions (force majeure)
- Strikes

Non-excusable Delay

A delay that does not entitle the contractor to either additional time for completion of the contract works or additional compensation is non-excusable delay. Such a delay may be non-excusable due to the contractor's failure to meet its contractual obligations or due to the terms of the contract.

A non-excusable delay is within the contractor's control and could have been avoided. This type of delay does not allow the contractor to recover any additional time or cost. Conversely, such delay could be compensable to the owner in the form of liquidated or actual damages paid by the contractor for late completion or increased cost to accelerate the work. Furthermore, the non-excusable delay may constitute a breach of the construction contract by the contractor and may justify the termination of the construction contract.

The owner normally is in a difficult position to identify the non-excusable delays at the early stages because he seldom maintains the construction schedule with sufficient detail to pinpoint the contractor's delay. This type of delay, therefore, is identified when the dispute arises. A contractor, on the other hand, is more likely to maintain the detailed schedule, so he is in a better position to monitor job progress and identify delays, which are attributable to the owner. Examples of non-excusable delay are:

Delay caused by Contractor

- Slow mobilization
- Inadequate labor force
- Strike caused by unfair labor practice
- Poor workmanship
- Late delivery of materials and components
- Failure to coordinate multiple sub contractors

Concurrent Delay

The concurrence of two or more delays arising from independent causes and affecting a project during the same or overlapping time periods is concurrent delay. Concurrent delays may act jointly to affect a single activity or path, or may act independently to affect multiple activities or paths.

Concurrent delays are two or more delays that occur at least to some degree simultaneously. As used in construction law, the term refers to the situation when there is more than one delay occurring at the same time, each of which, if it had occurred alone, would have affected the project completion date.

Courts determine the legal impact of concurrent delays by examining the responsibility for the concurrent delays and determining whether the parties are seeking compensation or an extension to time. The concurrent delay can be more than one type of delay. With respect to contractor recovery for concurrent delays, the delays must be solely the owner's responsibility. Similarly, if the owner can clearly distinguish the contractor's responsibility for concurrent delays, the owner can collect liquidated damages. In general, when excusable and non-excusable delays are concurrent, the contractor ought to be entitled an extension of construction time. In case of concurrent compensatory and non-compensatory delays, the contractor should be entitled to a time extension but not to damages. For the contractor to collect damages, the owner would have to cause all compensatory delays.

Excusable + Non-Excusable \Rightarrow Time extension

Concurrent (Compensatory + Non-compensatory) \Rightarrow Time extension only

All compensatory delay solely by owner \Rightarrow Compensation + Time extension

If the concurrent delays consist of delays attributed to both the owner and contractor, some cases hold that neither can recover damages for the other's act. Some endeavor should be made to apportion the concurrent delays between parties. Inadequate documentation may, however, make apportionment impossible. If concurrent delays cannot be apportioned, neither the owner nor the contractor can recover delay damages.

Extension of time

Time is essence of the contract. It is necessary to obtain program from the contractor in the form specified in the contract and revised program from time to time. This will ease the process to:

- assess and compare program achieved against original program
- to obtain monthly or biweekly program
- to monitor the actual progress of the work
- to check that escalation is not claimed for work done later
- to take actions and resolve issues in time
- to assess the effect of variations on completion of the project

Major causes that have implication on time

- variations that involve time and additional cost
- design change
- scope of work is changed
- time lag between project preparation and implementation
- unrealistic estimate
- incompetent contractors
- improper plant and equipment
- litigation
- slack in supervision
- slow decision making
- absence of fund flow
- delay in land acquisition
- local law and problems
- delay in shifting of utilities

Provision of extension of time

Extension of time effect

Extension of time due to employer's default: time extension is awarded to the contractor without imposing liquidated damages. Employer to bear all additional costs under the contract price escalation to be borne by the employer.

Extension of time due to contractor's default:

Time extension is awarded to the contractor by imposing liquidated damages. Extension of time in such cases may have implication on other aspects of the contract such as price escalation. Contractor to bear additional costs at his own expense.

Liquidated damages

Liquidated damages are designed to reflect what the owner reasonably estimates the economic damages will be in the event of late delivery or completion.

Contractors with liquidated damages clauses should also contain excusable clauses like strikes, weather, natural disasters etc.

Liquidated damages are remedies available to any contracting party to compensate for the financial loss suffered as the result of a proven breach of contract.

Liquidated damage acts as a deterrent to the contractor not to take the contract works casually.

In common law countries, it is known as liquidated damages in civil law countries, it is known as contractual penalties
Provisions of liquidated damages

Contract Variations

Introduction

Variation literally means change, alteration, modification etc. In general Variation Order (VO) is categorized as two types:

- Change in original Bill of Quantities (BoQ)
- Additional work items or Specifications changes

Contracts provide clauses for execution of varied works. Variation clause is a tool which allows Project Manager/Employer to modify the contract as required during the performance of contract. It allows to execute unforeseen works without breach of contract or a new contract.

According to Institution of civil Engineers (ICE): "Variation are required for the satisfactory completion and functioning of works". Greater the elements of unknown more chances of variations. Strictly speaking, contractor is not bound to execute more than contracted unless contractual provisions bind him. The binding documents are:

- Contract documents for the Contractor and
- Contract documents, financial rules, procurement act and rules, donor's guidelines for Employer's representative.

Causes of variations

Variation occurs with the change in circumstances in different stages of the project. The various causes that have direct impact on variation are:

- Changes in quantities without change in scope/design
- Change in scope of work: Compromise/design improvement and additional work.
Mainly due to shortage/availability of additional fund
- Technical reasons: These covers
 - Changes in design/specifications, which occurs due to lack of information, raising/reducing design parameters and additional requirement due to further investigation/information and
 - Inadequate/faulty design
- Change in site condition: This may arise due to natural phenomenon, further deterioration of existing condition and due to time lag between design and execution
- Time extension: General items need to be varied in this process
- Change in specified sequence or timing
- Time constraint for new contract

Effect of variation

Variation has a important effect in contract execution, performance and management. The various effects are;

- Satisfactory completion and functioning of works
- Reduction or increment in scope of work
- Reduction or increase in volume of work
- Increment or reduction in project cost
- Time extension
- Increment in price escalation cost
- Revision of contract rates
- Fixation of new rates
- Claim situation

Variation related clauses

Public Procurement Act 2063 clause 54 and Public Procurement Regulations 2064 clause 118 provides variations limited up to 15 % to be approved by the department chief, up to 25% to be approved by Secretary of Ministry and in excess of that to be forwarded and approved by the cabinet.

Variation preparation and approval

Flow charts are prepared if needed followed by Standard formats and submitted to the Approval authority. Additional requirement of VO committee may be needed for adequate justifications with supporting documents, submission after approval within authority. New rate negotiation is done if needed as well.

Benefits and risks associated with variation

Benefits are:

- Financial management
- Satisfactory completion and functioning of works as planned
- Scope and technical management
- Facilitates inclusion of changes required during construction
- No contract variation may result in: incomplete work, desired quality may not be achieved, claims and loss to the employer

Risks are:

- Increase in project cost: due to additional works, extension of contract period, additional escalation cost due to time extension, additional supervision cost and claim from contractor
- Delay in project completion
- Absence of additional fund leads to scope curtailment
- Probable high work item rate pricing for varied works due to uncompetitive rate arrived through negotiation
- Rate negotiation generally an advantage to the contractor
- Competitive bid could result to be more costly due to increase in BoQ item quantity with escalated rates
- Opportunity for non-performing contractor for excuse for time extension
- Contract litigation

Conclusion

Although variation is regarded as change in original Bill of Quantities (BoQ) or additional work items or Specifications changes and when it occurs there is need to modify the contract as required during the performance of contract. It allows to execute unforeseen works without breach of contract or a new contract which will provide proper room from the satisfactory completion and functioning of works and project at end. The contractor is not bound to execute more than contracted work unless contractual provisions bind him. Hence the binding contract documents, financial rules, procurement act and rules etc. should facilitate the variation process

Challenges of Nepalese Construction Industry

Macro Level

- Soaring Construction Demand (both Private and Public Sector)
- Continuing Openness of the Market to International Players (WTO etc.)
- Capacity Building (Financial, Technical and Human Resources, Mechanization and New Technologies)

Micro Level

- Prevailing Procurement Practices
- Project Formulation and Design
- Contracts Administration

Challenges (Micro Level)

Prevailing Procurement Practices

- Qualification Criteria
- Provision for Price Adjustment
- Slicing and Packaging of Contracts
- Excessive low bid
- Provision of Central Data Bank of Contract Details
- Works up to 6 million for user's group
- Contractors Specialization of Works
- Promotion of Domestic Contractors

Project Formulation and Design

- Estimation of Project Period
- Estimation of Project Cost
- Adequacy of Design

Contracts Administration

- Allocation of less budget & Late Payment
- Lengthy Tender Evaluation & Variation Process
- Force Majeure (Band, Fuel and other Construction Material Shortages)

Present Qualification Criteria

- Average Annual Turnover of best 3 years out of
 $3/5/7/10 \text{ year} = 1.5 \sim 2 \times V/T$
- Specific Construction Experience
- = at least 1~3 Contracts of estimated value within last 3/5/7/10 years
- Bid Capacity
- = Working Capital x (5~10) + Lines of Credit – (40% of) Current Contract Commitment

Present Real Practices

- Make joint venture with other companies to meet the qualification criteria (more than 95% projects)
- Execute the project singly (more than 95% projects)
- Pay 1%-7% commission to Joint Venture partners and take the power of attorney from them
- Submit highly qualified but unavailable personnel's bio-data at the time of bidding (including expired, abroad, government officials)

Provision for Price Adjustment

- Sudden Price fluctuation in construction materials and fuel
- Price adjusted only in major construction materials beyond 10% of contracts of construction period less than 15 months
- Project period unreasonably reduced to 15 months just to avoid risk of price escalation
- No Price Adjustment in some projects of contract period more than 18 months/2 years
- No price adjustment beyond 25% (Clause 119(3) of Public

Procurement Regulation 2064)

Slicing and Packaging of Contracts

- No Standard Norms

Excessive Low Bid

Reasons:

- to fulfill the high qualification criteria of forthcoming project / survival in market
- Execution and Acceptance of low-quality works
- Demand / Supply
- Lack of professionalism in the industry
- Provision of Central Data Bank of Contract Details
- Works to user's group (political cadre)
- Specialization of Works
- Promotion of Domestic Contractors

Project Formulation and Design

Contracts Administration

- Allocation of less budget & Late Payment
- Lengthy Tender Evaluation & Variation Process
- Force Majeure (Band, fuel and other construction materials shortages)

Way Forward

Qualification Criteria – to enable growth

- Set minimum required qualification criteria which is:
 P = practical R = realistic R = reasonable
- Average Annual Turnover of best 3 years out of last 10 years = $0.5 \times V/T$
- Specific Construction Experience
- at least one Contract of value = $0.5 \times \text{estimated value}$
- at least two contracts of value = $0.3 \times \text{estimated value}$
- at least three contracts of value = $0.2 \times \text{estimated value}$
- Bid Capacity
- = Working Capital x (15~20) + Lines of Credit – (20% of Current Contract Commitment)

Price Adjustment

- Provision of Price Adjustment as per Nepal Rastra Bank Index irrespective of contract period.

Excessive Low Bid

- Rejection of low-quality work and black listing
- Strictly Implementation of bid capacity Provision
- Reasonable Qualification Criteria

- Award Contract who is nearest to the average of Contractors' bid
- Monitoring of proper utilization of Mobilization Advance
- Reasonable Extra Performance Guarantee
- Provision of Milestones

Slicing and Packaging shall be done based on

- past experience
- present bid capacity of contractors
- more scientific and economic

Central Data of Contract Details

There should be a national level central data bank of all contracts details which will help

- to set qualification criteria
- to decide in slicing and packaging
- to evaluate the bid capacity of bidders
- and many more.....

Estimation of Project Period

Project period shall be estimated seriously which is realistic and more practical considering

- Project location
- Accessibility to the Project
- Project start date/Working period

Estimation of Project Cost

- Strict implementation of Clause 9(2) of Public

Procurement Regulation 2064

- District Rates finalized normally in August (off season)
- Normally water is not taken into consideration during cost estimate

Allocation of Less Budget & Late Payment

- Work shall be procured only if there is sufficient budget
- Payment shall be done in time
- Interest rate for late payment shall be more than bank rate

Tender Evaluation and Variation Process

Tender evaluation and variation process shall be done in time

Works to User's Group (Political cadre)

- Equipment hiring shall not allowed
- Contribution of user's group compulsory
- Subletting shall not be allowed
- Proper monitoring necessary

Specialization of Works

- Contractors shall be specialized in particular works in order to be more efficient and professional
- Concern authority shall issue license accordingly

Promotion of Domestic Contractors

- International contractors must have J/V with Nepali Contractors in order to transfer the new technology.
- 10 % price preference to Nepalese Contractors
- Relaxed qualification criteria to Nepalese Contractors

Design Standards for Feeder Roads (Third Revision, 1997)

The Road Classification (Second Revision) 2050 provides for five classes of road in Nepal:

(I) National Highways (NH)

National Highways are the main Highways connecting East to West, North to South and those joining the main, north-south valleys of the Nation. The roads connecting NH to Regional Headquarters are also classified as National Highways. These serve directly the greater portion of the longer distance travel, provide consistently higher level of service, and bear the inter-community mobility (regional interest). These roads are the main arterial routes passing through the length and breadth of the country as a whole.

(11) Feeder Roads (FR)

Feeder Roads are important roads of a more localized nature than National Highways (NH). Feeder Roads are of

secondary nature in the hierarchy of the road network. Feeder Roads are further classified into Feeder Roads (Major) and Feeder Roads (Minor).

The Feeder Roads (Major) /FRN comprise:

- major links (i.e. with an AADT of over 100 veh/day) between the National Highways (NH);
- roads linking District Headquarters/Zonal Headquarters to the National Highways (NH);
- links from National Highways (NH) to the major places of industry, tourism, public utilities and power generation (e.g. hydropower), etc.

The Feeder Roads (Minor) /FRO comprise:

- links from Feeder Roads (FRN) to the major places of industry, tourism, public utilities and power generation (e.g. hydropower), etc.;
- links from Urban Roads (UR) to the major places of industry, tourism, public utilities and power generation e.g. hydropower, etc.

(111) **District Roads (DR)**

District Roads are defined as those roads within the district which serve primarily by providing access to abutting land carrying little or no through movement. These roads give access to one or more villages to the nearest market or higher classes of roads.

(IV) **Urban Roads (UR)**

Urban roads within the urban limit of municipality boundary, except for the above classes, passing through the city. These roads provides access to abutting residential, business, and industrial places within the municipalities.

(V) **Village Roads (VR)**

Village Roads include short non-through roads linking single villages directly to the District Roads.

In order to effectively manage a road network and the traffic using it and to make the best use of available resources, the classification of roads on the basis of functional and administrative importance is necessary for the present network planning.

Functional classification of Roads (National Road System, 2054)

- a) **The Strategic Road Network** - comprising National Highways and Feeder Roads. Roads in this network are the main responsibility of DOR.
- b) **The District Transport Network** - comprising District Roads, Main Tracks and Main Trails.
- c) **The Urban Road Network** - comprising all non-Strategic Roads within the municipal boundaries.
- d) **The Village Transport Network** - includes short non-through roads, tracks and local trails linking single villages to the District Transport Network.

1. Development Stages of Construction for Feeder Roads

In constructing feeder roads, the concept of Stage Construction shall be applied with clearly defined construction stages and using objective criteria for determining the entry stage for new road construction, and the point at which upgrading to the next stage takes place. Appropriate design and construction standards can then be assigned to each stage. Five development stages are laid down in this document and these should, in general, be implemented in succession.

Stage I, Detailed Design and Project Formulation (DDPF) - is the preparation stage covering the planning, engineering design, costing and construction programming of the road or upgrading works;

Stage 11, Fair Weather Earth Track (FWET) - is the initial construction stage representing a basic level of dry season vehicular access;

Stage 111, Fair Weather Gravel Track (FWGT) - represents a construction stage to improve the road to dry season access of gravel standard;

Stage IV, All Weather Gravel Track (AWGT) - represents a construction stage to improve the road to all weather access of gravel standard with the provision of structures to ensure only minimum restrictions to traffic at stream crossings.

Stage V, All Weather Bitumen Road (AWBR) - represents a construction stage to improve the road to all weather access of bitumen standard with the provision of structures to ensure only minimum restrictions to traffic at stream crossings,

Stage I (DDPF) must precede all other stages and special emphasis must be placed on this stage to ensure that:

- the road is planned to meet present serviceability requirements which will establish the Development Stage of the road;
- the design of the road is in accordance with the standards relating to the particular Development Stage;
- the resources needed for construction and maintenance of the road are identified together with methods of implementation;
- construction is carried out in accordance with the standards and to an agreed programme.

If the potential benefits of the road are to be realised, ***it is most important that construction does not commence until Stage I is complete.*** Resources for construction and maintenance will then have been identified and committed, and a realistic construction programme should have been prepared.

As development proceeds and traffic increases, the decision to upgrade a particular road shall be based on the level of total transport costs (the sum of road construction and maintenance costs and vehicle operating costs) for each Development Stage of construction. Threshold traffic values have been developed for this purpose and are given in section 4. The values relate to actual traffic levels on the road. These threshold levels are average figures for roads built in the Hills and the Terai and represent a "trigger point" for initiating a more detailed feasibility study. The decision to upgrade a particular road will be made on the results of the detailed study.

The design standards for different Development Stages of construction are given in section 3. It is particularly important for road safety reasons to ensure that all design elements are upgraded when moving to the next stage.

2. Design Standards for Feeder Roads

The concept of stage construction for Feeder Roads in Nepal shall follow the principle that, wherever possible, each construction stage shall be utilised in subsequent upgrading. In practice, this means progressive improvements will be limited to the pavement, drainage and engineering structures thus providing increased stability and permanence of the road as development proceeds. On this basis, the aim should be to establish the alignment and complete the majority of earthworks in Development Stage II (FWET). In order to achieve economies in costly hill road construction and to reduce investment risk for low trafficked hill roads, the feeder road standards have been further sub-divided as follows.

- a) Truck Standards** - the general standard for all Feeder Roads in the Terai, and Feeder Roads in the Hill Areas with traffic levels greater than 50 AADT (Average Annual Daily Traffic).
- b) Tractor/Trailer Standards** - a minimum standard for Feeder Roads in the Hill Areas having traffic levels less than 50 AADT.
 - a. Truck Standards

Truck Standard is the general standard for Feeder Roads and is applicable for all roads in the Terai, and roads in the Hills having traffic levels above 50 AADT, where truck and bus access is an essential **requirement**. In determining suitable design standards, consideration shall be given to the following factors.

Alignment and Geometrics

- Feeder Roads provide a basic means of vehicular access for relatively low traffic levels (up to about 300-400 vehicles per day); therefore, apart from possibly road width and gradient, geometric standards have much less importance than the permanence of the road.
- The alignment shall be chosen carefully to ensure good drainage; additionally, in hilly terrain, earthworks and disturbance to the terrain should be minimized.
- Shoulder widths may need to be increased on sections where there are large numbers of pedestrians and non-motorized vehicles. Surveys of such movements should be made to provide an objective basis on which to make design decisions.
- The alignment must provide drivers with an adequate view of hazards ahead, including areas of high pedestrian activity such as villages. Where this is not possible, good advance signing will be essential and some form of speed reduction device may need to be introduced where speeds are high. Special consideration should be given to narrow bridges, bridges on bends and bends themselves.
- In flat terrain, the cost of road construction and upgrading is largely independent of the alignment; therefore, separate design standards shall be adopted for flat terrain and hilly terrain.
- Geometric standards for each construction stage are defined in Table 1 (Hilly Terrain) and Table 2 (Flat

Terrain) and these have been chosen on the basis of safety and minimal construction and maintenance costs.

- Where feasible, horizontal curves and summit vertical curves shall be kept to the minimum desirable radius and as short as possible. The aim is to provide the maximum length of road where sight distances are sufficient for safe overtaking. Consequently, horizontal curves and summit curves shall generally be kept to the minimum **desirable radius and be as short as possible**. However, care must be taken to avoid having a tight curve after a long straight as this will greatly increase the risk of accidents.
- Consistency of standards shall be maintained over short distances of 5-15 km to reduce the risk of accidents. The design should also try to ensure that speeds on successive elements do not differ by more than about 15 km/hour.
- Where steep gradients in excess of 7% are adopted, they should be followed by a minimum length of recovery section of 150 metres. The gradient of the recovery section should be 4% (hilly terrain) and 3% (flat terrain).
- Attention should be paid to incorporating carriageway widening on tight curves. The extent of the widening will depend on the traffic and the nature of the curve and is particularly important for paved roads. Similar attention should be given to avoiding adverse crossfall on the carriageway.
- Provision shall be made in hilly terrain for passing places by means of an additional lane 60 metres long and 3.0 metres wide located every 300 to 500 metres along the road.

Earthworks

- The majority of earthworks must be completed under Development Stage II (FWET).
- Earthworks are costly and shall be kept to a minimum in the Hills and Terai. The use of labour-based operations has a major advantage in this respect in that excavation and filling can be carried out more selectively, to much closer tolerances and with less disturbance than by machine.
- For safety reasons, embankment side slopes should be kept as flat as possible (preferably 1 in 4 or shallower), for at least within 2 metres of the outer edge of the shoulder. Where this is not feasible, consideration should be given to providing some sort of warning device such as delineator posts when the embankment height reaches 2 metres, and safety barriers when the height exceeds 3 metres.
- An earthworks balance shall be achieved through cross movements rather than extensive longitudinal movements by:

- O locating smaller borrow pits at frequent intervals;
- O arranging borrow areas alongside fill sections;
- O locating the road in sidelong ground rather than through deep cutting.

To avoid ponding, borrow pits should be drained to the nearest natural water course (k-hola).

- The level of compaction applied to fill sections shall be governed by considerations of overall stability rather than the more onerous reduction of settlement at subgrade level.
- In all cases the subgrade (pavement surface in the case of earth roads) shall be a minimum of 300 mm above ground level or any standing water including water in the side drain.

Drainage

- Adequate provision shall be made for drainage in construction Development Stage II (FWET). The improvements needed in successive stages will largely concern cross drainage such as the replacement of fords by culverted drifts and, eventually, the addition of bridges.
- Side drains must be able to cope with the expected run-off, be capable of being easily cleaned, be traffic-friendly, and not present a serious hazard to run-away vehicles. In easy terrain they should be wide and shallow and as far from the road as is practicable. Where space is limited and a open channel drain is required it should be preferably flat-bottomed, 400-500 mm wide, and no deeper than 350 mm. Where the drains must be larger than this they should be covered, as should all channel drains on roads through villages and towns. In towns and villages consideration should be given to using concrete "tickle shaped" open drains as an alternative, in view of their easiness to clean and reduced risk for pedestrians and vehicles. Side drains should be discharged along well-defined natural water channels. For details refer **Designing Safer Drains (Road Safety Note 2)** available from the Design Branch, DoR.
- Earthen drains are preferred for the flat gradient section of the road while masonry drains are preferred for the built up areas and the sections of road exceeding 5 % gradient.
- The cleaning of side drains shall be undertaken manually; therefore; the drains should be flat bottomed and be minimum 400 mm wide.

- Pipe culverts with a maximum size of 1 metre diameter are advisable for handling and to keep earthworks to a minimum; where an increased waterway opening is needed this can be provided by using multiple culvert pipes.
- Stream crossings shall normally be by ford in construction Stages 11 (FWET) and III (FWGT), and by culverted drift in Stage IV (AWGT). Bridges shall be added in Stage IV (AWGT).
- Feeder Roads will have single land bridges. These bridges shall have a minimum overall width of 5.7 meters, consisting of a 4.5 metre carriageway together with 0.6 metre kerbed shoulders supporting a parapet. Advanced warning signs (Road Narrows or Narrow Bridge Ahead) must be installed. Where the bridge is preceded by a sharp bend, as is commonly the case, this too must be adequately signed. On bitumen-surfaced roads, the use of rumble strips may be effective in alerting drivers to the hazard ahead. (For details regarding protection of foot way and safety measures on construction of bridges refer **DoR Standard Design, DoR Traffic Sign Manual and Road Safety on Bridges (Road Safety Note 7)** available from the Design Branch, DoR.

Pavement

- Except in the case of steep gradients and/or highly erodible soils where stabilization or imported material may be needed, the pavement for construction Stage II (FWET) shall be of natural soil (earth) to provide dry-weather access only.
- Stages III (FWGT) and IV (AWGT) shall provide all-weather access through the addition of a gravel pavement and Stage V (AWBR) through a permanent bitumen running surface.
- An adequate camber shall be provided and maintained on all pavements to remove surface water. Recommended slopes are given in Tables I and 2.
- It is most important in the case of bitumen roads that particular attention is paid to shoulder construction and maintenance. The shoulders are used for passing, parking, by slow moving traffic, and as support for the

carriageway edge. They should be solidly constructed of an erosion resistant material and should not be allowed to fall below the level of the edge of the adjacent carriageway.

Road Safety Measures

For the road section having medium to high traffic (> 500 vehicles per -day), the provisions of studs in road bends, safety barrier at hazardous locations, delineator posts, and chevron signs in tight bends should be considered while designing the road. (for details regarding road safety measures on road and road junction and delineation measures refer **DoR Traffic Sign Manual (Road Safety Note 5 & 6)** available from the Design Branch, DoR

Environment Management

The environmental effects of construction should be considered at every stage from planning onwards. The Department of Roads has published a policy document (*Environmental Management guidelines*) to simplify this aspect of feeder roads. The main environmental concerns and related to the following areas: quarries; borrow pits; spoil and construction waste disposal; work and labour camps, location and operation; earthworks and slope stabilisation; use of bitumen; stockpiling of materials; explosive, combustible and toxic materials management; setting up and operation of crusher plants; water management; and air and noise pollution. The Department's guidelines should be followed in all of these cases.

Bio-engineering

Bio-engineering techniques should be integrated with standard civil engineering measures in all slope stabilisation works. The areas where bio-engineering should be used are:

- all bare soil areas on embankment and cut face slopes;
- all sites where there is a risk of scour erosion (*ie* gullyng);
- all slopes where there is a risk of shallow (less than 50 cm deep) debris flows or -translational slips;
- any slope component where other civil engineering structures are employed;
- any area, such as tipping and quarry sites, or camp compounds, where general rehabilitation is required.

For detailed information on the use of bio-engineering, reference should be made to the range of publications produced by the Geo-Environmental Unit of the Department of Roads. The main one of these is the *Roadside Bio-engineering Manual*

Basic Design Standards for Feeder Roads (Truck Standard) covering each Construction Development Stage are given separately for Hilly Terrain and Flat Terrain in Tables 1 and 2 respectively.

b. Tractor/Trailer Standards

Feeder Roads (Tractor/Trailer Standard) cover roads connecting District Headquarters, or similar low trafficked roads in the Hills, having predicted traffic levels less than 50 AADT. Minimum design standards have been adopted for these roads. The principle behind the use of the Tractor/Trailer Standard is that the greatest economic benefit produced by a

road generally arises when a motorable track is first constructed into an area. Whether subsequent development takes place of sufficient magnitude to justify upgrading the road will depend on many factors and is inherently difficult to forecast. Roads built to Tractor/Trailer Standard are therefore in the nature of a *pilot scheme* to reduce investment risk. They are designed to open-up a region in the Hill Areas at minimum cost by providing basic access for vehicular transport and will, additionally, provide substantive proof of the need, if any, for further investment in road infrastructure to the area. These standards are designed to provide fair weather earth access only for tractor/trailer units, light trucks (TATA 6.08) and mini buses. At the higher traffic levels, it may be necessary to introduce staggered, unidirectional working. These roads should be closed to vehicular traffic during periods of prolonged rainfall for reasons of safety and to avoid major damage to the road surface.

The Tractor/Trailer Standards effectively comprise a reduction in the **Stage II, (Fair Weather Earth Track FWET)** Truck Standards. In addition to the relevant points made concerning the Truck Standards in section 3a, particular attention shall also be paid to the points set-out below when using the Tractor/Trailer Standards.

- Roads shall be constructed with minimum impact on the surrounding environment. This policy option demands a balanced cut-and-fill earthworks operation. In the absence of a balanced cut-and-fill operation, the resulting surplus cut material will create problems of safe disposal, particularly where the labour-intensive methods of construction have been used. In the hills, an alignment utilizing side-cut and fill is preferable.
- Traditional methods of construction based on indigenous technology shall generally be adopted. Examples of such methods are given in the DOR Departmental Policy Document: Construction Details for Low-Cost Feeder Roads.
- The intention should be to provide each District Headquarters or similar undeveloped area in the Hills with a basic road access to the national network for a minimum capital investment. If the intended development occurs in practice, the road can then be justifiably improved to Truck Standard and higher on the basis of actual traffic demand.
- Steep gradients (above 7%) shall have a gravel surface and shall be followed by a recovery section similar to the requirement for Truck Standards;
- The formation width shall be adjusted to suit the requirements of the complementary longitudinal drainage;
- As for roads to Truck Standard, provision shall be made for passing places by means of an additional lane 60 metres long and 3.0 metres wide located every 300 to 500 metres along the road.
- The pay load of vehicles using the road shall be limited to 3.5 Tonnes (5 Tonnes total weight).
- The basic Design Standards for Feeder Roads (Tractor/Trailer Standard) are given for Hilly Terrain in Table I overleaf.

3. Threshold Traffic Levels for Feeder Road Upgrading

New Feeder Roads will normally be constructed to Fair Weather Earth Track (FWET) Standards, Construction Development Stage 11. In order to ensure that the maximum benefits are obtained from the available resources, further capital investment in the road in the form of upgrading, should not be made until additional benefits are assured. This can generally be achieved by upgrading the road only when the combined costs of recurrent and periodic maintenance, together with vehicle operating costs, exceed these same costs on the upgraded road plus the cost of upgrading. As the cost of recurrent and periodic maintenance as well as -total Vehicle Operating Costs will increase with higher traffic levels, the determining factor for upgrading Feeder Roads from one Construction Development Stage to the next is the level of traffic actually using the road.

Use has been made of the World Bank computer-based Highway Design and Maintenance Standards Model (HDM 111) to determine the total transport costs (construction/upgrading, maintenance and vehicle operating costs) for a range of traffic levels on earth, gravel and bitumen Feeder Roads. Graphs of total transport costs against traffic levels have then been plotted for each construction standard from which the threshold traffic values for upgrading the road have been determined. Two cases were considered covering Hilly Terrain roads and roads in the Flat Terrain. The resulting graphs and the detailed methodology for deriving them are given below.

For simplicity the DoR Working Group has slightly modified the threshold values given by the graph and has recommended the following threshold to be used when assessing the need for upgrading roads.

Threshold for:

Upgrading Stage 11 (FWET) to Stage III (FWGT), earth to gravel surface. Upgrading Stage III (FWGT) to Stage V (AWBR), gravel to bitumen surface.

Hilly Terrain	Flat Terrain
50 vpd	100 vpd
150 vpd	250 vpd

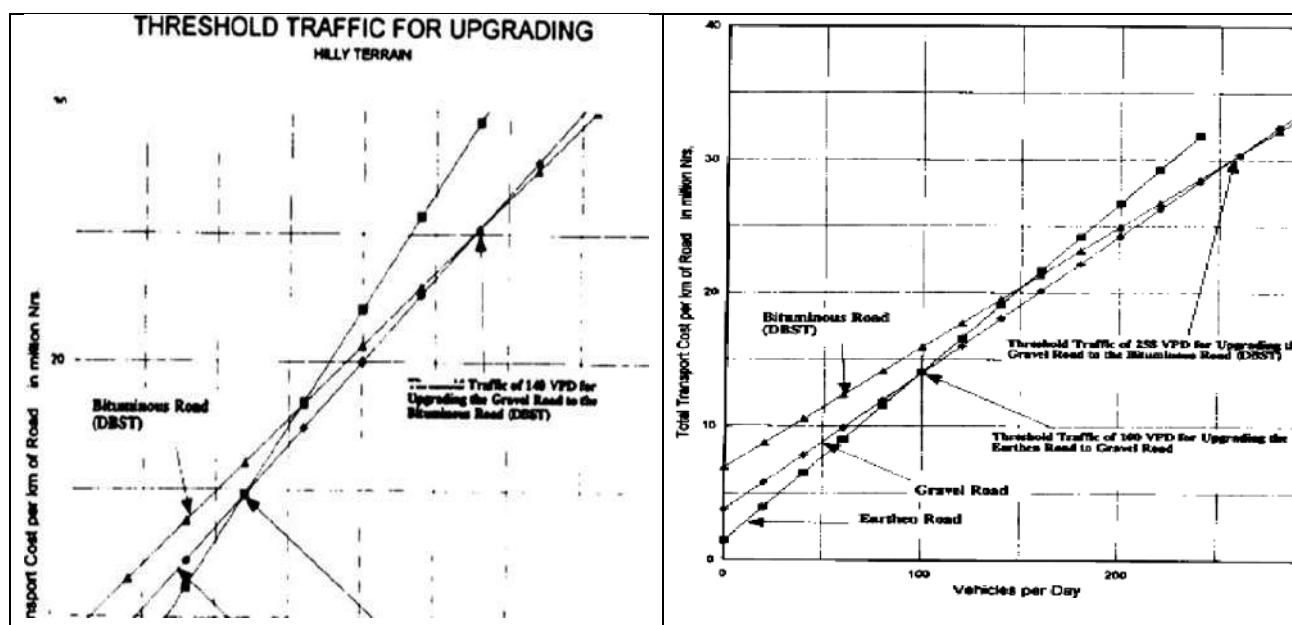
Upgrading gravel surfaced roads from fair weather to all weather, Stage 1II to Stage 1V, should be undertaken before moving to Stage V, bitumen surface. Calculations to determine a suitable traffic threshold for upgrading in this case have not been made but traffic levels midway between the figures given above are considered appropriate.

It is important to note that the threshold levels given are average values and are not intended to be absolute. They have been derived for use: as "trigger points" for initiating detailed feasibility studies on a particular road; as in making the case against premature upgrading and the uneconomic use of scarce resources; or for the preparation of 3 year and 5 year rolling plans for new construction works.

In Nepal conditions, upgrading to the next Construction Development Stage should only be considered when actual traffic levels are equal to or exceed the quoted figure in Hilly and Terai Region.

Review/विश्लेषणात्मक टिप्पणी Or why not useful for us and what is necessary in present condition

- Design and Upgrading Standard of Feeder Roads clearly suggest that construction and upgrading of feeder roads should not commence until stage 1 was completed i.e., the detailed design should be finalized and adequate resources commitment for construction and maintenance subsequent upgrading would be based on various traffic threshold on simplified HDM analysis.
- At that condition only 15 NH and 51 FR i.e., SRN network only in the range of 5000 km, but the now 80 NH (14000km) and SRN around 35000km so it is obviously not matching the design standard and upgrading standard in present condition.
- The situation today is different. Almost all DHQ are connected by road and will be completed all weather (Black topped) road as per the current policy, strategic paper and Budget.
- In addition to a substantial length of low standard local district and village level roads have been constructed throughout the country providing a basic level of access to large portion of the VDCs across the country.
- Due to the entry of Federal system in the country: all levels government are allocating huge amount of budget for road and bridges construction for targeting most of the road in blacktop.
- As the number of vehicles (approximately 4 million) increase tremendously, the Road safety action plan, SDC goals, 15th plan and policy of road sector also advocate for good, safer, all weather, reliable transport in the country so that it also needs to review the feeder road standard and upgrading threshold also.
- For the balance and 21st century competitive condition and sustainable transport, GoN also planning to improve the Road infrastructure by adding tunnel, expressway, flyover etc. in different part of country in various road which was feeder road in that time but now become highway.
- Some of the road upgrading and construction are also due to political pressure without any traffic volume calculation and economic return analysis such as six lane of Janakpur Jatahi road, long span bridges such as Trishuli river bridges are at 2 to 3 km interval in Dhading and waste of money in the name of study such as tunnel in Bheri corridor etc. which are opposite in the principle of traffic threshold for upgrading and PIP for road infrastructure development. Due to above reasons, the traffic threshold and design standard of feeder road at present condition seem to be obsolete, so it is better to review and guide the principle and provide factual data and guideline for the upgrading and design standard of road such as provincial, rural roads as per the classification and importance of roads in Nepal.



Sustainable Transport Initiative, Future Plan and Consideration by ADB

Conceptual Framework for Sustainable Transport

The approach to transport in Asia and the Pacific is being affected by changes in the way that development is conceptualized and advanced. It is now widely accepted that development is about much more than economic advancement, and that more attention should be given to understanding its multiple effects on human life and the natural and physical environment. In this way the beneficial effects of development can be harnessed and adverse effects avoided or minimized.

Strategy 2020 seeks to align ADB's operations with these changes in development thinking. The overall focus is on helping DMCs (Developing member countries) establish a sustainable pattern of development, one that will enable all people to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations. Nowhere is the concept of sustainability more relevant than in the transport sector. Transport is an integral part of most of the activities, goods, and services required for supporting and improving people's lives, yet it also consumes resources and has adverse side effects. A balance has to be found that will enable people's transport needs to be met in a way that neither harms nor depletes.

It is appropriate that ADB should adopt sustainable transport as the guiding principle for aligning its transport operations with Strategy 2020. While various definitions are possible, a sustainable transport system may generally be considered to be one that allows the basic access and development needs of individuals, companies, and society to be met safely and in a manner consistent with human health. Sustainable transport supports a competitive economy and balanced regional development, and promotes equity, including gender equity, within and between successive generations. Environmentally, a sustainable transport system minimizes the use of land and emissions, waste, and noise. It uses renewable resources at or below their rates of generation, uses nonrenewable resources at or below the rates of development of renewable substitutes, and limits emissions and waste within the planet's ability to absorb them. In terms of cost, a sustainable transport system is one that is affordable and operates efficiently, taking into account requirements for investment in capacity and the need for maintenance.

Based on these considerations, the STI defines a sustainable transport system as one that is accessible, safe, environment-friendly, and affordable.^o This incorporates multiple overlapping dimensions of sustainability (Table 1).

Table 1 Dimensions within the Definition of a Sustainable Transport System

Dimension of Sustainability	Definition of a Sustainable Transport System			
	Accessible	Safe	Environment-Friendly	Affordable
Economic and financial	◆			◆
Asset condition	◆	◆	◆	◆
Social equity	◆	◆	◆	◆
Health		◆	◆	
Ecology			◆	
Physical environment		◆	◆	
Air quality and noise		◆	◆	
Climate		◆	◆	

Source: ADB.

Sustainable Transport Needs

Despite advances during recent decades, DMCs still have enormous needs for accessible, safe, environment-friendly, and affordable transport. Their needs have increased as a result of population growth and the economic progress facilitated by past transport development. DMCs also need to adapt and improve upon the type of transport provided for this to be sustainable, and address new and emerging transport needs and challenges.

Continuing Needs and Challenges

Infrastructure gap. A recent study by the ADB Institute found that, in spite of considerable investment, transport improvements have not kept pace with the growth in demand, and that transport consequently remains a critical development bottleneck. There are gaps in every transport subsector, at each level of the transport network, and in terms of accessibility, geographical coverage, and interconnectivity between transport modes, particularly in poor regions. In the years ahead, the demand for freight and passenger transport will continue to grow faster than gross domestic product (GDP). In the next decade the countries of Asia and the Pacific will need to invest \$8 trillion in infrastructure, with much of this being for transport.

Given the enormous financing requirements, DMCs will continue to need support from ADB and other development partners to mobilize financing for transport infrastructure. The nature and extent of this support will vary depending on a country's size, capacity, and access

to capital markets. Some small, low-income countries may continue to depend on ADB and other development partners to finance much of their transport investment requirements and to support capacity development. However, for the region as a whole, financing from ADB will only cover a small portion of total transport investment requirements. For this reason, ADB transport operations will need to give much greater emphasis to leveraging additional financing from other sources, in particular by acting as a catalyst, to bring about a much higher level of private sector participation in transport. ADB will also need to add value to the investments through enhanced knowledge support to the DMCs on strategic issues and in specialized fields of transport.

Roads. ADB transport lending has focused mainly on the road subsector (Figure 1). This period has seen road networks and the capacity of existing roads in many DMCs significantly expand, and the proportion of paved roads increase. ADB has financed roads in most DMCs, at all levels of the network. During 2005–2008, ADB projects provided 1,400 kilometers (km) of expressways and 39,100 km of national highways and provincial, district, and rural roads, benefiting an estimated 422 million people. With road traffic growing faster than GDP in most DMCs, there will be large continuing needs for road construction and improvement in the years ahead, and ADB assistance for roads will remain important.

Construction of expressways and national highways has reduced transport costs and journey times, and thereby enabled economic growth. ADB support has helped assure project quality and financial sustainability, introduce improved construction technologies and features such as tolling, and strengthen safeguards against adverse social and environmental impacts. Alongside its support for investments, ADB has provided assistance to strengthen the capacity of road institutions. With varying degrees of success, it has helped governments with the difficult process of modernizing and streamlining their policy and institutional arrangements for roads, including through reengineering, commercialization, outsourcing, and privatization.

Road improvements at lower levels of the network have played a key role in improving people's access to economic opportunities and services. In most DMCs, the incidence of poverty is highest in rural areas. Often this is linked to geographical remoteness and lack of access to markets and services. In line with its overarching poverty reduction strategy, ADB has supported integrated road network improvements in many DMCs and financed major rural roads programs. Between 1996 and 2009, ADB provided \$4 billion for rural roads, including large programs in India, Indonesia, Pakistan, and Viet Nam. ADB has also provided support for strengthening institutional arrangements and capacity for jurisdiction over rural road networks, project management, and financing and execution of rural road maintenance. To help realize the full potential for rural roads to contribute to more accessible and affordable transport, ADB has also supported improved rural bus services to ensure adequate services, encourage competitive transport markets, strengthen approaches to service regulation, and finance facilities such as bus stations. Rural transport will continue to be an important focus for ADB transport operations.

For road investments to be sustainable, the road assets need to be maintained throughout their intended economic life; otherwise, the initial gains in improved accessibility, affordability, and safety will gradually be lost. As a general rule, for every \$1 of essential maintenance that is postponed, the operating costs of vehicles increase by more than \$3. In many DMCs there continue to be significant shortcomings in the way that road infrastructure is maintained. DMC governments have often emphasized new construction over road maintenance, with the result that maintenance backlogs have built up. Some DMCs have also lacked the necessary policies, institutional arrangements, and capacity for maintenance.

A sustainable approach to maintenance has three pillars: an objective approach to selection of maintenance works, effective execution of works, and adequate financing. For roads carrying large traffic volumes, ADB has helped create self-supporting road agencies (and sometimes public—private partnership [PPP] concessions). These agencies finance road construction and operation from toll revenue, and have the technical capability for undertaking maintenance programming and recruiting capable maintenance contractors. For other parts of the road network, ADB has helped establish road asset management systems, strengthen road maintenance agencies, introduce maintenance contracting and performance-based contracts, and raise the level of maintenance budgets. It has also helped some DMCs establish road funds to provide a more reliable source of financing for road maintenance—such as from fuel taxes, vehicle fees, or other taxes—and to improve accountability to the public. To support sustainability in the road's subsector, ADB should continue to include road asset management in its road subsector policy dialogue and operational support, and assist DMCs to address accumulated road maintenance backlogs.

Railways. In contrast with the universal growth of road transport, rail transport in much of developing Asia has experienced declining market share, with expansion and growth confined to a small number of DMCs. The major exception is the People's Republic of China (PRC), which has steadily expanded its railways and reformed its railway institutions. This included a 60% increase in route-kilometers since 1980, with a 17,000 km high-speed passenger network under construction. On a lesser scale, India has invested substantially in expanding its network and initiating reforms. Several other DMCs have also invested in new lines, but most of the region's railways have seen only very modest development and reform. The experience of the PRC has demonstrated that—depending on traffic, geography, and other factors—modern railways can play a major role in enabling inclusive economic growth, and can have positive effects on poverty levels in hinterland areas. It has also shown that railways are an important mode for sustainable transport, as they offer significant safety advantages and have lower environmental impacts and emissions. The experience of other DMCs also shows that many railway administrations have struggled to adapt to rapidly changing market circumstances, and have found it difficult to reform and modernize.

Past ADB support for railways has been mainly confined to Bangladesh, the PRC(China), India, and Uzbekistan (new lending is also under consideration for Cambodia, Mongolia, and Turkmenistan). During 2005–2008, ADB projects financed 3,200 km of

railway lines (footnote 8). These were mostly new lines in the PRC, which also account for two-thirds of the 2010–2012 railways lending pipeline. The major factor that has limited the scale of lending for railways is the reluctance of railway administration bodies to reform and modernize. In some DMCs, this has made it difficult to justify large new investments. Another constraint is that it has not been possible to realize the full potential of railways for long-distance transport because of restrictions in cross-border movements as well as gauge differences between countries. In several DMCs there appear to be signs of a new willingness to embrace railway reform and modernization. There may also be prospects for regional cooperation initiatives to unlock the potential for developing cross-border railways. Another opportunity is to support private railway concessions. Potentially, PPPs can relieve governments of the burden of financing railways investments; speed up railway construction; and introduce the modern, efficient, and cost-effective approaches to operations that are needed for railways to be competitive.

Other transport modes. While the situation varies from country to country, ADB's support for transport modes other than roads and railways has been quite limited. Aviation, ocean shipping, and ports have grown rapidly in developing Asia and the Pacific. However, in the early 1990s, ADB largely phased out its support as the private sector was already performing effectively in these areas. ADB did continue to support a small number of DMCs—such as Nepal, Mongolia, and various Pacific DMCs—where aviation and ocean transport have a unique role due to limitations in land transport, generally linked to factors such as geography and low population density. In the case of inland waterways, the overall growth of traffic and facilities has been slower, and ADB's involvement has been small. Only a limited number of inland waterways within the region have significant navigation potential. Their development has been constrained by the weakness of existing institutions and lack of support for modernization and reform. However, as is evident from the PRC's ambitious plans to expand inland waterway transport, when governments are prepared to address the existing constraints, inland waterways can offer a cost-effective, safe, and low-carbon mode for certain types of freight, and ADB can play a useful supporting role.

Private sector participation. In the past decade, ADB assisted some DMCs with policy, legal, regulatory, and institutional arrangements to support increased private sector participation in transport. Through its public sector operations, ADB helped governments introduce additional forms of private participation, such as build—operate—transfer concessions for toll roads and bridges, public transport service concessions, and performance- and area-based operation and maintenance contracts.¹⁰ Through private sector operations, ADB also financed innovative private ventures in the transport sector, particularly build—operate—transfer concessions.

However, the scale of ADB's support for private sector participation needs to be greatly increased. Strategy 2020 has set an overall target that private sector development and private sector operations should reach 50% of total ADB lending by 2020 (footnote 1). This will require ADB-wide changes, including in the transport sector. During 2000–2009, ADB's average annual private sector lending for transport was only \$23 million—less than 1% of its total lending for transport. This reflects a series of problems and challenges, some concerning the wider environment for transport PPPs in DMCs, and others concerning limitations in ADB's approach to supporting transport PPPs. At the country level, there are still problems in terms of policy, legal, regulatory, and institutional arrangements that reduce the capacity of DMCs to attract private sector interest. Within ADB, the transport lending pipeline in the country partnerships and strategies focuses primarily on public sector projects. Few staff within its transport and urban divisions have practical experience of transport PPPs. Until now, the regional departments and the Private Sector Operations Department have lacked effective arrangements for knowledge sharing, coordination, and collaboration in support of ADB's role in promoting transport PPPs.

Social and environmental considerations. As incomes and education levels in DMCs have risen, and information has become more widely available, so has the appreciation that different people and groups have different development needs and that most development interventions have both positive and negative effects. In the 2 decades since 1990, ADB has steadily increased the attention it gives to the social and environmental dimensions of development. This has changed the way it formulates transport operations and how it conducts associated policy dialogue. All transport operations now incorporate safeguards to protect people and the environment from adverse effects. The introduction and application of safeguards to transport projects, together with associated dialogue and capacity building support, have helped many DMCs reassess the adequacy of their domestic policies and legal provisions for providing social and environmental safeguards, and their monitoring and enforcement arrangements. In many DMCs this process is ongoing and ADB transport projects can have further influence in the future. From an early stage in formulating transport operations, ADB also conducts an assessment of social and poverty issues that influences the approach and scope of the project. This has led to inclusion of special measures or complementary project components to ensure that the poor or other disadvantaged groups benefit from the project, and to address gender dimensions and the risks of HIV/AIDS and human trafficking. Support from the Japan Fund for Poverty Reduction and other bilateral funds has played a valuable role in helping ADB address such considerations in transport projects. Incorporating social and environmental considerations will continue to be an important feature of ADB transport operations.

Anticorruption. It is widely recognized that corrupt practices remain a problem affecting the performance of the transport sector in DMCs. Through its involvement in the transport sector, ADB has helped DMCs control such practices in a variety of ways, including at the project level and through policy dialogue and advisory activities. These have included adopting internationally recognized procurement procedures; scrutinizing project procurement activities; financial, procurement, and performance audits; supporting streamlining and reform of government procurement procedures; and introducing whistle-blower mechanisms. ADB needs to continue to pursue anticorruption and good governance in transport through policy dialogue and advisory activities. ADB support for anticorruption efforts will remain relevant for transport operations.

Emerging Needs and Challenges

As a result of past economic development, and changes in settlement patterns and in the way of life, DMCs need to address several emerging needs and challenges in the transport sector. Some of these concern aspects of transport that have received limited attention

in the past; others refer to aspects that have become more important and where ADB support needs to be increased.

Urban Transport

With almost 3.9 billion people, Asia has 61% of the world's population. Its share of the world's urban population rose from 9% in 1920 to more than 48% in 2005, and is expected to reach 54% in 2030. About 44 million people are being added to Asia's urban population every year, which is equivalent to 120,000 people per day. A feature of this rapid urbanization is the growth of large cities and megacities—already the region contains 10 of the world's 25 largest cities, and these are among the fastest growing. ADB has estimated that 80% of Asia's new economic growth will in future be generated in its urban economies, since this is where most jobs and employment opportunities are located.¹⁴ However, there will also be large numbers of urban residents who are poor. About 70% (800 million) of the world's poor live in Asia and, although poverty is sometimes perceived to be a rural phenomenon, the incidence of urban and peri-urban poverty is significant and growing. Although the large cities of Asia are growing rapidly, and it is forecast that more than 80% of Asia's economic growth will be in its urban areas, the reality is that, after more than 3 decades of rapid economic growth, one of the defining characteristics of Asia's cities is poverty—almost 25% of Asia's urban population is poor. About 250 million poor people in Asia reside in urban areas, and this is projected to reach 300 million by 2020.

These trends are placing an enormous strain on transport and mobility in urban areas. Road congestion already costs Asian economies an estimated 2%—5% of GDP every year due to lost time and increased transport costs. Congestion occurs where demand exceeds the capacity of the transport system, including when links in the strategic transport network are missing. In response to growing urban transport needs and rising congestion, there has already been a sharp rise in investment in urban transport systems, including ring roads and mass transit systems. Investment will rise considerably in the near future.

To provide sustainable urban transport solutions, the countries of Asia and the Pacific need to address rapid motorization, which is a major cause of congestion and pollution. As a result of rising incomes, per capita vehicle ownership is rising exceptionally fast; motor vehicle fleets are doubling every 5—7 years. Emerging Asian countries were expected to add 35 million vehicles between 2006 and 2009.¹ Since fleets are growing from a low base, very rapid growth will continue for the foreseeable future unless other transport solutions can be found.¹ The 10 countries in the world with the highest private vehicle future demand index are in Asia; these include the PRC, India, and Indonesia, the three most populous countries in the world.

Uncontrolled growth in urban road traffic and rising congestion are also compromising the health and safety of urban dwellers. The region's cities suffer from the highest air pollution levels in the world, with as much as 80% attributable to transport.²⁰ Respiratory ailments and other diseases related to local air pollution contribute to the premature death of more than 500,000 people each year. According to the World Health Organization, this imposes an economic cost of up to 2%—4% of GDP in many countries. A recent study estimated that 350,000 lives were lost in 2003 due to air pollution in cities in the PRC, and that air pollution in the PRC resulted in more than 250,000 new cases of chronic bronchitis. The value of lives lost was equivalent to 4% of the PRC's GDP Reducing air pollution levels to those experienced in the United States in 1990 would save more than 200,000 lives annually. Road traffic growth has also led to increased traffic safety risks for pedestrians and cyclists.

The unprecedented growth in private vehicle ownership poses a serious development challenge. As some large Asian cities are discovering, constructing urban roads will not in itself provide a solution. Constructing new roads leads to more purchases of private vehicles, which eventually leads to the roads again becoming congested. Moreover, further road building faces severe practical limitations and escalating costs due to the shortage of land in urban areas.

Given its scale and significance for global climate change, the emerging urban transport problem will be the biggest transport challenge for developing Asia and the Pacific in the coming years. Urban transport provision and urban development need to be closely coordinated to create more livable cities with shorter journey times and journey distances. There will also be a need to improve nonmotorized transport, and this will require principles of nonmotorized transport to be incorporated within the overall approach to urban planning. To arrive at sustainable solutions, there will be a need for multimodal transport systems that use the most sustainable modes. To provide passengers with alternatives to private vehicle use, high-quality urban mass transit systems will need to be developed, including metro rail systems and bus rapid transit. Many of these projects will be very costly and will require sophisticated approaches to financing, tariffs, technology, and operations. At the same time, cities will need to find better ways of managing growth in vehicle ownership and use. As has been demonstrated in Singapore, London, and elsewhere, vehicle or road pricing mechanisms can play a central role. These have the added advantage that they can generate financial resources to expand and maintain the urban transport network and systems.

Climate Change and Energy Efficiency

Asia's emissions from motorized transport have become a significant contributor to the global problem of greenhouse gas emissions that leads to climate change. Energy use in the transport sector is dominated by petroleum product fuels. The share of transport within total global greenhouse gas emissions, in particular CO₂, is growing rapidly, with the vast majority of projected increases expected to come from developing Asia. In 2006 transport accounted for 13% of global greenhouse gas, while 23% of global CO₂ emissions from fuel combustion were transport related. Asia accounted for 19% of total transport sector CO₂ emissions in 2006 but by 2030, this figure will increase to 31%. Addressing transport emissions in Asia is therefore crucial for global CO₂ mitigation.

As a result of rapid motorization, energy use for transport is expected to increase dramatically in the years up to 2025, accounting for an

additional 30% of world energy requirements. At 2.7% per year, the projected average growth rate for transportation energy use in the non-Organisation for Co-operation and Development (OECD) countries from 2006 to 2030 is eight times higher than the projected rate for OECD countries. The use of liquid fuels in the non-OECD transport sector as a whole is expected to nearly double over the period. In the countries of developing Asia, passenger and freight transport energy consumption is expected to increase more rapidly than in the other non-OECD countries.²⁴ This will have significant implications for energy demand, pollution (global and local), and energy security across the region. Most Asian countries are importers of fossil fuels, and recent experience has shown that fuel price volatility can have severe impacts on the economy and on the lives of poor and low-income people.

In view of the priority accorded internationally to the issue of climate change, there is an urgent need for ADB to assist in developing effective, efficient solutions that can work on a large scale in the transport sector in developing Asia. A useful conceptual tool to guide this work at country and regional level is the “**avoid—shift—improve**” approach:

- **Avoid** means reducing the need to travel, for example by integrating land use and transport planning to create local clusters of economic activity that require less mobility; by changing how production is organized (e.g., doing more online); and by developing multimodal logistics chains to cut unnecessary trips.
- **Shift** means changing to more energy efficient modes or routes, such as shifting from road to rail or waterways, or onto well-defined trunking routes, or shifting passengers from private vehicles to public transport and nonmotorized modes.
- **Improve** means using technologies that are more energy efficient, including through improving vehicle standards, inspection, and enforcement; developing improved vehicle technologies and fuels; and improving transport efficiency using information technology.

A further dimension of climate change is that transport investments are vulnerable to the effects of climate change. Such effects include rises in sea level; changes in permafrost conditions and locations; changes in precipitation; and increases in the frequency and intensity of storms, floods, and droughts. These have consequences for the design, construction, and alignment of roads, railway tracks, and other transport infrastructure. At the same time, the development of transport infrastructure can inadvertently increase vulnerability to climate change effects, e.g., by reducing natural flood control ecosystems and disrupting migratory patterns of sensitive species. Transportation systems also influence patterns of settlement, which can result in population concentrations in areas that are becoming more prone to extreme weather conditions and disasters. To address these challenges, ADB is undertaking a number of case studies and developing improved analytical tools to systematically integrate adaptation measures into ADB transport operations.

Regional Cooperation and Integration

Globalization and rapid growth of trade are major drivers of economic development and poverty reduction in Asia and the Pacific. By 2020 the region could account for one-third of world trade. Intraregional trade now accounts for 55% of the region's total trade, compared with 43% in the early 1990s.¹⁰ Globalization has led to the region's economies becoming more closely intertwined with each other and the rest of the world, and international supply chains span the region to utilize each country's comparative advantage. As tariff barriers have diminished, transport costs and bottlenecks have emerged as constraints to trade growth. These include the indirect costs associated with unreliable transit times, border-crossing delays, handling and storage costs due to poor terminal infrastructure, risks of theft and property damage, and bribes. Finding solutions to these problems is especially important for landlocked countries that rely on transit through neighboring countries to gain access to international markets.

ADB supports several subregional programs that include substantial transport components." A recent IED sector assistance program evaluation found that the Greater Mekong Subregion program has led to benefits that would not have been realized through national initiatives alone. ADB support for transport and trade facilitation has led to significant savings in vehicle operating costs and travel time, and reduced border-crossing times. It has also led to expanded economic activities, with new industries and special industrial zones developing along the regional road corridors. However, IED also found that, to achieve the full potential benefits, there is a need to improve the “software” aspect of cross-border agreements and regional institutions.

In adopting regional cooperation and integration as one of ADB's three long-term strategic agendas, Strategy 2020 challenges ADB to substantially expand the scale, influence, and effectiveness of its support for regional cooperation. In the transport sector, this will mean accelerating the investments needed to complete the regional road networks, establishing programs of investments to create a competitive regional railway network, and developing faster and more effective ways of helping regional partners streamline cross-border rules and procedures. A recent ADB—ADB Institute study sets the long-term vision of a “seamless Asia—an integrated region connected by world-class, environmentally friendly infrastructure—in terms of both ‘hard’ (physical) and ‘soft’ (facilitating) infrastructure,” and estimates that improved transport and harmonization of regulations to facilitate new trade and transport patterns would generate \$13 trillion in increased income for Asia over the next 10 years (footnote 7).

Road Accidents and Emerging Social Issues

One of the most serious adverse effects of the rising traffic on Asia's roads has been growing road accidents. Out of an estimated 1.18 million deaths and millions of injuries globally each year due to road accidents, 60% occur in Asia. This reflects not only traffic growth but also high road accident rates—accident rates in DMCs are much higher than in advanced countries. The burden of road accidents falls disproportionately on the poor. According to the World Health Organization, almost half of those who die in road traffic crashes are pedestrians, cyclists, or users of motorized two-wheelers, and this proportion is higher in poorer economies. Among the

member countries of the Association of Southeast Asian Nations (ASEAN) alone, road accidents cost an estimated \$15 billion each year.

While ADB and other international agencies have long supported road safety in developing countries, such support has not been on a large enough scale or on a sufficiently sustained basis to close this gap. Recent international initiatives have highlighted the extent of the road accident problem, which has been identified as a major public health issue (the leading cause of premature death and disability for children aged 5 and above)." At the First Global Ministerial Conference on Road Safety in Moscow in November 2009, ADB and other multilateral development banks made a commitment to increase their support for road safety, including road safety management capacity; safe approaches to the design, construction, operation, and maintenance of road infrastructure; road safety performance measures; and mobilizing resources for road safety.

It will not be easy for DMCs to make transport safer. Road safety depends not only on having safer infrastructure and vehicles, but also on changing driver behavior and supporting law enforcement, emergency response, and medical facilities. The multisector nature of road safety means that it requires coordination among government agencies and cooperation between government and members of society. Countries need effective safety legislation and institutions, and good safety practices. They also need systematic, comprehensive accident reporting systems; safer engineering design and safety audit systems; education and awareness programs, aimed particularly at children; improved driver training and vehicle testing; effective enforcement of legislation; and emergency rescue systems.

In addition to road accidents, more attention needs to be given to realizing the potential positive social impacts of transport and to avoiding and mitigating negative social impacts. Since ADB's overarching goal is poverty reduction, its work on transport should contribute to providing effective solutions to the transport needs of the poor. More effective approaches are also needed for addressing other social dimensions of transport, including gender mainstreaming, participation, and social risks other than those covered by ADB's safeguard policies. These include (i) more participatory approaches to project planning and project strategies to protect against associated HIV/AIDS and human trafficking risks, (ii) incorporating complementary development programs and community-based maintenance, (iii) improving transport services, (iv) providing improved facilities such as public toilets and pedestrian and bicycle lanes to make transport accessible and safe for all users and social groups including women and the elderly, (v) applying core labor standards, and (vi) using tariff and subsidy options to increase access for vulnerable groups.

Future Sustainable Transport Operations

This STI operational plan identifies three main categories of future ADB transport operations. The first category is operations to address continuing needs and challenges where ADB already has a track record of effective operations. This category will constitute the majority of ADB transport operations during the initial years of the STI operational plan and will still account for a substantial portion in 2020. For such operations, the STI will focus on mainstreaming sustainable transport considerations into ADB's approach. The second category is opportunities to introduce new or enhanced operations to address emerging needs and challenges where effective forms of support are already available. These will provide early opportunities to realign ADB's transport operations with Strategy 2020. The third category is potential elements of future sustainable transport operations that require research, consultation, and pilot testing before they can be included in ADB transport operations. These could lead to new types of operations in the later part of the operational plan period.

Mainstreaming Sustainable Transport in Existing Areas of Operations

ADB's existing areas of transport operations, focusing mainly on roads, will remain relevant in most DMCs in the next decade. Having an established competence in these areas, as well as close working relationships with executing agencies, ADB is well placed to continue to provide support. At the same time, the adoption of sustainable transport as ADB's guiding principle in transport will require departments and transport staff to review their approach to the existing areas of operations. They will need to question how well past approaches have addressed the multiple dimensions of sustainable transport, and draw upon new sources of ideas and expertise to strengthen sustainability in future. Sustainable transport will need to be mainstreamed into the transport sector road maps in future country partnerships and strategies, and in the approach to formulating and implementing transport and technical assistance projects. This change process will require strategic leadership from the TCOP, staff training and capacity development, effective use of knowledge and collaboration with knowledge partners, and greater selectivity to focus ADB's role on aspects of sustainable transport where it can offer greatest value addition.

While previous ADB projects and transport sector road maps (within country partnership strategies) have addressed some dimensions of sustainable transport, few have done so comprehensively, and there have been gaps and blind spots. For example, some past projects aimed to reduce transport costs and increase vehicle speeds without considering how to avoid some of the adverse impacts this might bring, such as increased road accidents, noise, and emissions. Some projects sought to make long distance transport more accessible and affordable but did not improve connecting rural roads and bus services or provide facilities needed for women's use of transport. Some projects emphasized cost recovery to support financial and asset sustainability but did not ask if tariff levels were affordable or whether subsidies were justified for some groups. In future, the mainstreaming of sustainable transport will involve giving attention to all the elements of sustainable transport, and finding the best balance between them to develop transport systems that are accessible, affordable, safe, and environment-friendly. Options that may be considered in formulating future projects, taking the road subsector as an example.

Since rural roads play an important role in inclusive economic growth by making transport accessible and affordable, ADB will continue to support rural roads in many DMCs. Where feasible, ADB will support the use of labor-intensive approaches to rural road construction and maintenance. ADB will also continue to support highways development, but will become

more selective—focusing on DMCs that still lack the necessary institutional capacity and access to finance to independently develop and operate their highway networks, and on DMCs where ADB can play a role in introducing PPPs for highways. Alongside its support for road investments, ADB will continue to support institution building and capacity development in the road subsector. To address the sustainability of existing road assets, it will provide increased support for road asset management and road maintenance. This will include financing programs to establish and implement improved systems for selecting, implementing, and financing road maintenance works; assisting DMCs to establish road funds; and financing investments in road rehabilitation and programs to reduce maintenance backlogs.

Mainstreaming sustainable transport in ADB will begin with disseminating and promoting the STI (Sustainable transport initiative) operational plan within ADB through seminars, workshops, and TCOP (transport community of practice) meetings. The STI was discussed extensively at the 2nd ADB Transport Forum in May 2010, in the presence of a large audience of ADB staff, DMC officials, development partners, donors, representatives of the private sector and nongovernment organizations (NGOs), and the media. The biennial ADB Transport Forum is ADB's largest knowledge-sharing event for transport. The program for the 2010 forum was devoted to the STI, and featured presentations and discussions on aspects of sustainable transport that ADB expects to support in the future. As part of the forum, the advisory teams within the TCOP conducted activity clinics to assess how sustainable transport should affect ADB's approach in their respective fields of transport.

The TCOP committee members and advisory teams will carry forward the dialogue on sustainable transport within ADB—at departmental level, within transport and urban divisions, and among staff with expertise in various specialized fields of transport. In doing so, the TCOP will work closely with other communities of practice that can contribute to ADB's approach to sustainable transport—including those for health, gender, environment, urban development, rural development, education, regional cooperation, and private sector development—and will explore opportunities for involving external partners in the TCOP Building upon the outputs of transport forum activity clinics, each TCOP advisory team will prepare a sustainable transport action plan for incorporating improved approaches, strengthening capacity and staff training, and providing access to knowledge in their respective specialized fields of transport. Drawing upon these action plans, the TCOP will prepare and implement a consolidated program for staff training in sustainable transport to be financed from the staff training budget.

The TCOP's quality assurance role within ADB's streamlined business processes will provide an important entry point for mainstreaming sustainable transport within individual transport operations. Beginning at the concept stage, the TCOP will use its sector-focused peer reviews of transport sector road maps and individual transport project proposals to strengthen the sustainable transport focus of future transport operations. The TCOP will establish a special section on sustainable transport in its electronic library of best practices in transport. This will provide staff with web-based access to international and ADB best practices. The TCOP will also work in collaboration and partnership with DMCs, development partners, and centers of excellence to create new and improved mechanisms for knowledge sharing on sustainable transport, including through websites, exchange visits, and workshops and seminars.

A further aspect of mainstreaming sustainable transport concerns private sector participation. Since greatly increased private sector participation will be essential if the region's enormous infrastructure financing needs are to be met, ADB's infrastructure operations will need to become more effective at attracting private sector participation. This challenge extends across all infrastructure sectors—not just transport—and will require ADB-wide efforts to strengthen ADB's orientation toward private sector participation, augment its capacity for supporting PPPs, optimize synergies between regional departments and PSOD, and develop financing models capable of attracting private sector participation on a much larger scale. Emphasizing private sector participation in transport will be an integral part of mainstreaming sustainable transport.

The final part of mainstreaming sustainable transport will be to encourage selectivity in ADB's approach to supporting sustainable transport. To optimize its contribution, ADB should focus on roles within sustainable transport where it can significantly add value. The optimal focus will vary from country to country but the following approaches will generally be considered:

- **Knowledge.** In addition to country knowledge, the design of ADB operations should build on ADB-wide and international best practices in sustainable transport.
- **Add value.** ADB financing should be channeled to projects and activities where ADB involvement will result in increased sustainability.
- **Be catalytic.** ADB assistance should help DMCs overcome sector obstacles to wider adoption of sustainable transport.
- **Scale up successful approaches.** ADB should help DMCs replicate successful approaches to sustainable transport on a larger scale.
- **Attract additional financing.** ADB should use innovative approaches to attract partners to provide additional financing to expand the scale of investments in sustainable transport.
- **Emphasize private sector participation.** Within transport sector road maps and project proposals, ADB should exert vigorous efforts to identify projects that can be implemented as PPPs.

Introducing New and Enhanced Sustainable Transport Operations

The STI operational plan identifies four opportunities for introducing new and enhanced ADB lending operations to scale up ADB's support for sustainable transport (Table 2).

Urban Transport

In its preliminary work on the STI, ADB has studied and pilot-tested various approaches to urban transport operations, including public mass transit systems. While the scope of ADB urban transport operations will depend on DMC needs, taking into account good practice and the lessons from ADB experience, the following elements are likely to feature, both individually and in combination:

Table 2: Opportunities for New and Enhanced Sustainable Transport Operations

S.N.	Name	Focus of Lending Operations
1	Urban transport	Scale up operations, model projects
2	Addressing climate change in transport	Model projects for mode shifting and distance shortening
3	Cross-border transport and logistics	More effective transport facilitation within planned and existing operations
4	Road safety and social sustainability	Scale up operations, model projects, best practices

- **Public transport systems.** These are needed to provide urban populations with safe, secure, accessible, rapid, efficient, and user-friendly transport, and to reduce pollution, congestion, and accidents. ADB support will include bus rapid transit and rail-based public transport systems.
- **Nonmotorized transport.** Integrated urban transport solutions should make provision for nonmotorized transport infrastructure together with pedestrian zones and walkways, segregated cycle paths, and bicycle parking and rental programs.
- **Integrated urban transport planning.** Urban transport plans should be integrated with urban land use plans to support more efficient approaches to planning urban expansion and redevelopment, limit trip lengths needed, make sustainable modes convenient for users, and optimize system integration.
- **Demand management.** In parallel with improving public transport and nonmotorized transport, cities need to use demand management to limit congestion and improve traffic flows by reducing the attractiveness of private vehicle use in busy urban areas. Options range from relatively simple systems, such as charging for vehicle licenses and parking fees, to more advanced computerized road-pricing schemes.
- **Traffic management.** Traffic engineering and traffic management systems are needed to optimize traffic flows on the available urban transport infrastructure.

In view of increased interest from DMCs, ADB is rapidly scaling up its urban transport operations. To ensure the success of this process, the STI will provide regional departments with additional expertise and resources to help them establish and consolidate high-quality transport lending operation. To assist regional departments while they are still building urban transport expertise, ADB will recruit urban transport experts with strong operational expertise to work full-time in assisting regional departments with urban transport operations. Through the TCOP, ADB will also form partnerships with international and regional institutes and NGOs to provide specialized urban transport expertise as needed.

Addressing Climate Change in Transport

While some approaches to addressing climate change and energy efficiency in the transport sector may yield results only in the medium to long term—e.g., developing new types of vehicle technologies—there are other opportunities for ADB to contribute to early improvements on a large scale. This can be done by expanding operations to shift traffic to modes with lower emissions and energy consumption, and improve transport efficiency on existing modes as follows:

- **Mode shifting** Railways and inland waterways can offer more efficient, lower emission transport solutions for long-distance freight and passenger traffic. This is particularly so when they are supported by improved logistics facilities and services to offer effective multimodal transport solutions that combine the comparative advantages of the different modes. There is also potential for increasing the share of mass transit systems and nonmotorized transport within urban transport.
- **Distance shortening.** Strategic investments in missing links can shorten journey distances on existing modes, thereby reducing emissions and energy use.

Through the STI, ADB will expand its operations for developing competitive long-distance railways and inland waterways, and provide support for investment in missing links that will reduce energy consumption and emissions through distance shortening. These will serve as demonstration projects to encourage wider use by DMCs. In supporting railways and inland waterways, ADB will be promoting business models capable of realizing the potential competitiveness of these modes—within the public sector, privately, or through PPPs. To support regional departments and PSOD in this work, the STI will make available additional specialized expertise in railways, inland waterways, logistics, transport PPPs, and transport emissions measurement. The STI will also support regional departments and PSOD in accessing global climate change funds.

ADB will also mainstream climate adaptation measures into its transport operations. These will include making climate adaptation adjustments to engineering specifications, alignments, and master planning; incorporating associated environmental measures; and adjusting maintenance and contract scheduling.

Cross-Border Transport and Logistics

As part of ADB's support for regional economic integration, transport has a critical role to play in enabling growth in trade. ADB has already provided substantial lending for constructing regional road infrastructure and has a large pipeline of planned lending operations. The long-term effectiveness and sustainability of these operations will depend not only on constructing transport infrastructure but also on incorporating efficient solutions to enable seamless regional transportation of goods from point of loading to point of discharge.

ADB's regional transport operations will need to incorporate improved approaches to assisting DMCs with transport facilitation. "This includes simplifying formalities, processes, and procedures; harmonizing national procedures, operations, and documents with international conventions, standards, and practices; and standardizing in accordance with internationally agreed formats for practices, procedures, documents, and information. There is also a need to address bottlenecks in freight mobility and reduce the turnaround time of cargo vehicles, including by providing facilities, equipment, and infrastructure to streamline transport connections at gateways, ports, and feeder connections, and creating dry-port facilities and logistics centers, including in hinterland areas. Attention will be given to addressing the special needs of landlocked countries.

Under the STI, ADB will establish a specialized transport facilitation team at staff level. This will be supplemented by technical assistance and by establishing partnership arrangements with transport research and representative organizations. This will be used to lead a concerted approach to implement transport facilitation on a corridor-by-corridor basis as part of ADB's support for regional transport corridors, including for both existing and proposed projects. The time frames for this support will be adjusted to fit with the requirements to implement transport facilitation solutions. Results monitoring will be integrated within ADB's results-based monitoring of subregional programs.

ADB will also assist DMCs and regional cooperation organizations to draw up plans and investment programs to create a competitive regional railway network. This can build upon recent progress at the country level, including the development of advanced passenger and freight railways in the PRC to link its major economic centers and connect with its borders, progress with railways upgrading and introduction of cross-border services in India and Bangladesh, and the renewed interest in regional railways among the countries of Southeast Asia and Central and West Asia. This is potentially a major new area for regional cooperation, and ADB will be required to recruit additional railway experts and long-term consultants.

Road Safety and Social Sustainability

To have a more sustainable impact on road safety in DMCs, ADB needs to increase the scale, quality, duration, and continuity of its support for road safety. Through the STI, ADB will develop comprehensive road safety operations in selected DMCs by providing stand-alone lending for road safety. These operations will support engineering and behavioral approaches to the safe design, construction, operation, and maintenance of road infrastructure; the use of intelligent transport systems (ITSs) for road safety; and the development of road safety management capacity, road safety performance measurement, and resource mobilization. In view of the complex nature of the road accident problem, the need to involve multiple agencies and civil society, and the current limitations in the institutional capacity of DMCs in road safety, ADB will provide substantial technical assistance for advisory, capacity development, and project preparation purposes. To support social sustainability, ADB will expand its work on pro-poor dimensions of transport, including through improving rural bus services and nonmotorized transport, and on other social dimensions of transport—including gender mainstreaming, participation, HIV/AIDS and human trafficking, core labor standards, and use of tariff and subsidy options—to optimize the balance between accessibility and affordability.

To provide the expertise that regional departments will initially need to scale up and improve their approach to road safety operations, the STI will recruit road safety experts to join staff of a new road safety unit in the Regional and Sustainable Development Department. These staff members will work full-time on assisting regional departments to prepare and implement model road safety operations, and will also develop guidelines and sample terms of reference for incorporating road safety considerations at each stage in the project cycle. To support this work and expand ADB's work on social sustainability, a technical assistance facility will be established to procure specialized consulting services in the fields of road safety and social sustainability. ADB will also establish partnership agreements to support increased collaboration with reputable international road safety organizations and social development institutes active in developing Asia.

Preparing New Types of Sustainable Transport Operations

The STI operational plan also identifies several opportunities for further expanding and improving ADB's support for sustainable transport over the medium term. These focus on assisting DMCs to incorporate sustainability considerations within transport investment planning and policies, and conducting research and pilot testing to establish new types of support that ADB could introduce within its operations by the second half of the STI operational plan period.

Sustainable transport development plans. In the 1970s and 1980s, the international community helped many countries to prepare national transport plans that were used to guide prioritization between modes and to plan transport investment programs. At that time the yardstick was economic efficiency, focusing mainly on the direct economic costs and benefits of the different transport modes used. Today this yardstick needs to be augmented to account for carbon emissions and other adverse externalities. A new type of sustainable transport development plan is needed to take a fresh look at the future roles of different transport modes and to guide medium- and long-term priorities and policies to bring about sustainable transport. Preparation of such plans can play a significant role in supporting application of the avoid—shift—improve approach.

Support for preparing sustainable transport development plans will enable ADB to assist DMCs at a strategic level to guide the long-term transport mix in developing Asia. Through the STI, ADB will provide technical assistance support to help several DMCs prepare sustainable transport development plans. The level of technical assistance resources will be sufficient to prepare highly professional plans that can become a model for wider replication. The DMCs will be selected based on their level of interest in developing comprehensive integrated plans for sustainable transport development. The plans will focus at the national, regional, or city level. To enable full consideration of choices between modes, the implementation arrangements will ensure that the plans are developed and approved at a high government level, e.g., by having an inter-ministerial steering committee chaired by a minister responsible for

finance or planning, or by a transport minister responsible for all modes.

Transport demand management and road pricing. Trends in advanced countries suggest that advanced approaches to transport demand management and road pricing have an important role to play in sustainable transport in developing Asia, especially in urban areas. Private vehicles have to be managed through physical means or pricing to address increasing congestion, pollution, and safety and health aspects, and ensure full cost recovery. Restrictive measures—such as traffic limitation for certain types of vehicles in certain areas or corridors, road rationing through alternative driving schemes, vehicle purchase auctions and compulsory scrapping of old and inefficient polluting vehicles—offer fairly simple but effective transport management tools. An efficient transport pricing system that correctly reflects transport costs including externalities is a powerful tool for promoting a sustainable and balanced transport system. Examples include road tolling, area or cordon pricing for urban centers, parking pricing, subsidized transit fares, pay-as-you-drive vehicle insurance schemes, and fuel or vehicle tax increases.

While ADB is already supporting simpler types of demand management within its operations, it has potential to act as a center of excellence and knowledge hub to support the use of more advanced transport demand management options, including automated systems of road pricing. As part of the STI, ADB will build its knowledge and expertise in how to apply advanced traffic management and road pricing in Asia with a view to introducing components in its transport operations in the latter part of the STI operational period. To support this, ADB will establish a staff position for a transport demand management and road pricing expert, establish partnerships with institutes and existing government practitioners to support knowledge acquisition, and provide support for future operation. It will also undertake regional technical assistance to examine and share best practices and conduct prefeasibility studies of prospective advanced schemes that can be taken up by regional departments.

Intelligent transport systems. The use of information technology through intelligent transport systems (ITSs) is likely to be another major tool for sustainable transport in the future. ITSs already include equipment and in-vehicle technology and software for traveler information, transport systems management, driving assistance, and electronic transactions. They can benefit transport managers, users, and the environment by offering improved operational efficiency and reduced travel uncertainty, and can reduce avoidable trips and increase safety. The use of ITSs can improve real-time traffic management, reduce congestion, reduce the need for additional infrastructure, and provide more accurate information to support traffic monitoring, forecasting, and investment project design.

As part of the STI, ADB will conduct studies to assist DMCs to demonstrate the potential for using ITSs. It will also support development of the necessary environment and system architecture to support ITS acquisition, adaptation, and development at sector level, with a view to subsequent expansion of ITS investment components within future ADB transport lending.

Vehicle, engine, and fuel technology. Advances in vehicle technology are expected to influence future cost-effectiveness, energy efficiency, and emissions reduction in the transport sector. While ADB has little role in vehicle technology research and commercialization, it may be able to support the introduction and take-up of more sustainable vehicle-related technologies by assisting governments to establish and implement policies, standards, and enforcement mechanisms. It will also explore potential roles as a catalyst to assist governments and vehicle manufacturers to work together to develop more sustainable technologies.

Other future opportunities. During STI implementation, other opportunities are expected to also be identified. These could include, for example, examining the potential of promising new transport technologies; studies to improve understanding on behavioral determinants of transport demand, congestion, and road safety; and updating ADB's approach to economic analysis of transport projects to incorporate various dimensions of sustainable transport. Depending on their relevance and potential to contribute to sustainable transport, such additional opportunities could be considered for inclusion in the STI.

Time Frame

Implementation will be undertaken in three phases (Table 3). Phase 1 will cover 2010–2011, and its focus takes into account the need to initially mainstream sustainable transport and build ADB's capacity for undertaking sustainable transport operations. It also allows for phases 2 and 3 to incorporate the lessons from implementation of phase 1, and to introduce further types of support for sustainable transport after conducting initial research and pilot testing. The STI operational plan will be updated before the start of phases 2 and 3.

Table 3 Implementation Phases of the Sustainable Transport Initiative

Phase	Years	Focus
1	2010–2011	Mainstreaming sustainable transport in existing areas of operations Initial implementation of new and enhanced sustainable transport operations Studies and pilot testing of new types of sustainable transport operations
2	2012–2015	Full implementation of new and enhanced sustainable transport operations Initial implementation of new types of sustainable transport operations
3	2016–2020	Full implementation

Source: ADB.

Aspect	of	Example of Sustainability to Consider in Practical Application
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Sustainability	
Affordability	<ul style="list-style-type: none"> ➤ Affordability requirements of different social groups ➤ Range of different technology options ➤ Arrangements for provision and regulation of transport services ➤ Approach to tariffs and subsidies
Accessibility	<ul style="list-style-type: none"> ➤ Need for rural roads if there are major gaps in rural accessibility ➤ Local road components to link new highways with hinterland population ➤ Programs of small rural infrastructure investments to provide year-round access, e.g., bridge repair, drainage, minor road improvements
Road maintenance and road asset management	<ul style="list-style-type: none"> ➤ Effective covenants on maintenance of Asian Development Bank–funded road sections ➤ Support for sector-level improvements in asset management systems and funding, with support continuing long enough to yield results ➤ Knowledge sharing and collaboration across developing member countries and regions
Road safety	<ul style="list-style-type: none"> ➤ Road safety audits ➤ Interjurisdictional road safety programs ➤ Collaboration with private partners such as fuel companies and vehicle manufacturers and distributors ➤ Use of intelligent transport systems Pedestrian and cycle paths
Environmental impacts	<ul style="list-style-type: none"> ➤ Roadway size minimized so that land take is minimized and Dust minimized ➤ Tighter vehicle emission and fuel quality standards supported Inspection and maintenance schemes improved
Social impacts	<ul style="list-style-type: none"> ➤ Participatory approach to project planning and preparation ➤ Roadway size minimized so that land take is minimized ➤ Complementary development programs to realize potential opportunities created by road improvement ➤ Core labor standards ➤ Community-based Road maintenance programs and Pedestrian and cycle paths
Carbon dioxide emissions	<ul style="list-style-type: none"> ➤ Reuse of road pavement materials ➤ Vehicle standards and inspection to reduce emissions supported ➤ Policy interventions to make users pay for adverse externalities through congestion, road, or fuel pricing
Climate adaptation	<ul style="list-style-type: none"> ➤ Climate resilience measures within engineering design
Health impacts	<ul style="list-style-type: none"> ➤ HIV/AIDS protection strategies in large construction projects ➤ Measures to reduce vehicle emissions and noise
Gender dimensions	<ul style="list-style-type: none"> ➤ Community-based Road maintenance programs ➤ Facilities and standards for roads, buses, coaches, and stations ➤ Measures to combat human trafficking
Needs of elderly and disabled	<ul style="list-style-type: none"> ➤ Facilities and standards for buses, coaches, and stations ➤ Approach to tariffs and subsidies

Sustainable Transport Partnership Facility

ADB plans to establish a Sustainable Transport Partnership Facility (STPF) to provide a mechanism for partners to provide financing and expertise to support the STI. The STPF will also act as a catalyst to support the preparation and implementation of innovative forms of support for sustainable transport within individual ADB operations.

The partnership window of the STPF will provide a mechanism for donors, research institutes, and NGOs to provide financing, expertise, and in-kind support to contribute to the work of the STI to improve and increase ADB's operations to support sustainable transport. The following are examples of support through this window:

- Financing contributions. For financing the STI operational plan, the regional technical assistance, or specific elements of these. This may include donor financing of partnerships with centers of excellence (such as reputable institutes and NGOs with expertise in specialized fields of transport required for the STI).
- Expertise contributions. Provision of specialized expertise required for the STI core group and for other possible STI roles through provision of staff on secondment, fixed-term staff, and long-term consultants. This may include self-financed contributions of expertise by centers of excellence.

The innovation window of the STPF will provide grants to finance a range of measures that will generally include one or more of the following:

- **Policy advisory work on sustainable transport.** To support DMC transport strategies and policies that provide

incentives for the development of low-carbon transport—including through land-use planning, hybrid and alternate fuel vehicles, fuel economy norms, traffic demand management, and sustainable financing mechanisms.

- **Prefeasibility and feasibility studies for sustainable transport projects.** For example, heavy and light rail, metros, bus rapid transit systems, public transport services, franchising structures, service rationalization, paratransit, and cycling and pedestrian infrastructure.
- **Finance "add-on" components to existing projects that enhance sustainability.** For example, safety components, traffic management, fleet renewal and replacement with low-emission vehicles, integrating public transport systems and ticketing, bicycle hire schemes, and establishing revolving funds to finance sustainable transport improvements leveling in cities.

As transport is recognized as one of ADB's areas of comparative advantage, and the STI operational plan seeks to refine ADB's transport operations to address key agendas that have widespread international support, it is expected that development partners will wish to support the STI. The STPF will provide partners with a unique opportunity to help in shaping ADB's future approach to transport—one of the main sectors of ADB's operations.

Towards Forgiving and Self-Explanatory Roads

Evangelos Bekiaris and Evangelia Gaitanidou

2.1 The Concept of Sustainable Safety

"Sustainable Safety" is a road safety concept, by which the entire traffic and transport system is adapted to human limitations. The aim is to prevent crashes and to limit their consequences. The infrastructure prevents road use involving large differences in direction, speed and mass, and directs the road user towards safe behavior. Vehicles are constructed to simplify the driving task and offer protection in the event of a crash. Road users are educated and informed properly and their behavior is tested regularly. The essence of the Sustainable Safety approach is: prevention is better than curement (IN-SAFETY Dow 2005). The Sustainable Safety vision of road safety is based on five principles. These five principles refer to the functionality of roads, the homogeneity of mass and/or speed and direction, physical and social forgivingness, recognition and predictability of roads and behavior, and state awareness. The following points are the goals of the Sustainable Safety vision (Wegman and Aarts 2006; SWOV 2007):

- The prevention of (serious) crashes, and where this is not possible, the almost total elimination of the risk of severe injury.
- The notion that man is the measure of all things due to his/her physical vulnerability and cognitive capabilities and limitations (such as fallibility and offence behavior).
- An integrated approach to the elements human-vehicle-road, which is tuned to the human measure.
- A proactive approach to bridging gaps in the traffic system.
- More specifically, the principles or specifically, the principles of sustainable safety can be summarized in the following table (Table 2.1):

Table 2.1 Description of the five sustainable safety principles (Wegman and Aarts 2006)

Sustainable safety principle	Description
Functionality of roads	Mono-functionality of roads as either through roads, distributor roads, or access roads in a hierarchically structured road network
Homogeneity of roads	Equality of speed, direction and mass at moderate and high speeds
Forgivingness of the environment and of road users	Injury limitation through a forgiving road environment and anticipation of road user behavior
Predictability of road course and road user behavior by a recognizable road design	Road environment and road user behavior that support road user expectations through consistency and continuity of road design
State awareness by the road user	Ability to assess one's capacity to handle the driving task

As seen in the table above, two of the principles are referring to forgiving and self-explanatory road environments. Thus, striving to define the road environment of the future, these two characteristics should be secured. According to FEHRL (2001), the roads of the future will need to:

- Contribute to sustainability.
- Make wide use of innovation.
- Contribute to improvements in road safety, environment and road transport efficiency.
- Reduce to zero any contribution to accidents (“forgiving road infrastructure”).
- Reduce traffic congestion.
- Reduce noise and vibration to the road environment.
- Reduce air and visual pollution.

To achieve the forgivingness and self-explainability of road environments, the EC has committed researchers and other related stakeholders, by means of research initiatives, so that such environments would be defined and further described, along with the pre-requisites for a road environment to be characterized as such, both in term of infrastructure based measures and the use of new technologies.

2.2 Forgiving Road Environments

Forgiving road environments constitute a basic tool in preventing or mitigating an important percentage of road accidents related to driving errors. As everybody makes mistakes, drivers will eventually keep doing erroneous manoeuvres or actions. Over 80% of accidents are related to driver's error. More specifically statistics show that about 25–30% of fatal accidents involve crashes with fixed roadside objects. Those accidents are mainly caused due to driving errors that lead to lane/road departure. The existence of a forgiving road environment would have prevented accidents of this type (and generally accidents that involve driving errors) and/or reduced the seriousness of the consequences of such accidents.

2 Towards Forgiving and Self-Explanatory Roads

Forgiving road environments and in-vehicle systems, which w systems, in contrast to traditional and au tance Systems), will not only support the but will supplement the road in simulating a rumble strips so driver involuntarily crosses the overtaking

and environments may also take advantage of advanced telematic e systems, which will support the driver in case of an error. Those contrast to traditional and autonomous ADAS (Advanced Driver Assistancess), will not only support the driver by providing an adequate warning, "Implement the road infrastructure. This, for example, can be achieved by a rumble strips sound or using other haptic warnings, when the voluntarily crosses the road marking, over speeds or initiates an erroneous.

2.2.1 Definition

In the context of this book, a forgiving road is defined as a road that is designed and built in such a way as to interfere with or block the development of driving errors and to avoid or mitigate negative consequences of driving errors, allowing the driver to regain control and either stop or return to the travel lane without injury or damage.

Examples are roads that have structural layout elements that reduce the consequences of accidents or driving errors (e.g. when leaving the lane unintentionally) once they happen, or in-vehicle devices with the same function, like “Lane Departure Warning Assistant”.

To develop a forgiving road environment certain characteristics must be included and measures should be taken, involving either the infrastructure itself or the use of telematic and other aids. Most notably, the combination of infrastructure and telematics measures can provide a more cost-efficient solution, as expensive infrastructure works may be substituted by telematics or other innovative systems.

2.2.2

Forgiving Road Environments in Practice

Devising the measures for forgiving road environments (FOR), as they by definition aim at avoiding or mitigating negative consequences of driving errors, starts with possible driving errors to be supported, that in turn are related to accident driving errors can be distinguished, usually some clustering or statistics. As various driving error action of errors is used. This procedure has been undertaken within the CTY project (Wiethoff et al. 2006), where four levels of driving errors have been identified and relevant measures have been proposed for each error category:

- 1) Accident type errors: result of the execution of an error (e.g. collide with other vehicle).

Table 2.2 Errors and measures for FOR and SER measures Measures

Measure error/scenario	In-vehicle	Infrastructure	Co-operative (based on vehicle infrastructure and vehicle-to-vehicle communication and cooperation)
Speeding in an unexpected bend on rural roads	Navigational aid	Variable message sign (VMS)	Electronic beacons, providing in-car info, merged into on-board navigation
Over-speeding (in general)	Speed alert system by Speed sign recognition	VDS	speed alert, based on digital maps, updated by road beacons
Wrong use of road	Lane departure warning system	Audio lane warning delineation	Adaptive LDWS
Violation of priority rules	In-vehicle traffic sign recognition	Electronic traffic signs	Traffic light status emitted to the car
Overtaking failure	Blind spot detector	Rumble strips	Vehicle-to-vehicle communication
Insufficient safety distance	A frontal arning system	VMS with fog warning	Adaptive frontal warning systems

2. Driving errors: action that leads to an accident (e.g. inappropriate speed).
3. Human error: psychological process that forms the basis of a driving error (e.g. incorrect evaluation of speed and distance).
4. Psycho-physiological condition: condition that can influence the underlying psychological process (e.g. fatigue).

The safety potential of each measure has been estimated, followed by the construction of relevant scenarios (see Table 2.2) and their consecutive prioritization, using the MCA/AHP methodology (more on these issues can be found in Chaps. 3 and 16).

2.3 Self-Explanatory Road Environments

The other basic principle of sustainable safety that is discussed in the present is this of self-explanatory roads (also referred to as self-explanatory roads). What this term implies is the interaction between the infrastructure (including the road, the road equipment and the whole roadside environment) and the road users. The key is in this case is that the road succeeds (either by its layout, or by adequate signing to communicate correctly to its users the necessary "messages", so that they would be able to use it effectively, in the least distracting and risk-generating manner.

2 Towards Forgiving and Self-Explanatory Roads

Examples are consistent environment as well as employed o warn/alarm him/her upon the direction multi-ethnic character of moderns road network make it all the more board more important to substitute text at VMSes and onboard systems with internationally recognizes symbols and sounds, many of which correspond to new functions (such as traffic congestions level, navigation, route guidance, lane deviation/departure, distance from frontal car, over speeding, traffic management control signals, etc.) and thus are not included into the signs of the Vienna Convention.

But self-explanatory roads measures are not limited to standardization of the interaction elements because, no matter how standardized they become, they are still surely not suitable for everybody. Thus, a key element is that of information redundancy but also consistency and timeliness of provision and, ultimately, on info and warning adaptation and personalization, to match the individual participants own needs (Bekiaris et al. 2005).

2.3.1

Definition

In the context of this book, self-explanatory road is defined as one that is designed and constructed to evoke correct expectations from road users and elicit proper driving behaviour, thereby reducing the probability of driver errors and enhancing driving comfort.

A road accident is generally the end result of a multi-step process. The result of combinations and interactions between the three parts of the system (driver, road and vehicle) contribute to the traffic accidents. The aim is to understand the contribution of human factors and road characteristics to road accidents, in order to find the way to reduce accidents. For understanding the process of accidents the human factors and the road characteristics in the development of the accidents to be examined. A clearer understanding of the role of these factors and characteristics will significantly contribute to the enhancement of road safety.

2.3.2

Self-Explanatory Road Environments in Practice

There are two main issues regarding self-explanatory roads (SER), on which IN-SAFETY (De Brucker et al. 2006) has focused: the first issue is related to the degree to which the total design of road environment, including road layout, contributes to creating a SER environment (through a process of prioritizing road

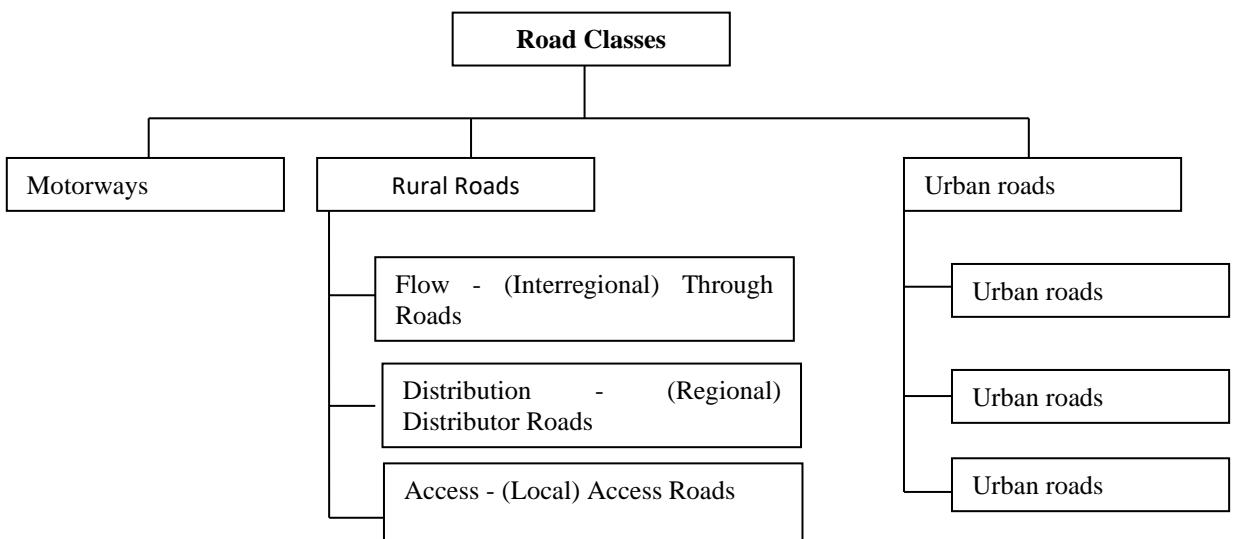


Fig. 2.1 Suggested road classes for self-explanatory roads (Matena et al. 2008)

Accidents, followed by designing, choosing alternative measures to prevent these types of accidents and prioritising, using multicriteria analysis – MCA). The second issue is related to the readability and understandability of VMS messages (through an analysis of existing VMS, the design of alternative VMS, as well as the design of new VMS, followed by a user test).

The features that contribute to the creation of self-explanatory road (SER) environments were identified (and quantified) within the project and refer to (1) a sound road categorization system, (2) assurance of sufficient time for the driver, (3) a safe field of vision offered to the driver and (4) respect for driver expectations. On the basis of these features, 14 recommendations for the development of variable message signs (VMS) have been formulated within the IN-SAFETY project. These refer to the size and design of pictograms, visual performance, text message and combined message recommendations, comprehensibility, route guidance, selection control, place of VMSes, distances between VMSes, combining several types of signals, changing messages in time and place, information overload and information absence. All these are further analyzed in Chaps. 13 and 14 of this book.

On the other hand, another EC funded research initiative, RIPCORD-ISEREST (506184), dealt with self-explanatory roads, merely from the infrastructure point of view. In it, among others, the concept and elements of self-explanatory roads were discussed, good practices identified and recommendations for self-explanatory road classes suggested (Matena et al. 2008) (Fig. 2.1).

2.4 Initial Concepts on Measures Promoting SER and FOR

The European transport system needs to be optimised to meet the demands of constant traffic enhancement and sustainable development. A modern transportation system must be sustainable from an economic and social as well as an environmental

Viewpoint The principles of for The principles of forgiving and self-explanatory road environments are 8 those which could contribute towards such an achievement. ms of forgiving road environments, the identification of error patterns accidents is the first step, in order to conclude to measures to be taken daring a road environment of forgiving nature. What is of outmost importance is to select the appropriate measure for each type of error, either in term of infrastrure enhancement or application of telematics, or even their combinations, are seen as the most promising solution, especially in terms of cost In terms of forgiving road that lead to accidents is the first site for rendering a road environment infrastructure enhancement or of which are seen as the mo efficiency.

It has been seen, regarding self-explanatory road environments, several human factors depend on the traffic environment and there is no possibility to influence all of them. To lower the rate of accidents, the environment needs to be changed, most notably the road characteristics. Road characteristics that are suitable to human nature, and supply the driver with a clear, understandable picture about the given situation, have to be ensured. Such a road can be called a self explanatory road

Within IN-SAFETY, a set of measures have been proposed, as seen in the Table 2.2, covering both cases. In Table 2.2, the alternatives that contribute to FOR only are represented in non-shaded cells and italics typeface. All the alternatives contributing to a SER environment are shaded cells. Those that contribute to a SER environment only are represented in black normal typeface. Those contributing to both SER and FOR (under specific circumstances) are represented in black, italics typeface, in shaded cells.

Reaching the deadline of 2010, set by the White Paper (COM 2001) road environments should, at the most possible degree, secure that people and goods can be transferred quickly, environmentally friendly and safely. This is a pre-requisite for the road transport to evolve towards the direction of sustainability, which is considered as the most promising feature for the future of transport.

BRIDGE POLICY

The Bridge Policy of DoR is to provide safe, reliable, and cost-effective bridges.

The DoR bridge policy statement emphasizes on safety, reliability and cost-effectiveness. In order to achieve these, the DoR requires well defined, pragmatic and affordable strategies. At the same time, these strategies must also be responsive to the changing needs of the transport sector, the overall economy and the society.

1. Safety

The prime concern of the policy is to develop safe bridges in terms of load carrying capacity, safety of the users and safety of the bridges. Therefore, highway bridges are designed with standard load, geometry, and other adequate safety measures for the users and bridge itself. But there are many other factors affecting safety of the bridges, particularly in Nepal. These include:

- rapid changes in hydrological regimes due to excessive deforestation or changes in irrigation patterns in catchments, removal of river bed material from bridges sites, and encroachment of river banks such as by uncontrolled settlement;
- inadequate earthquake standards in bridge design, construction and inadequate earthquake measures for existing bridges;
- poor assessment and inadequate measures for environmental and social impacts to and from the bridges;
- inadequate maintenance and protection practice;
- insufficient funds for maintenance of the existing bridges
- lack of public awareness in the protection of bridges.

DoR is fully committed to reduce all these shortcomings and to maintain safe bridges with the strategies described within this policy document.

2. Reliability

It is essential to make bridges reliable for use by the general traffic during nominal period as well as during times of emergency. Reliability is the function of structural adequacy for standard load, safety of users and safety of the bridges. Structural adequacy depends on established codes, appropriate and adequate standards, manuals and guidelines, use of quality materials, and measures to consider the potential hazards.

Reliability is also related to socio-economic needs. The collapse of a bridge caused either by an external hazard or failure of the structure, disturbs the movement of goods and people, and adversely affects socio-economic conditions of the general public. It also detracts the feeling of confidence among road users. DoR continuously improves its institutional capacity and be ready to respond to natural calamities and other disasters.

Safety and reliability provide confidence to the users for their mobility

3. Cost effectiveness

While keeping bridges “safe” and “reliable”, DoR must maintain *cost effectiveness*. So, it should consider following measures:

- introduce typed designs, standards, manuals and guidelines;
- enhance institutional performance by enforcing a bridge register, quality assurance plan, setting appropriate feedback system, construction schedules and construction methodology;
- use technology suitable to Nepalese condition including availability of material, technical capability of both public and private sectors and other resources;
- develop the technical capacity of both public and private sectors;
- move towards public-private partnerships and incentive Structures;
- introduce design audits and safety audit to all detail technical designs submitted by consultants as well as in-house design works by the Bridge Branch;
- introduce performance auditing system;
- introduce value engineering in all the stages of project management cycle;
- institutionalize feedback system within all the administrative levels of the bridge management.

To achieve the overall goal of the ‘National Transport Policy 2002’, the DoR shows its experience in bridge management with other institutions, such as DoLIDAR, DDCs, VDCs and municipalities.

DOR BRIDGE STRATEGIES

In order to implement the Bridge Policy, DoR commits to the following Bridge Strategies.

Strategy 1: Strengthening the existing institutional capacity.

Strategy 2: Establishing economic and financial norms.

Strategy 3: Institutionalizing bridge maintenance and emergency works.

Strategy 4: Incorporating environmental and social aspects in the management of bridges.

Strategy 5: Establishing project management cycles.

Strategy6: Technical support and standardizing bridge definitions with other organization

The policy and strategies will remain ineffective unless they are made adoptable in implementation. Hence, the DoR will have to develop realistic modalities by:

- defining the aims and serving i.e. needs of each strategy;
- establishing method statements for carrying out the works;
- setting implementation schedules to complete work;
- developing standards, manuals aid guidelines;
- establishing a monitoring system.

All these activities will be carried out by DoR, Bridge Branch.

Strengthening the Existing Institutional capacity

The following measures are to be undertaken in order to strengthen existing institutional capacity of DoR:

Committing Bridge Branch as a center to:

- recommend the bridge management policies, standards for DoR;
- enhance DoR's capability for bridge design, construction and maintenance management practices;
- play /establish following main roles:
- managing bridge and bridge standards
- seeing detail rules and standards in construction and maintenance
- regularizing construction and maintenance of bridges with respect to long term planning of the country
- enforcing regulations for traffic safety and axle loading on bridges
- establishing adequate measures for potential hazards
- institutionalizing planned maintenance of bridges

Enhancing professionalism of DoR bridge engineers through participation in local and international seminars, paper presentations, study tours, tuning with the SAARC (to improve familiarity with SAARC countries' codes, engineering practices and standards) countries' codes, standards, engineering practices, manual and guidelines through on-the job-training, training and skill improvement, higher studies and working jointly with consultants, contractors and local technical institutions.

- Updating of the BU's technical capacity through subscriptions to intern at publications, journals and standards; introduction of computer aid design practices *etc.*
- Developing bridge standards inclusive of bridge loading standards, typical, designs, manuals and guidelines.
- Strengthening Planning & Design Branch in Contract Management through the involvement of the Planning and Design Branch in "Innovative Special Bridges Projects" and also involving the BU in tendering, construction supervision for the specific new bridges and on some pilot Projects.
- Developing and introducing "Bridge Design Manuals" consisting of stepwise processes for (1) location of bridge site, (2) geotechnical and hydrological investigation, (3) design of foundations, (4) design of substructures (5) design of superstructures, and (6) design of protection measures, along with typical *examples* and cross referencing to all available relevant documents such as specification, norm, typical superstructure designs, standards and design practices.
- Involving the Dispute Resolution Unit and Bridge Unit during preparation on of the bid documents, particularly regarding bill items, quantities, clarity in the definition of cash flows versus work schedules, quality assurance plans, construction methodology, all other legal aspects and in providing training on contractual disputes and legal procedures for field staff.
- Addressing the management capability of Divisions and Project offices by providing technical support from the BU and design consultants, giving short-term training in contract management and on the job, training programs, and providing need-based material testing facilities in the regional material laboratories.
- Strengthening the private sector (design consultants and contractors) through pilot projects, seminars, on the job training sessions, workshops by giving access to the DoR database and documents; and by introducing incentives for the quality of work.
- Tuning with Civil Service Act 2049 and Civil Service Regulation 2051 to suit capacity improvement of DoR staff, particularly in bridge design, construction, operation and maintenance by adopting a "Cyclic Approach" in staff transfer, training and higher studies.
- Introducing a Design Audit as well as Safety Audit to all technical detailed engineering designs submitted by consultants as well as in-house design works by BU before forwarding for 'Design Acceptance'.
- Developing and systematically introducing a performance auditing process comprising of technical and financial audits for construction, and operation and maintenance.
- Developing a comprehensive DoR Service Manual (very specific to DoR) to serve as a guide for day to day working in the office and field, particularly comprising of Charter of Duties and Procedures, Execution of Works, Spelling-out clearly the necessary Authority to do the tasks enlisted to him/her, Account Rules and Codes, and Monitoring System.
- Introducing Performance Based Incentives System (financial award and personal recognitions etc.) particularly for in-house works such as preliminary field investigations, detailed engineering designs, and other academic works, research and any other innovative efforts such as project cost reduction, innovative designs, etc.
- Setting up "Quality Circle (QC)" at the Central Level as well as at the Regional Level management of the DoR.

Establishing Economic and Financial Norms

The development and maintenance of bridges requires high investment. It is essential to introduce rational procedures in investment and fiscal management for optimal use of scarce resources. The second strategy aims to ensure optimal decisions in investment and introducing of financial management through the following measures:

- Providing a regular budget for bridge construction and maintenance; sufficient funds for the Bridge Unit; and adopting a predefined and guaranteed cash-flow scenario with respect to agreed construction schedules.
- Conducting detailed technical, economic, environmental, and social studies before making any investment decisions for projects comprising new bridges, or the replacement and improvement of existing bridges.
- Establishing investment decisions based on the “Total Life Cycle Cost” as far as practicable, and giving due consideration to all viable alternatives.
- Dealing with national emergencies as urgent activity in the allocation of budgets.
- Prioritizing maintenance over construction in all cases, with fund allocation in the following priority order:
 - a. routine maintenance and minor repair works;
 - b. periodic maintenance;
 - c. major repairs and rehabilitation;
 - d. improvement and replacements.
- Giving priority to budget allocations in the following priority order for new bridge construction:
 - a. bridges already under construction;
 - b. bridges along roads connecting district headquarters;
 - c. bridges along strategic roads planned for construction to fair weather standards;
 - d. bridges along strategic roads which are to be upgraded to all weather standards in the 20-year plan period.
 - e. bridges on feeder roads including roads connecting to hydropower sites and key tourist locations, and urban bypasses.
- Providing an appropriate environment for private sector investment in the construction and maintenance of bridges suitable for BOT, BOOT, MOT and promoting the marketing of the economic potential of bridges for private investment.
- Identifying Bridge Packages for Donor Support, particularly for periodic maintenance, rehabilitation, emergency works and special bridges.
- Making Technical Consultants (detailed engineering design) responsible for- all technical designs through the development of modalities for financial and professional liabilities of such responsibilities and assurance of quality work based on prevailing rules and regulations.
- Enhancing the optimization process (low cost and high-cost effectiveness) in selection of bridge types, in detailed engineering designs, protection works, and by setting realistic norms, adopting suitable methodologies for construction and maintenance works and quality monitoring process.
- Adopting affordable technology, material, construction management practices, anti-procedures for operation and maintenance. DoR keeps options open to introduce new technologies in bridge types suitable to the country's terrain such as motorable suspension bridges, arch bridges, cable-stayed bridges, pre-stressed concrete bridge, prefabricated and modular bridge, and other any innovative bridges and materials such as high tensile steel and high-performance concrete.
- Initiating necessary measures to establish market practices within the BU's technical and managerial capability, in order to generate adequate incentives in terms of financial benefits to organization and staff and to enhance the BU's technical and managerial capability through market exposures by:
 - a) allowing to market the technical & managerial capability into private sector, intergovernmental organizations such as DoLIDAR, local governments (DDC, VDC, and Municipality), and technical institutions in form of:
 - training packages;
 - design experts;
 - construction management experts;
 - maintenance management experts
 - knowledge based information
 - b) allowing BU to take part into bridge design and supervision bidding competition of the intergovernmental organizations
 - c) publishing all technical publications including bridge manuals, guidelines, specification, typical bridge designs, maintenance manuals etc. through a commercial publishing house both in electronic version and paper back;

Institutionalizing Bridge Maintenance and Emergency Works

Although around twelve hundred bridges have so far been constructed in Nepal, the level of maintenance in those bridges is still inadequate. Many bridges can suffer premature loss of strength and a reduced functional life due to inadequate maintenance. In this situation, there must be a strong strategy towards planned bridge maintenance. This will be made effective by the following measures.

- Prioritizing maintenance over construction in planning and programming.
- Sustainable Bridge Management as a part of “Highway Asset Management” through developing and introducing various decision support systems such as BMMS and BRMS applicable in maintaining bridges, including proper inventories and condition surveys, and linking the bridge database to the HMIS for coordinated network planning.
- Adopting planned bridge maintenance as per the SMD process, seeking a need-based budget for all maintenance and make use of guidelines, manuals produced by department such as:
 - Procedures for the Inspection and Maintenance of Bridges;
 - Bridge Inspection Manuals;
 - Guidelines for the Routine Maintenance of Bridges;
 - Guidelines for Minor Repair Works.
- Encouraging private sector participation in bridge maintenance and riverside protection works.
- Giving priority to the use of local labor, materials and local skill for bridge maintenance.
- Defining the maintenance responsibility at divisional, regional and central levels of the DoR organization.
- Establishing a separate maintenance strategy for special bridges such as the Karnali Bridge and all motor-able suspension bridges.
- Enhancing capacity for dealing with emergencies including trained staff, adequate stand-by funds for emergency works, keeping sufficient stock of ‘easy to install’ modular bridges such as Bailey bridges, a system for coordinating (with other relevant organizations) and establishing nation-wide emergency readiness during the monsoon period.
- Adopting “Cyclic Approach” to carry out Periodic Maintenance after completion of Principal Inspection/Bridge Condition Survey through Pilot Projects or DRO incorporating it into the YPO / ARMP.
- Preparing list of Rehabilitation Projects using Principal Inspection/Bridge Condition Survey and plan according to priority for the rehabilitation of the candidate projects.
- Developing Bridge Replacement Management System for systematic replacement of the unsafe bridges and plan according to priority for replacement in the future.
- Incorporating adequate measures for emergency readiness right front site selection and design of bridges such as easy diversion during emergency, provision of riverbed protection works which can be used as diversion during construction auto emergency period etc.

Incorporating Environmental and Social Aspects in the Management of Bridges

Bridges are essential part of any road network and they bring many changes to the environment as well as society within their vicinity. Their impact must be properly addressed in time. Measures to do this are described below.

- Implementing environmental and social legislation effectively, and following rules and regulations, through the production and use of guidelines and manuals.
- Encouraging community participation in the management of bridge protection works, such as the extraction of river bed materials from safe locations to bridges, anti by minimizing uncontrolled urbanization and reducing waste disposal on river banks.
- Setting appropriate and adequate standards, and framing rules and regulation to prevent and minimize natural as well as human hazards to bridges; to make special provisions such as insurance policies; and to enhance the security of national strategic bridges.
- Establishing water management by monitoring and annually mapping river corridors with a view to reducing possible flood damage to roads and bridges, by undertaking river training works (such as rock armouring) in a timely way, and dredging debris from river channels to bring flow into the main course before the monsoon. This shall be a part of the Bridge Protection Management System.

Establishing Project Management Cycle

In the last decade, particularly during the Eighth and Ninth Five Year Plans. Bridge building activities have increased enormously without adopting an appropriate and systematic bridge selection and prioritization process. Many new bridge projects were undertaken in each fiscal year, well beyond the funding capacity of the government. As a result, there was the scarcity of funds and many projects remained incomplete for long periods of time. Over-runs of both construction time and cost, along with contractual disputes, have become common in construction management. This situation clearly requires a systematic Project Management Cycle (PMC) having four specific stages:

- (a) selection and approval of projects;
- (b) project implementation phase;
- (c) a formal hand-over process and documentation; and
- (d) operation and maintenance;

Setting well define information Management System at each stage of the PMC.

- Taking necessary steps to introduce "Value Engineering" in all the above four stages of the PMC at any levels and periods particularly through Design Audit, Safety Audit, Technical Audit & Financial Audit (Performance Audit) and developing other standard check-lists to establish Value Engineering such as survey checklist, detailed engineering design checklist, construction checklist and maintenance checklist and so on.
- Introducing Construction Methodology (method statements) for each bridge project at the DRO or PO.
- Developing a stringent and adequate Quality Assurance Plan introducing in conjunction with the agreed construction methodology, and adoption of the Bridge Register during construction as well as in operation and maintenance periods.
- Establishing practices of Load test / Load carrying capacity test for special bridges during construction and operation period.
- Developing a plan for sustainable maintenance after completion of" project (Construction works) including a schedule for Principal Inspection.
- Setting a process of "Internal Technical Audit" through the Regional Directorate during construction and for all newly completed bridges against standard check lists based on detailed engineering design, standards, specification and construction methodology, quality assurance plan, work schedule and other relevant facts and figures.
- Committing to reviewing and update all management tools such as construction methodology (method statements), best cash-flow scenario (with respect to the construction schedule), construction schedule, bridge register, quality assurance plan, system for monitoring and reporting, and system for hand-over and documentation. and all other checklists to establish value engineering.
- Tuning project implementation with FAR particularly for approval of estimate, processing and approval of bids by defining the role of DRO, PO, RD and Central Level with respect to stages of implementation.

Describe the role of RBN and analysis of Existing Road maintenance Practice in DoR.

Roads Board Nepal CRBN) was established under the Road Board Act, 2058 with the aim of providing sustainable funds for planned maintenance of roads. RBN is a self-governing self-sustaining and organized entity based on ppp model.

The major function of RBN is to collect manage and allocate funds for road maintenance to the road agencies like Dor, Municipalities, DOLIDAR, DDCs etc.

The prime objectives of RBN are

-To create a stable (self-sustaining fund by involving road users, channel it to the road sector to implement the Integrated Annual Plan (IAP) and other road development and road research activities.

- To carry out various maintenance activities of the road and make arrangements for imposition and collection of tolls from the vehicles plying on the road,

Allow limited percentage of funding to other higher Category of maintenance works such as rehab, reconstruction, upgrading etc. only when resources remain surplus after addressing to the priority maintenance activities such as routine, recurrent, periodic and emergency maintenance.

Current Government Policy for SRN maintenance:

1) Road maintenance is addressed in various policies in Nepal which include.

- Nepal Transport policy 2058:

* CH-7

- sector wise transport policy – Transport Fund and Maintenance management,

* CH-6

Working policy - Transport Infrastructure

- The DoR strategy, 1995

- Master plan for SRN, SWRP & PIP (I), 2007

2) The Dor strategy, 1995 clearly aims to maintain the road network and provide a reasonable Los to road users at all times thereby saving a considerable Capital investment made in roads,

3) The Dor strategy with its 6 objectives, 9 policy options and 51 key measures envisages to meet the set of goals in reduction of total road transportation costs. All the policy option and key measures have their strong focus on maintenance.

4) At present : 'SRN Maintenance Policy document is being prepared for which the consultant already has submitted the draft report.

5) Core road Network principle for NH/SRN maintenance also applied from f.y.2077/078.

Source of Fund:

RBN has currently been relying on the following resources to collect funds:

i) fuel levy on diesel and petrol for vehicles,

ii) Road user tox (toll),

iii) Vehicle registration fee,

other possible resources that are yet to be tapped are:

- Vehicles registered abroad but used in Nepal,

- Penalties for non-complies to the rules under this act,

- Subsidies and so on.

It collects road user fee from three road sections, from SRN of Nepal's road network:

→ Hetauda - Narayanghat } East-West Highway

Narayanghat - Butwal

" Naubise-Mugling → Prithvi Highway

RBN allocated 70% of its resources to SRN through DoR and 30% to LRN through DOLIDAR. Road agencies have to provide a minimum counterpart fund of 30% to municipalities and 20% to DDCs.

Issues of RBN/Problems of RBN Fund and maintenance practice

The various issues of RBN are:

RBN has covered almost all amount required for routine and recurrent maintenance but provided only partial coverage for periodic, rehabilitation & reconstruction Works. According to WB study, about 40% gap exists i.e. RBN funding needs to be increased by 2.5 times to achieve full coverage.

fund disbursement is in following pattern:

25% fund after signing MoU with RA,
30% fund after 25% of work completion
30% fund - after 75% of work completion,
15% fund after submission of WCR.

2) Milestone Schedule:

It's difficult to achieve since Fy of GoN ends on Ashad while that of RBN ends by kastik.

- 3) fuel levy is not fully disbursed to the road maintenance fund,
- 4) Government or political intervention in the structure of GON,
- 5) RBN has also to suffer LRN,
- 6) Due to funding problem, SRN is getting backlog maintenance specially in periodic, rehabilitation works since RBN allocates only 30%. of required
- 7) RBN fund only covers about 60%. SRN roads, mainly paved roads while other gravel/earthen roads are left.

Probable solutions:

1) Institutional solutions for existing revenue mechanism:

- All concerned stakeholders have to work to transform RBN into a functional second generation of road fund. RBN shall be given full authority & responsibility to regulate the users' charge mechanism of meeting the maintenance cost of all SRNS.
- Fuel levy direct to RBN fund to get underlying benefits from a stable, predictable and timely provision of funds,
- Electric tolling system to reduce administrative expenses,
- Establishment of pavement maintenance system (PMS) for reasonable estimation of required fund.
- Establishment of new toll plaza by proper assessment according to the latest upgraded road according to traffic volume.
- Establishing weighing bridge and control the overload.
- Additional fund collection by Value captured principal.
- DPs (Development partner like ADB, WB) also provide the space for the maintenance beside the new construction.
- PBMC, ROT also used in the maintenance.

2) Revenue Generation and financing for Maintenance:

- Establish new collection centers at Eastern, western, mid-western and far-western regions which is a current essence to collect more funds,
- Sustainable financing through user-pay principle against economic benefits received in the form of me, money, comfort, safety by road users. (PPP model),

If this is implemented, RBN will move to the next of maintenance through full commercialization and 'fee for service' basis.

3) others:

- To implement various solutions some amendments may be needed to RBN act GoN & DOR policy,
- Establish a strong Monitoring & Evaluation mechanism
- Other income generation through lease of Row, auction of tree plant, land development tax etc.
- Provide incentives including medical treatment costs for person aged over 58 years and has served more than 5 years and subject them to force leave'. On the vacant positions employ new young workers.
- During the leave or retirement from work (by age or other legal reasons), the person shall be either benefitted by
- incentives or
- job for family person in same post.
- The length workers who are working in contract basis are not suitable for permanent recruitment in DoR.
- For new recruitment of supervisor, minimum education level of SLC shall be imposed.

Why PBMC is useful for road maintenance? Why PBMC was not successful in Nepal? Write the suggestion for proper use of it in Nepal.

Performance Based Maintenance Contracts (PBMC)

- Performance based maintenance Contracting is an approach for maintenance where a private Contractor assumes responsibility for managing the conditions of transportation assets to predefined conditions.
- The Hall mark 9 PBMC is to pay a contractor based on the results achieved and not on the methods for performing the task. this approach of contracting provides incentives, disincentives or o the contractor to achieve the targets or performance standards for measurable outcomes and sometimes outputs
- The disincentives or incentives can consist of reductions or increases in payments for respectively falling short or exceeding desired targets.
- They may also include Liquidated Damages for failing to satisfy the coc/ contract provisions, an award fee for satisfying qualitative Criteria and a contract extension for performing well etc.
- Performance Based Maintenance Contract (PBMC) for the maintenance and management of road network is a new concept designed to increase the efficiency
- and effectiveness of road maintenance operations.
- It should be ensured that the physical condition of the road under contract is adequate for the need of road users, over the entire period of contract,
- This is more advanced form of maintenance mgmt. system, widely used in developed countries.
- These contracts include initial works paid on an output basis and subsequent maintenance paid on performance basis for a period of 3-5 years. During the bidding process, contractors compete among each other by proposing a fixed monthly lump-sum fee per km. of a road to be paid to them and the Contractors are paid for the output.
- The work usually comprises of pavement surface improvements with or without an overlay and routine maintenance backlog. PBMC contracts include the 'Performance and Operational' indicators
- The Performance Indicators include SDI, IRI & axle load control. The operational indicators include specific items related to pavements, Row, structures, drainage, road signs and markings.
- One fundamental feature of PBMC is that the contractor is responsible for designing and carrying out the actions he believes are necessary to comply with the service quality levels stated in the contract.
- The service quality levels are defined from road users' perspective and may include factors such as average travel speeds, riding comfort, safety features etc.
- If the service quality level is not achieved in any month, the payment for that month may be reduced or even suspended.

Why PBMC??

- 1) Potential to increase Los and reduce agency costs,
- 2) Performance criteria focused on customer-oriented outcomes,
- 3) Pressures on operating expenditures budgets,
- 4) Need to do more with fixed work force,
- 5) Achieve expenditure stability & long-term, lump-sum contracts with fairly predictable payments to contractors,
- 6) Shifting risks from employers/agencies to the contractors
- 7) Significant benefits from effective partnering between the agency and contractor,
- 8) Encourage the contractor to minimize life-cycle costs by assuming the long-term contract,
- 9) fostering on innovations - Contractor is free to use any method to meet performance targets & specifications rather than adhering to some specific requirements
- 10.) Reductions in contract Administration requirements.

Impediments/obstructions to PBMC:

- 1) Lack of government support,
- 2) Lack a culture from agency and contractors being familiar with system, resistant to changes.
- 3) Inadequate experience with PBMC or negation first try
- 4) Adjustments / Adaptations required to go from methods/process to performance specifications.
- 5) lack of training
- 6) lack of legalizing authority, rules, acts etc.
- 7) challenges in estimating in-house Vs contractor costs
- 8) Loss of quality sometimes the first-year long-term contract,
- 9) Insufficient Contractor capacity,
- 10) Inability to achieve sufficient competitive environment,

- 11.) Incomplete or inaccurate asset inventory and condition data,
- 12) Loss a control over methods, equipments and materials used,
- 13.) Concerns that life - cycle contacts will increase
- 14) Concerns that privatization will lead to loss in employment of various in-house staffs.
- 15) Concern & Union Members that PBMC will undermine wages, benefits, work conditions, job - security that government offers,
- 16) Need to secure substantial funds to undertake budgetary process for large, multi-year contracts
- 17) contractor's inability to effectively handle reactive maintenance such as erosions, repair a traffic control devices, incident and emergency response.
- 18) Challenges a reassuming the responsibility for maintenance is the contractor fails to perform especially if the contracting agency sells off its equipment's and lays off all its maintenance staffs excluding only those required to administer the contracts.

PBMC Experience in Nepal:

PBMC in Nepal appears to have been originated from suggestions made by World Bank in 2002. It was felt Useful for Nepal to experiment with approach used maintenance approach used in other countries.

Without adequate discussions and plans within DoR, RMDP selected a pilot trial of Butwal - Narayanghat section (113 km) of East West Highway. PBMC for this road was contracted for 2 years (Ma4, 2003 ~ May 2005] Later ADB supported RNDP started PBMC in the following SRN from 2005 to 2010:

Pathalaiya - Chaurahawa section (248 km) of East - West Highway,

kohalpur - Gaddachauki Section (201 of East-West Highway,

kohalpur Amiliya section (14 km)

However, PBMC was not found successful in Nepal for various reasons and ADB also carrying out the evaluation of PBMC in Nepal. Main experiences and issues are:

1) PBMC was started without enough preparatory works, especially the required training to both the DoR staff and the contractors,

2) Contractors took PROMC as an extended DLP, carrying out maintenance only when defects are encountered,

3) Lack of self-monitoring by contractors and proper inspections by DoR led to poor performance Contractors In Nepal are in general not considered to be matured enough for Work arrangement on self-controlling mechanism.

4) In PBMC, improper and complex performance indicates and penalty systems are being used but also, even due to lack of contractors' perception and incompetency towards output-based maintenance systems, effectiveness Can't be observed

Suggestions:

(1) Monitoring of PBMC requires high degree of trust in the honesty of the Contractor, something that can be rarely found in Nepalese context. On the other hand, constant monitoring from the client side is expected, for the unrepaired defects which are subjected to the penalties from the contractor. The rate of success relies upon both the honesty of the contractor and commitment of the client in the constant monitor

2) Provide institutional support to create the compatible environment to implement PBMC,

3) Bidding documents being used in PBMC should be improved by reducing too many indicators but in required numbers to smoothen out payments.

3) Lack of self-monitoring by contractors and proper inspections by DoR led to poor performance Contractors In Nepal are in general not considered to be matured enough for Work arrangement on self-controlling mechanism.

4) In PBMC, improper and complex performance indicates and penalty systems are being used but also, even due to lack of contractors' perception and incompetency towards output-based maintenance systems, effectiveness Can't be observed

१५ औं आवधिक योजना, राष्ट्रिय योजना आयोग आदि सम्बन्धि विषयबस्तु

दीर्घकालीन सोंच २१००

सम्बृद्ध नेपाल सुखी नेपाली : समुन्नत, स्वाधीन र समाजबाद उन्मुख अर्थतन्त्र सहितको समान अवसर प्राप्त, स्वास्थ्य, शिक्षित, मर्यादित, उच्च जीवनस्तर भएका सुखी नागरिक बसोबास गर्ने मुलक



१.३. दीर्घकालीन सोचको मार्गचित्र



१.४. दीर्घकालीन राष्ट्रिय रणनीति



१.५. रूपान्तरणका प्रमुख सम्बाहक



दीर्घकालीन लक्ष्य हासिल गर्ने प्रमुख आधारहरू

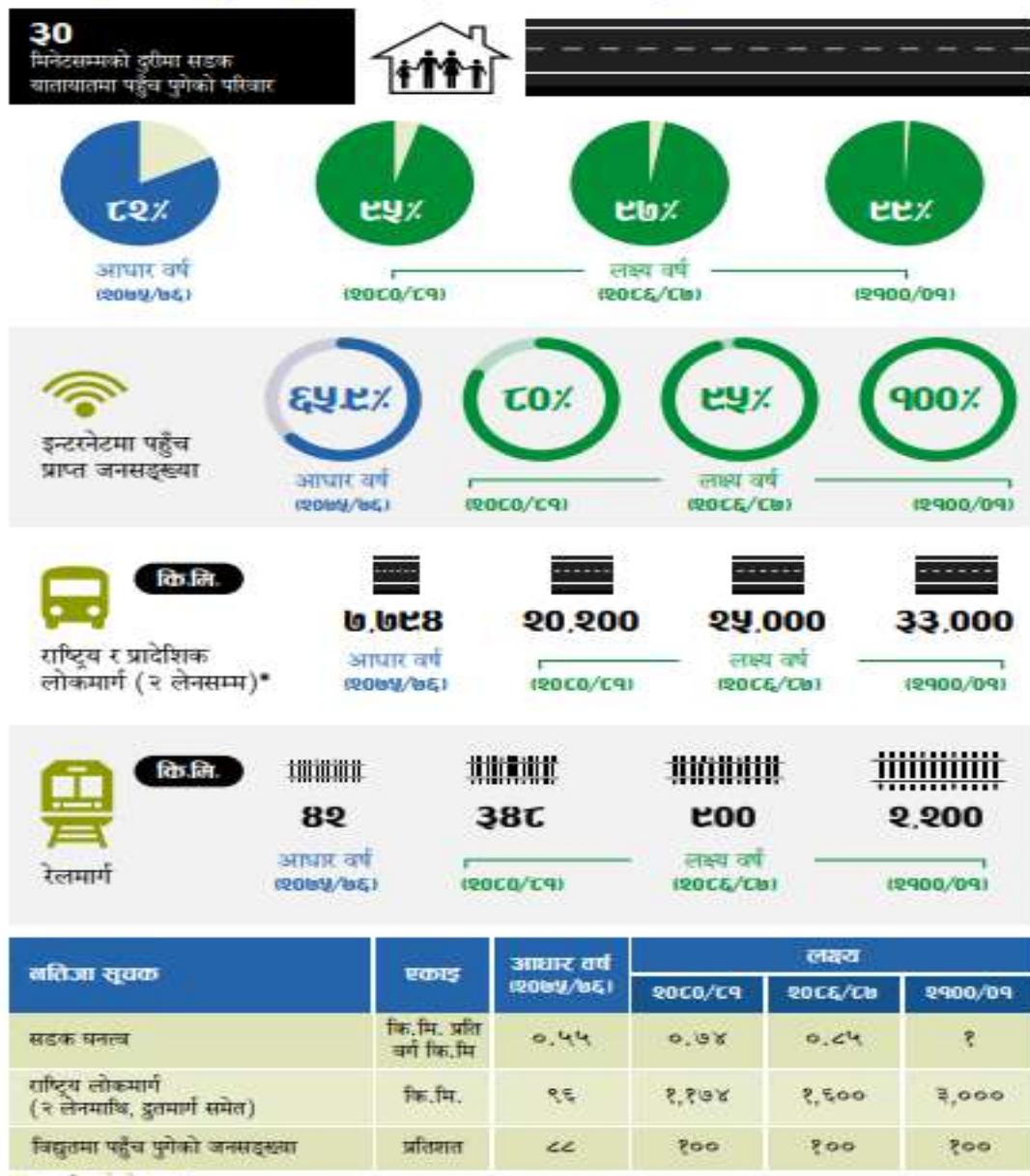
- राज्यका नीति र मौलिक हक प्राप्त गर्न उच्च र दिगो आर्थिक वृद्धिको आवश्यकता ।
- राजनीतिक तथा नीतिगत स्थिरता कायम भई आर्थिक समृद्धि उन्मुख अवस्था ।
- समष्टिगत आर्थिक स्थायित्व कायम गरी सार्वजनिक, निजी, सहकारी र सामुदायिक क्षेत्रको लगानी वृद्धि गर्ने उपयुक्त वातावरण ।
- जनसाइर्ख्यक लाभ र प्राकृतिक स्रोत-साधनको महत्तम उपयोग ।
- ज्ञान, सीप, पुँजी तथा प्रविधि, पूर्वाधार र उर्जा विकास गरी उत्पादन र उत्पादकत्वमा वृद्धि ।
- वि.सं. २०८७ सम्म दिगो विकास लक्ष्य हासिल गर्ने राष्ट्रिय प्रतिबद्धता ।
- विकास कार्यक्रमको कार्यान्वयनमा तीव्रता प्रदान गर्न आयोजना बैंक, आयोजना पूर्व तयारी र अनुगमन तथा मूल्याङ्कन कार्यको सुदृढीकरण ।
- अनौपचारिक अर्थतन्त्रलाई क्रमशः औपचारिक अर्थतन्त्रमा रूपान्तरण ।
- राष्ट्रिय प्राथमिकता प्राप्त क्षेत्रमा विदेशी लगानी आकर्षित गर्ने आवश्यक सुधार र एकद्वार प्रणाली अवलम्बन ।
- ज्ञानमा आधारित अर्थतन्त्रको विकास र समृद्धि ।

८. पूर्वाधार क्षेत्र



- ३५ हजार मेगावाट जलविद्युत र ५ हजार मेगावाट वैकल्पिक उर्जा उत्पादन
- प्रतिव्यक्ति उर्जा खपत ३,५०० किलोवाट घण्टा
- राष्ट्रिय रणनीतिक महत्वका सडकलाई एसियाली हाइवे मापदण्ड अनुरूप चारदेखि आठ लेनसम्म निर्माण र विस्तार
- रेल, जल, हवाई, केबलकार र रोपवे लगायतका यातायात पूर्वाधारलाई एकीकृत यातायात प्रणालीमा आबद्धता
- केन्द्र र प्रदेश तथा प्रदेश राजधानीहरूबीच द्रूत यातायात सेवा विस्तार

३. सर्वसूलभ आधुनिक प्रौद्योगिक एवं साधन अन्तरालाखडुता



२.३ चुनौती तथा अवसर

चुनौती

- समन्वयिक आर्थिक वृद्धि र नागरिकको जीवनमा गुणात्मक सुधार गर्नु
- गुणस्तरीय भौतिक पूर्वाधारको विकास र उपभोगमा वृद्धि गर्नु
- दक्ष मानव संसाधनको विकासद्वारा उत्पादनशील रोजगारीको अवसर वृद्धि गरी जनसाधारिक लाभको उपयोग गर्नु
- वित्तीय संघीयताको कुशल कार्यान्वयन गरी समर्पित आर्थिक स्थायित्व कायम गर्नु
- संघ, प्रदेश र स्थानीय तहको कार्य जिम्मेवारी पुरा गर्न साधन-मोतको लागत अनुमान, वितरण र जनशक्ति एवम् संस्थागत प्रबन्ध गर्नु

अवसर

- संघ, प्रदेश र स्थानीय तहमा क्रियशील सरकार र संस्थागत स्थायित्व
- तहगत सरकारका बीचमा दिगो विकास, समृद्धि र सुशासनका क्षेत्रमा प्रतिस्पर्धी भावना
- उपलब्ध जनसाइलिङ्क लाभलाई मुलुकको विकासमा उपयोगको उच्च सम्भावना
- लगानी केन्द्रित गर्न सहज वातावरण निर्माण
- प्राकृतिक, भौगोलिक, जैविक, पर्यावरणीय तथा सामाजिक सौस्ख्यतिक विविधताको बहुआयामिक उपयोग
- निजी क्षेत्रको लगानी, व्यावसायिकता र प्रतिस्पर्धात्मक क्षमता अभिवृद्धि र सामुदायिक क्षेत्रको उत्पादनशील क्षेत्रमा परिचालनहारा राष्ट्रिय पैँजी निर्माण

२.८ दिगो विकास लक्ष्यको आन्तरिकीकरण



दिगो विकास लक्ष्यको आन्तरिकीकरण तथा स्थानीयकरणमा विशेष जोड



आर्थिक वृद्धि, रोजगारी, उत्पादन तथा उपभोग, औद्योगिकरण र शाहरीकरणसँग सम्बन्धित योजनाका लक्ष्य र रणनीतिहरू



लैगिक समानता, समावेशीकरण, सुशासन तथा सामाजिक सुरक्षासँग सम्बन्धित लक्ष्य तथा रणनीतिहरू



गरिवी, भोकमरी, खानेपानी र ऊर्जा जस्ता मानव सभ्यताका आधारभूत पक्षसँग सम्बन्धित लक्ष्य तथा रणनीतिहरू



स्वास्थ्य तथा शिक्षा क्षेत्रसँग सम्बन्धित लक्ष्य तथा रणनीतिहरू



प्राकृतिक मोत व्यवस्थापन तथा उत्थानशीलतासँग सम्बन्धित लक्ष्य तथा रणनीतिहरू



सार्वजनिक, निजी, सहकारी, सामुदायिक क्षेत्र लगायतका आन्तरिक र बाह्य सरोकारवालासँग समन्वय र साझेदारीसँग सम्बन्धित लक्ष्य तथा रणनीतिहरू



८.४ वैदेशिक लगानी



सोच

वैदेशिक लगानी परिचालन मार्फत
प्रतिस्पर्धी एवम् गतिशील राष्ट्रिय
अर्थतन्त्र निर्माण।



लक्ष्य

वैदेशिक लगानी आकर्षण र अभिवृद्धि गरी
उत्पादन, उत्पादकत्व र प्रतिस्पर्धात्मक
क्षमता विकास गर्ने।



उद्देश्य

- १) नेपालमा भित्रिने प्रत्यक्ष वैदेशिक लगानीलाई उच्च र दिगो बनाउनु।
- २) वैदेशिक लगानीको मार्गदर्शन तथा प्रविधि, प्राविधिक सीप तथा व्यवस्थापकीय कोशल भित्र्याउनु।
- ३) उपयोगमा नआएका प्राकृतिक स्रोतको उपयोग र पूर्वाधार विकास गर्नु।



रणनीति

- १) कानूनी, संरचनागत तथा प्रक्रियागत सुधार र सम्पूर्णकरण गरी लगानीमीठी वातावरण सिर्जना गर्ने।
- २) त्रिलोकात्मक लाभ, उत्पादनमूलक तथा सञ्जागारमूलक क्षेत्रमा लगानी आकर्षित गर्ने।
- ३) स्थानीय ढोत-साधन र सीपको उपयोग तथा प्राविधिक सञ्चालन कायम हुने गरी लगानी विकास गर्ने।
- ४) वैदेशिक लगानी परिचालनको लागि आर्थिक बहुनीति उपयोग गर्ने।
- ५) लगानीको प्रवेश, अनुमति, सञ्चालन, बहिर्भूमन सम्पर्क क्षेत्रमा र सुविधा एके स्थानबाट उपलब्ध गराउने।

अपेक्षित उपलब्धि



७.२ यातायात पूर्वाधार

७.२.१ सडक



सोच

सघन, सन्तुलित, सुलभ, सुरक्षित,
गुणस्तरीय एवम् दिगो सडक
पूर्वाधारको विकास।



लक्ष्य

राष्ट्रिय सडक सञ्जालको विस्तार गरी
आर्थिक-सामाजिक विकास, व्यापार सहजीकरण
मार्फत आर्थिक समृद्धि हासिल गर्ने।



उद्देश्य

- १) कुल यातायात खर्च न्यूनतम हुने
गरी सडक सञ्जालको सन्तुलित
विकास तथा विस्तार गर्नु।
२. सडक पूर्वाधारको संरक्षण,
मर्मत-सम्भार र सडक सुरक्षा गरी
सहज सवारी आवागमन सुनिश्चित गर्नु।



रणनीति

- १) वैदेशिक सञ्जाल कायम हुने गरी उच्च क्षमताका दूतमार्पण, भूमिग
मार्ग, भावा-डक लगायतका आधुनिक संरचना सहित सडक
सञ्जाल विकास गर्ने।
- २) संचारात क्षमता विकासलाई प्राथमिकता दिई आधुनिक प्राविधिक
अधिकातम उपयोग गर्ने।
- ३) सरकारी स्रोतमाधिको निर्भरता घटाइ लगानीका वैकल्पिक स्रोत
जुटाउने।
- ४) सडकको डिजाइन, निर्माण, मर्मत-सम्भार तथा सडक सुरक्षाका
लागि आधुनिक प्राविधिको उपयोग तथा यान्त्रीकरणमा जोड दिने
- ५) प्राकृतिक प्रकोप तथा जलवायु प्रतिकूलताका सम्भाव्य असर वा
हानी नोकसानी न्यूनीकरण गर्ने।

अपेक्षित उपलब्धि



कुल गार्हस्थ्य उत्पादनमा यातायात क्षेत्रको योगदान (प्रतिशत)

आधार वर्ष
२०८५/८६

लक्ष्य
२०८०/८९

५.९

८.८

सडक घनत्व (कि.मि. प्रति वर्गि कि.मि.)

०.५५

०.६८

राष्ट्रिय राजमार्ग (दुई लेनसम्म, कालोपत्रो) (कि.मि.)

५.५८

१२.३००

राष्ट्रिय राजमार्ग (दुई लेनमाथि, द्रुतमार्ग सलेत) (कि.मि.)

८६

१.१४४

प्रादेशिक राजमार्ग (कालोपत्रो) (कि.मि.)

१.८००

७.८००

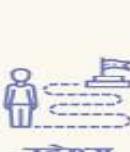
७.२.३ रेल यातायात



सोच
भरपट्टों, सुरक्षित, पहुँचयोग्य,
वातावरणमीठी रेल यातायात
प्रणालीको विकास।



लक्ष्य
सुरक्षित, भरपट्टों र पर्यावरणमीठी रास्ट्रिय रेल
सञ्चालन नियमिंग गरी सामाजिक, आर्थिक र
भौगोलिक विकासमा सन्-तुलन कायम गर्ने।



- उद्देश्य**
- १) रेल यातायात विस्तार गरी अन्तर्रेशीय
व्यापार पहुँच विस्तार बढाउंदै आर्थिक
सामाजिक एकीकरणमा योगदान गर्नु।
 - २) भौगोलिक सन्-तुलन र निकालमा योगदान
पुऱ्ठे गरी भरपट्टों र सुरक्षित रेलसेवा
सञ्चालन गर्नु।



- रणनीति**
- १) रेलमार्गको सम्भाल्यता अध्ययन गरी
रास्ट्रिय आवश्यकता पहिचान, विकास र
विस्तार गर्ने।
 - २) रेल विधागको संस्थागत क्षमता अभिवृद्धि
गर्ने। रेल यातायातको पूर्णाधार विकास
तथा सञ्चालनमा वैकल्पिक स्रोत
प्रवर्द्धन गर्ने।



अपेक्षित उपलब्धि

रेलमार्ग (कि.मि.)

४२

२०१५/१६
आधार वर्ष

३८८

२०२०/२१
लक्ष्य

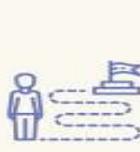
७.२.४ जल यातायात



सोच
सुलभ र किफायती यातायातको
भरपट्टों विकल्पको रूपमा जल
यातायातको विकास।



लक्ष्य
आन्तरिक र समुद्रसम्म जल यातायातको
विकास मार्फत पर्यटन प्रवर्द्धन एवम्
व्यापार सहजीकरण गर्ने।



- उद्देश्य**
आन्तरिक, क्षेत्रीय र अन्तर्राष्ट्रिय
जलमार्गको प्रयोग गरी रास्ट्रिय
अर्थतन्त्रमा योगदान पुऱ्ठाउनु।



- रणनीति**
- १) आन्तरिक तथा समुद्रसम्म पहुँचका लागि जल
यातायातको विकास र विस्तार गर्ने।
 - २) जल यातायात विकासको लागि निजी एवम् अन्य
क्षेत्रको लगानी आकर्षित गर्ने।
 - ३) संस्थागत, व्यवस्थापकीय र प्राविधिक क्षमता
विकास तथा अभिवृद्धि गर्ने।



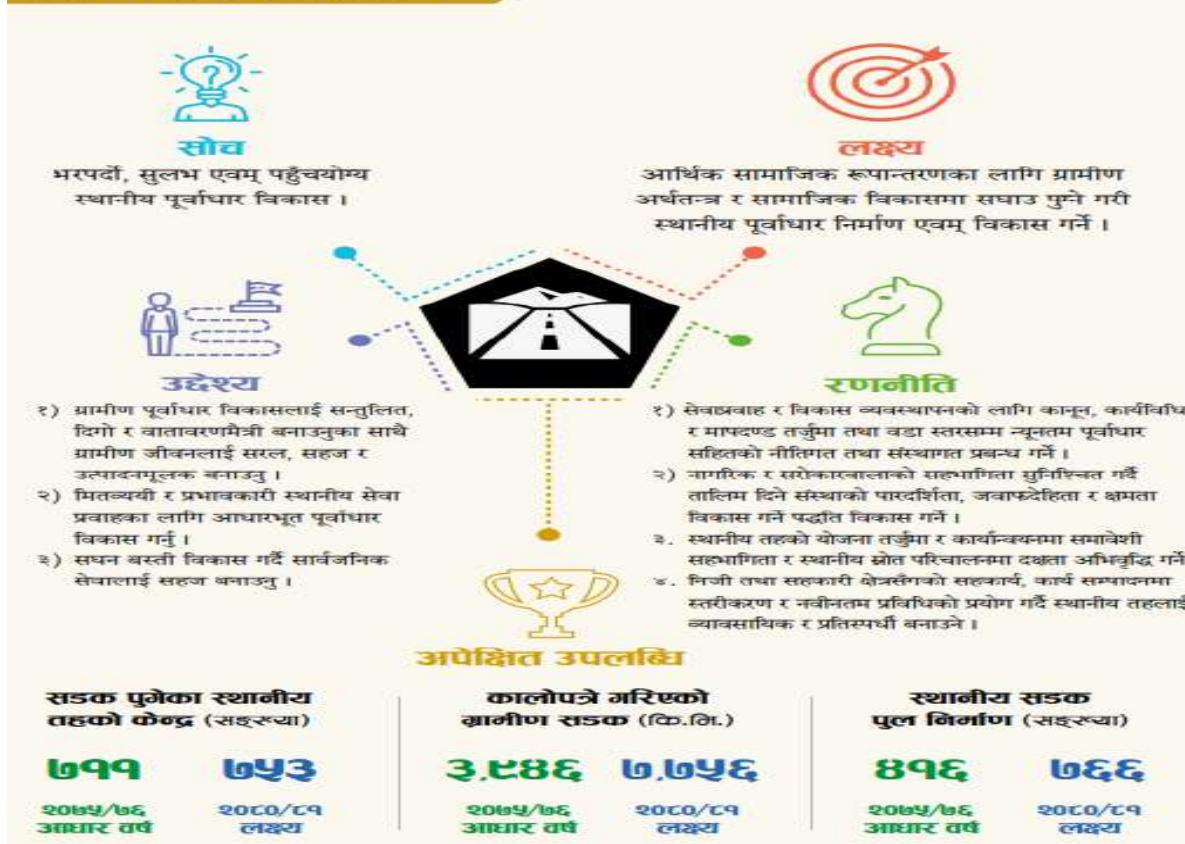
अपेक्षित उपलब्धि

कोशी, कालीगण्डकी, नारायणी र
कर्णाली नदीहरूमा जल यातायात संचालन भएको हुनेछ।

७.२.५ यातायात व्यवस्थापन



७.४ स्थानीय पूर्वाधार



राष्ट्रिय गौरव र रुपान्तरणकारी आयोजनाहरु भन्नाले कस्तो आयोजनालाई बुझिन्छ ? यिनीहरुको सफल कार्यान्वयन किन हुन् नसकेको हो ? व्यावहारिक उत्तर दिनुहोस ।

१५ औं आवधिक योजनाले सम्बन्धित मन्त्रालयको सिफारिस, स्रोत लगानीको सुनिश्चितता भएको, वातावरणीय अध्ययन भएको, विस्तृत आयोजना प्रतिवेदन तयार भएको आयोजना मध्ये क्षेत्रगत, रणनीतिक, दिगो बिकासका लक्ष्य, लैंगिक समानता आदिमा गर्ने योगदानको आधारमा राष्ट्रिय योजना आयोगले राष्ट्रिय प्राथमिकता आयोजनाको रूपमा बर्गीकरण गर्न सक्ने व्यवस्था रहेको छ ।

नेपाल सरकारले पहिलोपल्ट आ.व. २०६८/०६९ देखि विभिन्न दृष्टिकोणले महत्वपूर्ण देखिएका १७ वटा आयोजनाहरूलाई राष्ट्रिय गौरवका आयोजनाका रूपमा बर्गीकरण गरेको विभिन्न समयमा थप सहित हाल सम्म २४ वटा राष्ट्रिय गौरवका आयोजनाहरु रहेकामा १८ वटा मात्र संचालनमा छन् । १५ औं आवधिक योजनाले राष्ट्रिय गौरवका आयोजना हुनलाई आर्थिक सामाजिक बिकासमा योगदान, बृहत पूर्वाधार निर्माण, सांस्कृतिक तथा वातावरण संरक्षण सम्बन्धि रणनीतिक महत्वलाई आधार मान्ने गरेको छ ।

त्यसैगरी १५ औं आवधिक योजनाले लिएका राष्ट्रिय लक्ष्य हासिल गर्न, बृहत प्रभाव पार्ने, सबल अर्थतन्त्र, प्रादेशिक सन्तुलन र दोहोरो अंकको आर्थिक वृद्धिमा योगदान गर्ने र विशिष्ट प्रकृतिका आयोजनालाई रुपान्तरणकारी आयोजनाको रूपमा राखेको छ । रुपान्तरणकारी आयोजनाका लागि आवश्यक शर्तहरु निम्नानुसार छन् ।

१. GDP मा ०.५ % प्रतिवर्ष योगदान दिने
२. २० हजार कार्यान्वयनको चरणमा र ४० हजार निर्माण सम्पन्न पश्चात रोजगारी सिर्जना गर्ने
३. बिषयगत/क्षेत्रगत उपलब्धिमा २०% योगदान दिने
४. १० लाख जनसंख्या कार्यान्वयनको चरणमा र २० लाख जनसंख्या निर्माण सम्पन्न पश्चात लाभान्वित गर्ने
५. प्रादेशिक सन्तुलन कायममा योगदान गर्ने

यी माथिका शर्त र आधारलाई आत्मसाथ गरेको हुनुपर्ने आयोजनाहरुको प्रगतिको दयनीय रहेको र केही आयोजनाहरु (जस्तै बुढी गण्डकी) दलीय चक्रव्यूहमा फसेका छन् । लुम्बिनी विमानस्थल, भेरी बबई डाइर्भर्सन बाहेक अन्य आयोजनाहरु समयमै नसकिने, लागत भन्दा बढी खर्च हुने र अन्तमा असफल हुने निश्चित छ । यसका पछाडी परियोजना व्यवस्थापन दक्षता र नैतिकताको अभाव सहित निम्न कारणहरु रहेका छन् ।

१. आयोजनाको पहिचान र छनौटमा समस्या : आयोजनाहरुको मापदण्ड, आर्थिक, सामाजिक, रणनीतिक लगायतका लाभ विश्लेषण नगरी Quick planning and budgeting गर्ने प्रवृत्ति सहित राजनीतिक तथा दलीय आधारमा खल्तीबाट Black Box model अनुरूप आयोजनाहरु छनौट गर्नु ।
२. आयोजनाको पूर्वतयारीमा समस्या : जग्गा प्राप्ति, साइट क्लियर नगरी, वातावरणीय अध्ययन प्रतिवेदन स्वीकार नहुदै, लगानीको मोडालिटी तयार नहुदै, निर्माण सामग्रीको उपलब्धता बारे यकिन नगरी कार्यान्वयनमा हतारिनु ।
३. परियोजना व्यवस्थापनमा समस्या : दक्ष र नैतिकतायुक्त, नेतृत्वलिने परियोजना व्यवस्थापक नियुक्त नहुनु, कागजी बजेट सुनिश्चितताको आधारमा, बैदेशिक स्रोतहरु यकिन नगरी वा नेपाल सरकारले गर्नुपर्ने शर्त पुरा नहुदै, पुर्व तयारी नहुदै स्वार्थअनुकूल Specification, योग्यता निर्धारणका शर्त, हचुवाको भरमा ठेकाको म्याद निर्धारण, विश्लेषण बिना प्याकेज र स्लाइस आदि गरी ठेक्का लगाउने प्रवृत्ति, QAP बारे अस्पष्ट हुनु, प्रयोगशालाको व्यवस्था नहुनु, समयमा भुक्तानी, सुपरभिजन, रेकर्ड, प्रतितर वा निर्णय आदि नगर्नु ।

४. निर्माण सामग्रीको उपलब्धता : निर्माणजन्य उद्योगको अभावले नदिजन्य निर्माण सामग्री र गुणस्तरीय निर्माण सामग्रीको समयमा प्राप्त हुन् नसक्नु ।
५. निर्माण व्यवसायीको क्षमता र आधुनिक प्रविधियुक्त निर्माण उपकरणको समस्या : न्यून निर्माण क्षमता, धैरे ठेक्का अगोटने प्रवृति, निर्माण क्षेत्रलाई उद्योगको रूपमा विकास नगरी पारिवारिक व्यवसायको रूपमा विकास गर्ने प्रवृति रहनु, प्राविधिक जनशक्तिको कमि, कठिन काममा भारतीय कामदारमा भर पर्नु, नयाँ र आधुनिक निर्माण उपकरण जस्तै ट्रेन्च कटर, Pile Boring Machine, अस्टरबर्ग सेल, precast technology, Concrete Paver, infra-doctor आदि प्रयोगमा नल्याउनु, ठुला नि.व्य.हरूले ठेक्का आफू लिने तर पेटी वा सब contractorलाई बिचमै बेच्ने प्रवृति आदि ।
६. परियोजनालाई स्रोत दुरुपयोगको माध्यम मान्नु : परियोजनालाई राजनीतिक, प्रशासन, निजि क्षेत्र सबै बाट आर्थिक लाभ लिने स्रोत का रूपमा दुरुपयोग गर्नु जस्तै चमेलिया, मेलम्ची का गाडीहरु मन्त्री र उच्च सरकारी पदाधिकारीले प्रयोग गर्नु ।
७. निकायगत समन्वयको समस्या र असहयोग : सार्वजनिक खरिद कार्यालयले समय सापेक्ष खरिद सम्बन्धि, खरिद विधि सम्बन्धि कागजात, मापदण्ड, प्राविधिक निर्देशिका तयार नगर्नु, अनुगमनको नाममा नियामक निकायहरूले खरिदकै चरणमा, निर्माणकै चरणमा महिनौ सम्म निर्णय नदिने प्रवृति, समयमा बजेट फुकुवा, निकासा, सोघभर्ना नदिने वा आर्थिक बर्षको अन्तमा बजेट दिने, रुख कटानको वा राष्ट्रिय बन प्रयोगको स्वीकृतीमा बर्षौं लाग्ने प्रवृति, खरिद प्रशासनमा अदालतको प्रवेश तथा मध्यस्तताको निर्णयमा सबै तहको अदालत जाने प्रवृति र समयमा निर्णय नहुने समस्या ।
८. नीति नियम, प्राविधिक समस्या र प्रक्रियागत समस्या: डिजाइन तथा पूर्वानुमान गरिएको भन्दा फरक अवस्था कार्यस्थलमा देखिनु, कार्यान्वयन चरणमा नयाँ थप क्रियाकलाप वा डिजाइन परिवर्तन हुनु, कार्यस्थलमा उत्तम प्राविधिक समाधान भन्दा राजनीतिक परिवेश हावी भइ प्रियताको मार्गमा राजनीतिक नेतृत्व उभिनु, लागत अनुमान, डिजाइन सदर, म्याद थप. भेरियेशन स्वीकृत गर्ने प्रक्रिया र निर्णय गर्ने अधिकार माथिल्लो निकायमा केन्द्रीकरण हुनु, बाह्य स्रोतमा निर्माण हुने परियोजनामा ऋण समझौताका शर्तका कारण संलग्न अन्तराष्ट्रिय नि.व्य. हरूलाई कारवाही गर्ने प्रक्रिया झन्झटिलो हुनु, निर्माण खरिदसंग सम्बन्धित व्यवस्थाहरु ऐन, नियमावलीको असल मनसाय सहित राखेका प्रावधानहरु हचुवाको भरमा छिटो छिटो परिवर्तन वा संसोधन हुनु, नुन देखि सुन सम्म, सियो देखि बोइंग सम्मको खरिद प्रक्रिया एकै किसिमको हुनु, राष्ट्रिय गैरव र रुपान्तरणकारी भनिएका आयोजनाहरूले कुनै बिशेष सहुलियत प्राप्त नगर्नु ।
९. सामाजिक मूल्य, मान्यता र संस्कृतिजन्य समस्या: परियोजनामा नागरिक सहभागिता न्यून हुनु वा नहुनु, पुर्वाधारहरु सामाजिक मूल्य मान्यता स्वीकार गर्ने बिषयबस्तुहरु सम्बोधन नहुदा जनताले बिश्वास र अपनत्व ग्रहण नगर्नु, विविध किसिमका चाडबाडका लागि बिदा र कार्यस्थलमा छुट्टी गर्ने परम्परा कायम रहनु ।
१०. भौगोलिक, भौगम्भिक र जलबायु परिवर्तन सहितको मौसमी समस्या :हिमाली पहाडी, भिरालो सतहमा काम गर्दा ढिलो हुने, मौसमी समस्याका कारण निर्माण सामग्रीको उपलब्धता, दुवानी र काम गर्ने समय कम पाउनु, जलबायु परिवर्तनका कारण काम गर्ने सिजनमा समेत अतिबृष्टि, अनावृष्टि हुनु आदि ।
११. अनुगमन, मूल्यांकन र पृष्ठपोषण तथा दिगोपना सम्बन्धि समस्या : परियोजना आफैको र नियामक निकाय समेतको अनुगमन र मूल्यांकन कर्मकाण्डी र देखावटी, औपचारिकता र तिर्थाटनमा सिमित, नाम मात्रको कार्य सम्पादन समझौता, अनुगमन र मूल्यांकनबाट दण्ड र पुरस्कार सहित व्यवस्था लागू नहुनु, भविष्यमा हुने उस्तै गलती गरिरहनु, निर्माण तथा मर्मतका असल अभ्यासहरूको निरन्तरता नदिनु आदि

१२. परियोजनामा संलग्न कर्मचारीको व्यावसायिकता, पेशागत आंचारसहिता, नैतिकता, सदचारिता र निष्ठाको अभावले गैरनैतिक स्वार्थ तथा आर्थिक अपचलनमा केन्द्रित रहनु, आफ्नो जिम्मेवारी र उत्तरदायित्वबाट पन्छिने समस्या आदि ।

१३. प्राकृतिक बिपत तथा Force majeure जस्तै भुकम्प, नाकाबन्दी, Covid, ठुलो पहिरो, लागायतका मानवीय क्षमता भन्दा बाहिरका समस्याहरु ।

राष्ट्रिय योजना आयोगले बिगत र वर्तमानमा खेलको भूमिका बारे चर्चा गर्दै भविष्यमा यसको भूमिकालाई प्रभावकारी बनाउने उपायहरु बारे छोटकरीमा टिप्पणी गर्नुहोस् ।

नेपालमा २०१३ साल देखि शुरु भएको योजनाबद्ध विकासको अभियान हालसम्म आइपुगदा साठे ६ दशकको यात्रा पुरा गरेको छ । वि.स. २०४७ साल र २०४७ सालमा भएको राजनीतिक परिवर्तनबाट सृजित संक्रमण कालमा Plan Holiday को अवस्था आएको भए पनि बाँकि अवधिमा नेपालका विकास कार्यक्रमहरु आवधिक योजनाबाट नै संचालन भएका छन् । योजनाबद्ध बिकासको माध्यमबाट देशलाई माथि उठाउने उद्देश्यका साथ सर्वप्रथम वि.स. २०१३ सालमा तत्कालिन प्रधानमन्त्री स्व. टंक प्रसाद आचार्यको अध्यक्षतामा केन्द्रीयस्तरमा योजना आयोगको गठन भएको र विभिन्न समयमा उक्त संगठनको नाम तथा सांगठनिक परिवर्तन भई हुँदै आएकोमा देश संघियतामा गएपछि संघियता अनुकूलको नीति तथा विकास योजना तर्जुमा तथा कार्यान्वयनका लागि नेपाल सरकार, प्रदेश सरकार र स्थानीय सरकार लाई आवश्यक सहयोग तथा नीतिगत सुझाव दिने आयोगको काम, कर्तव्य र अधिकारको गठन आदेश २०७४ बमोजिम प्रधानमन्त्रीको अध्यक्षतामामा एक उपाध्यक्ष, ८ सदस्य, सदस्य सचिव एक, मुख्य सचिव र अर्थ सचिव पदेन सदस्य रहने राष्ट्रिय योजना आयोगको रूपमा रहेको छ । यसले मुख्य गरि बजेट निर्माण कार्यका लागि स्रोतको आंकलन, योजनाहरु सिफारिश गर्ने गर्दछ । यसै गरि मध्यकालिन खर्च आयोजनाहरुमा स्रोत सुनिश्चितता प्रदान गर्ने र राष्ट्रगौरब र रूपान्तरणकारी आयोजनाको अनुगमन तथा मूल्यांकन जस्ता कार्यहरु समेत गर्दै आएको छ । यसै गरि नेपाल सरकारलाई नीतिगत बिषयबस्तु सम्बन्धमा नीति बनाउने, पृष्ठपोषण प्रदान गर्ने, क्षेत्रगत रूपमा रणनीतिक योजनाहरुको तर्जुमा गर्ने एवं स्वतन्त्र अनुगमन, मूल्यांकन गर्ने जस्ता कार्यहरु गर्दै आएको पाइन्छ ।

राष्ट्रिय योजना आयोगले विगतमा खेलको भूमिकालाई अध्ययन गर्दा गर्व गर्ने ठाउँ भैटिन्छ | तर वर्तमानमा यो संस्थाको औचित्य छैन भन्ने आवाजहरु पनि यदाकदा सुनिन थालेका छन् । जे भए पनि योजन आयोगको औचित्य छैन भन्नेहरुले इतिहासको वास्तविकता नबुझिकन सतही कुरा बोलेको जस्ती देखिन्छ ।

बिगतमा र वर्तमानमा योजना आयोगले खेलको भूमिका

- विगतमा आयोग अत्यन्तै शक्तिशाली भएको कारणले नै कुनै कानुनमा टेकेर गठन भएको नभए तापनि तत्कालिन राजाको प्रत्यक्ष समर्थनमा बसेर काम गर्नुपर्ने र राजाले सोचेको बिकासको खाँका यहि संस्था मार्फत बढेको ।
- तत्त्वाकिन राजाको कदेश विदेशको भ्रमणमा विकासको मागहरु र राजाले दिएका आश्वासनहरुलाई कार्यान्वयनमा लैजाने यसै संस्थाको मुख्य भूमिका हुन्थ्यो ।
- नेतृत्वको निरन्तरताको कारण नेतृत्वपंक्तिमा कुनै किसिमको खाडल नहुनु
- तत्कालिन परिबेशमा देशको समग्र बिकासको लागि दूरगामीप्रभाव पार्ने कामको खाँका जस्तै पुर्व पश्चिम राजमार्ग, विकासक्षेत्र बिभाजन गरि विकास गर्ने नीति आदि
- आयोगको बिजहरु आफ्नो बिषयमा परिपक्क निर्णय दिने र कतिपय अवस्थामा सम्बन्धित मन्त्रीभन्दा पनि उपाध्यक्षको भूमिका बढी महत्वपूर्ण हुने

- बि.स. २०४६ सालको राजनीतिक परिवर्तन पश्चात् आयोगको भूमिका फेरियो र बिस्तारै यसको भूमिका खस्किदै गएको
- सरकारले आफ्नो इच्छा अनुसारको टिम बनाउने र सरकार पिच्छे टिम नै परिवर्तन हुने र आयोगको भूमिकालाई सरोकारवाला मन्त्रीले कार्यक्षेत्रमा हस्तक्षेप ठान्ने प्रवृति हावी भएको
- देशको दूरगामी निर्णय जस्तै प्रदेशको संख्या, निर्वाचन क्षेत्र निर्धारण, समाबेशीकरण सम्बन्धित कानून तर्जुमा, हजुवाको भरमा योजनाको बर्गीकरण, विकास योजनाको लागि लिने बैदेशिक ऋण आदिमा आयोगको भूमिकालाई संकुचन गरेको वा प्रभावकारी भूमिका खेल्न नसकेको ।
- पछिल्ला समयमा सानातिना कममहत्वका Cantilever संस्थाहरु स्थापना हुदै जाने जस्तै संस्थान, लगानी बोर्ड, विकास समिति आदि तर पहिले स्थापना भएका गतिलो संस्था योजना आयोगको नै औचित्य छैन , यसलाई विघटन गर्नुपर्छ भन्ने आवजहरु सुनिन थालेको अवस्थामा यसको भूमिका लाई निम्नानुसारको उपायहरु मार्फत भविष्यमा यसको भूमिकालाई सशक्त बनाउन सकिन्छ ।

राष्ट्रिय योजना आयोगको भूमिकालाई प्रभावकारी बनाउने उपायहरु

१. आयोगलाई गठन आदेश भन्दा पनि कानून अनुसार स्थापना गरि स्थायी Think Tank को रूपमा विकास गरिनु पर्ने
२. स्थानीय सरकारको योजना एकाइ, प्रदेश सरकारको प्रादेशिक योजना आयोग र संघीय सरकारको राष्ट्रिय योजना आयोगका बीचमा कस्तो सम्बन्ध रहने, कस्तो प्रकृतिको योजना कसले कसरी निर्माण र कार्यान्वयन गर्दा देशले लिएको सम्बूद्धिको लक्ष्य हासिल गर्न तिनै तहका सरकारहरुले समन्वय, सहकार्य र साझेदारीमा थप जोड दिनुपर्ने
३. आयोगले दिने नीतिगत सुझावहरु लाई सरकारले बाध्यकारी रूपमा ग्रहण गर्नुपर्ने
४. आयोगका पदाधिकारी नियुक्ति राजनीतिक भन्दा पनि बिशेषज्ञताको रूपमा नियुक्त गरिनुपर्ने
५. संघीय संरचना अनुरूप पुनर्संरचना गरी विश्वस्तरीय Think Tank र तिनै तहको Policy Hub को रूपमा विकास गरी अर्थतन्त्रको आकार र संरचना कस्तो बनाउने, आन्तरिक वा बाह्य लगानी परिचालनको वातावरण कसरी निर्माण गर्ने जस्ता बहुत खाका कोर्न र त्यसको प्राप्तिका लागि प्रेरकको भूमिका निर्वाह गर्ने
६. आयोगलाई नीति अध्ययन, अनुसन्धान, मूल्यांकनको आधारमा अनुसन्धान केन्द्रको रूपमा विकास गर्नुपर्ने
७. राष्ट्रिय तथ्यांक विकास रणनीति ल्याई राष्ट्रिय आवश्यकता, बदलिँदो परिवेश तथा अन्तराष्ट्रिय मूल्य मान्यता र मापदण्ड अनुरूपको व्यवस्थित तथ्यांक प्रणालीको विकास गर्नुपर्ने,
८. राष्ट्रिय गौरव, रूपान्तरणकारी, राष्ट्रिय प्राथमिकता प्राप्त कार्यक्रम तथा आयोजना निर्धारणमा आयोगले नीतिगत, कानूनी आधार र मापदण्डमा निर्णायक भूमिका निर्वाह गर्ने
९. आयोगको संस्थागत क्षमता सुदृढ गरी दक्ष र बिज संस्थाको रूपमा विकास गर्ने
१०. आयोगको सचिवालयलाई छरितो र व्यवसायिक बनाउने
११. आयोगले प्रशासनिक काम हरु क्रमशः छोड्दै जाने र अनुसन्धानात्मक कार्यहरुमा बढी संलग्न हुने
१२. हाम्रो योजनाहरु समस्याको पहिचान गर्न जति सफल मानिन्छन त्यो भन्दा बढी असफल चाहिँ समस्याको कारण र गहिराइको खोजि र सम्बोधनका उपायहरु पहिचान गर्न भएकोले आगामी दिनमा प्रभावकारी अनुगमन र मूल्यांकन गरि यस्ता गल्तीमा सुधार गर्ने

नेपालका राष्ट्रिय योजनाका मूल्यहरू चर्चा गर्दै योजनाबद्ध विकास देखि हालसम्मका प्रवृत्तिबारे छोटो टिप्पणी गर्नुहोस् ।

नेपालमा २०१३ साल देखि राष्ट्रिय स्तरमा योजना शुरुवात भएको र योजनाका सांगठनिक परिवर्तन र योजना नियमित रूपमा बढ्दै कार्यान्वयन हुदै आएको तर प्रगति खोजेको जति कहिल्यै नभएको, आवधिक योजनाहरूले परिलक्षित गरेको आर्थिक वृद्धि, गरिवी निवारणमा उपेक्षित उपलब्धि, स्रोतसाधनमा सम्मन पहुँच, रोजगारीका अवसरहरूको सिर्जना, सुशासनको अभिवृद्धि जस्ता अर्थतन्त्रका संरचनागत समस्याहरूलाई उचित रूपमा सम्बोधन गर्न नसकदा राष्ट्रिय योजनाहरूमाथि नै बिभिन्न टिकाटिप्पणी सहित प्रश्नचिन्ह खडा भएको छ । राष्ट्रिय योजनाहरूले मुलुकमा सम्बृद्धि ल्याउने उद्देश्यका साथ सफल कार्यान्वयन होस् भन्ने हेतु बजेट निर्माण कार्यका लागि स्रोतको आंकलन, योजनाहरू सिफारिशमा मापदण्ड निर्धारण, मध्यकालिन खर्च संरचना, बहुर्षीय ठेक्का मापदण्ड, स्रोत सुनिश्चितता प्रदान गर्ने र प्राथमिकता प्राप्त, राष्ट्रगौरब र रूपान्तरणकारी आयोजनाहरू बर्गीकरण गर्ने, अनुगमन तथा मूल्यांकन जस्ता कार्यहरू समेत भएको भएपनि सोचे जस्तो पूँजीगत खर्च, समयमा, लागतअनुमान बमोजिम आयोजना सम्पन्न नहुँदा सुखी र सम्बृद्धि हुने अभिलाषा आकाशको फल जस्तै भएको अवस्था देखिन्छ ।

नेपालको राष्ट्रिय योजनाले प्रत्यक्ष रूपमा मुल्यको कुरा नगरेपनि निम्न मूल्यहरू निहित रहेका छन् ।

१. सुशासन, विकास र सम्बृद्धि
२. प्रादेशिक सन्तुलन, समावेशिता, प्राकृतिक स्रोतसाधनको संरक्षण, सम्बर्द्धन र परिचालन बाट रोजगारी सिर्जना
३. दिगो विकास र अन्तर्राष्ट्रिय विकास एजेण्डाहरूका मूल्यलाई आत्मसाथ गरिएको
४. समाजबाद उन्मुख लोककल्याणकारी राज्यको स्थापना
५. विविधताको लाभ सिर्जना
६. दिगो विकासलाई स्थानीयकरण
७. साझेदारी, सहभागितामूलक शासन, सहकार्य र लोकतान्त्रिक मूल्य र मान्यताहरूको अनुशरण
८. मानवीय, नैतिक र नागरिक मूल्यको प्रवर्धन
९. बिकासका लाभहरूको समन्यायिक वितरण
१०. स्थानीय कला, संस्कृति, रितिरिवाज, विविधतायुक्त नेपाली समाजको सम्पदाको संरक्षण र प्रबर्धन
११. Deepening Democracy, सार्वजनिक निजि साझेदारी, उदारीकरण र सूचना तथा प्रविधिको विकास आदि
१२. तिनै तहका सरकार बिचको सहकार्य, सअस्तित्व, समन्वय युक्त अन्तरसम्बन्ध र परस्परिकता आदि

बि.स. १०१३ साल देखि योजनाबद्ध विकास अभ्यास अवलम्बन गरिएकाले धैरैले नेपालको बिकास अभ्यासलाई समाजबादी प्रारूप (सोभियतसंघ मोडेल)को मान्छन तर वास्तविकता त्यो पनि होइन किनकि चौथो योजनाबाटै नेपालले विकेन्ट्रीत विकास अभ्यास गर्ने थालिएको, भलै त्यसका व्यवहारिक धरातलमा कार्यान्वयन पक्ष अलग किन नहोस । योजनाबद्ध अभ्यासको साढे ६ दशक लाई हेर्दा राज्यले अपनाएको आर्थिक नीति र बिकासका प्राथमिकता पनि बदलिए गएको देखिन्छ । पहिलो देखि तेसो योजनाका धार एकै किसिमको देखिए पनि चौथोले विकेन्ट्रीकरण, पाचौले प्रादेशिक सन्तुलन र एकीकरण गर्ने उद्देश्य राखेको र छैटोले त् अझै विकास प्राथमिकता बदलियो । खासगरी रोजगारी सिर्जना र अर्थतन्त्रको उत्पादकत्व बढाउने लक्ष्य राख्दै जनतको आधारभूत आवश्यकता पुरा गर्ने किसिमका कार्यक्रममा लक्षित हुने मूल लक्ष्य राखियो । जुन सातौ योजनामा समेत निरन्तर रह्यो ।

बि.स. २०४६ सालको परिवर्तन पछि आठौ योजनाबाट देशमा खुला बजार र उदार अर्थनीति त अवलम्बन गरियो तर यो नीतिले राष्ट्रिय बिकासका अङ्गै प्राथमिकीकरण गर्न सकेन | फलतः नवौ योजनामा आइपुग्दा फेरी बिकासका प्राथमिकता बदलिए | योजनाको दस्ताबेजमै भनिए अनुसार “ योजनाको दीर्घकालीन अवधारणा अनुरूप आवधिक योजनाहरू आवद्ध रूपमा कार्यान्वयन हुनुपर्नेमा त्यस्तो दिर्घकालीन अभावमा दिर्घकालिन महत्वका योजनाका उद्देश्य प्रत्येक आवधिक योजनामा फरक पर्दै जानाले रणनीतिमा निरन्तरता हुन् सकेन | उक्त अवधिमा दिर्घकालिन बिकासको सोच अघि सारेको थियो जसले मुख्यता गरिवी निवारणलाई लक्ष्य राखेको थियो | नवौ योजनाले दिर्घकालिन सोच सहित २० बर्षको अवधि (२०७७-२०७५) मा गरिवी ४२% बाट १०% मा झार्ने लक्ष्य राखियो र अहिले १८.६ % मा झारेको छ | यसको पछाडी दसौ योजना (जुन WB/IMF को गरिवी निवारण रणनीति पत्र PRSP को मूल दस्ताबेज मानिन्छ) बाट संचालित गरिवी निवारणका लक्षित् कार्यक्रम र देशभित्र बढ्न थालेको रेमिटयान्स दुबैको प्रभाव हो |

देशभित्र चरम उत्कर्षमा पुगेको सशस्त्र द्वन्द र राजनीतिक परिवर्तनका कारण दसौ योजना पूर्ण कार्यान्वयन नै हुन् पाएन भने ११ औ देखि १४ औ योजनाहरू संक्रमणकालीन योजना नै थिए | यी योजनाहरूले लक्षित् गरेका प्रमुख विकास लक्ष्यका बिषयमा नै पहिले त अन्योल रहयो, अलिअलि प्राथमिकीकरण गरिएको भए पनि औसतमा १ बर्ष आयू भएका सरकारबाट बार्षिक बजेटमा फरक फरक प्राथमिकता निर्धारण गरि आवधिक योजनाको उपहास गरे | त्यसले न दिगो विकासको प्रयास भयो, न त दिर्घकालिन महत्वका विकास आयोजनाहरूले प्राथमिकता पाए | त्यसपश्चात हालको १५ औ आवधिक योजनाले २५ बर्ष दिर्घकालिन सोच “सम्बृद्ध नेपाल, सुखी नेपाली” सहित दिगो बिकासको लक्ष्य हासिल हुनेगरी राष्ट्रिय योजनाहरूले मुलुकमा सम्बृद्धि ल्याउने उद्देश्यका साथ सफल कार्यान्वयन होस् भन्ने हेतु बजेट निर्माण कार्यका लागि स्रोतको आंकलन, योजनाहरू सिफारिशमा मापदण्ड, आयोजना बैंकको अवधारणा, मध्यकालिन खर्च संरचना, बहुबर्षीय ठेक्का मापदण्ड, स्रोत सुनिश्चितता प्रदान गर्ने र प्राथमिकता प्राप्त, राष्ट्रगैरेब र रूपान्तरणकारी आयोजनाहरू बर्गीकरण गर्ने जस्ता कार्यहरू मार्फत लक्ष्य प्राप्त गर्ने खोजेको भएपनि राष्ट्रगैरेब, रूपान्तरणकारी आयोजनका प्रगति, दक्षता सोचे नहुँदा सुखी र सम्बृद्ध हुने अभिलाषा आकाशको फल जस्तै भएको अवस्था देखिन्छ |

नेपालले दशकौ देखि प्रयोग गरेको भौतिक पूर्वाधार र आर्थिक सूचकांकलाई नै विकास भनेर बुझ्ने सकुचनलाई राजनीतिक दलहरूले समृद्धिको नयाँ रंग लगाएर पुन अभ्यास गर्न खोजेको अवस्थामा विकास परिणाम मात्र होइन, प्रक्रियाको पनि प्रश्न हो | विकास सार्थक र प्रभावकारी हुन त्यसमा मानिसका प्राथमिकता र सहभागिता समेटिएको हुनुपर्छ | कसैले कसैका लागि गरिदिने परिवर्तन विकास होइन |कमसेकम नेपालको ऐतिहासिक, सामाजिक, आर्थिक र सांस्कृतिक मूल्य, मान्यता, परिवेशमा विकास गरिदिने र लाभान्दित हुने समूह अलग गर्न सकिन्न |

तसर्थ बिकासका लागि नेपालको प्रयास त्यहाँ बाट थालिनुपर्छ, जहाँ आवश्यकता धैरै छ | नेपालको आजको आवश्यकता अत्यावश्यक सेवाहरू जस्तै शिक्षा, स्वास्थ, रोजगारी, बिपत तथा जलबायु अनुकूल रहनसहन आदि नागरिकको घर दैलोमा पुर्याउनु हो जसको लागि स्रोतसाधन, अवसरमा समानरूपले पहुँच, परिचालन र बितरण गराई सहभागितामूलक पारदर्शी निर्णय प्रक्रियामा प्रभावकारिता ल्याउनु जरुरी भैसकेको छ |

के राष्ट्रिय योजना आयोगले आफ्नो भूमिकालाई क्रियाशील बनाउन नसकेकै हो ? यदि त्यसो हो भने यसको कार्यलाई Staff Agency को रूपमा प्रभावकारी कसरी बनाउन सकिन्छ ? तर्कपूर्ण टिप्पणी गर्नुहोस् |

नेपालमा २०१३ साल देखि शुरु भएको योजनाबद्ध विकासको अभियान हालसम्म आइपुग्दा साढे ६ दशकको यात्रा पुरा गरेको छ | वि.स. २०४७ साल र २०४७ सालमा भएको राजनीतिक परिवर्तनबाट सृजित संक्रमण कालमा Plan Holiday को अवस्था आएको भए पनि बाँकि अवधिमा नेपालका विकास कार्यक्रमहरू आवधिक योजनाबाट नै संचालन भएका

छन् । योजनाबद्ध बिकासको माध्यमबाट देशलाई माथि उठाउने उद्देश्यका साथ सर्वप्रथम बि.स. २०१३ सालमा तत्कालिन प्रधानमन्त्री स्व. टंक प्रसाद आचार्यको अध्यक्षतामा केन्द्रीयस्तरमा योजना आयोगको गठन भएको र विभिन्न समयमा उक्त संगठनको नाम तथा सांगठनिक परिवर्तन भई हुँदै आएकोमा देश संघियतामा गएपछि संघियता अनुकूलको नीति तथा विकास योजना तर्जुमा तथा कार्यान्वयनका लागि नेपाल सरकार, प्रदेश सरकार र स्थानीय सरकार लाई आवश्यक सहयोग तथा नीतिगत सुझाव दिने आयोगको काम, कर्तव्य र अधिकारको गठन आदेश २०७४ बमोजिम प्रधानमन्त्रीको अध्यक्षतामामा एक उपाध्यक्ष, ८ सदस्य, सदस्य सचिव एक, मुख्य सचिव र अर्थ सचिव पदेन सदस्य रहने राष्ट्रिय योजना आयोगको रूपमा रहेको छ । यसले मुख्य गरि बजेट निर्माण कार्यका लागि स्रोतको आंकलन, योजनाहरू सिफारिश गर्ने गर्दछ । यसै गरि मध्यकालिन खर्च आयोजनाहरूमा स्रोत सुनिश्चितता प्रदान गर्ने र राष्ट्रगौरब र रूपान्तरणकारी आयोजनाको अनुगमन तथा मूल्यांकन जस्ता कार्यहरू समेत गर्दै आएको छ । यसै गरि नेपाल सरकारलाई नीतिगत बिषयबस्तु सम्बन्धमा नीति बनाउने, पृष्ठपोषण प्रदान गर्ने, क्षेत्रगत रूपमा राणनैतिक योजनाहरूको तर्जुमा गर्ने एवं स्वतन्त्र अनुगमन, मूल्यांकन गर्ने जस्ता कार्यहरू गर्दै आएको पाइन्छ ।

तर आवधिक योजनाहरूले परिलक्षित गरेको आर्थिक वृद्धि, गरिवो निवारणमा उपेक्षित उपलब्धि, स्रोतसाधनमा समान पहुँच, रोजगारीका अवसरहरूको सिर्जना, सुशासनको अभिवृद्धि जस्ता अर्थतन्त्रका संरचनागत समस्याहरूलाई उचित रूपमा सम्बोधन गर्न नसक्दा राष्ट्रिय योजना आयोगको क्रियाशिलता माथि हाल विभिन्न टिकाटिप्पणी सहित प्रश्न चिन्ह उठेको छ । राष्ट्रिय स्तरका योजना तर्जुमा प्रक्रियामा आयोगले तिन तहहरू बीच समन्वय र सहकार्य गरि एकिकृत योजना निर्माण प्रक्रिया अवलम्बन गराउन नसकेको, यसले दिने सल्लाह, सुझाव तथा परामर्श सरकारले लागू वा कार्यान्वयन नगरेको, स्वतन्त्र अनुगमन, मूल्यांकन कार्यमा पनि प्राविधिक हिसाबले कमजोर रही प्रतिवेदनमुख्य मात्र भएको, सरकर परिवर्तन संगै आयोगका पदाधिकारीहरू समेत परिवर्तन हुने व्यवस्थाले सदस्यहरूमा विशेषज्ञताको विकास हुन नसक्नुका साथै आयोगलाई Think Tank को रूपमा विकास गर्ने नसक्नुले आयोगको भूमिका प्रभावकारी हुन् नसकेको बिषयलाई उजागर गर्दछ ।

राष्ट्रिय योजना आयोगको कार्यलाई Staff Agency को रूपमा प्रभावकारी बनाउने उपायहरू

१. आयोगलाई गठन आदेश भन्दा पनि कानून अनुसार स्थापना गरि स्थायी Think Tank को रूपमा विकास गरिनु पर्ने
२. स्थानीय सरकारको योजना एकाइ, प्रदेश सरकारको प्रादेशिक योजना आयोग र संघीय सरकारको राष्ट्रिय योजना आयोगका बीचमा कस्तो सम्बन्ध रहने, कस्तो प्रकृतिको योजना कसले कसरी निर्माण र कार्यान्वयन गर्दा देशले लिएको सम्बूद्धिको लक्ष्य हासिल गर्न तिनै तहका सरकारहरूले समन्वय, सहकार्य र साझेदारीमा थप जोड दिनुपर्ने
३. आयोगले दिने नीतिगत सुझावहरू लाई सरकारले बाध्यकारी रूपमा ग्रहण गर्नुपर्ने
४. आयोगका पदाधिकारी नियुक्ति राजनीतिक भन्दा पनि विशेषज्ञताको रूपमा नियुक्त गरिनुपर्ने
५. संघीय संरचना अनुरूप पुनर्संरचना गरी विश्वस्तरीय Think Tank र तिनै तहको Policy Hub को रूपमा विकास गरी अर्थतन्त्रको आकार र संरचना कस्तो बनाउने, आन्तरिक वा बाह्य लगानी परिचालनको वातावरण कसरी निर्माण गर्ने जस्ता बृहत खाका कोर्ने र त्यसको प्राप्तिका लागि प्रेरकको भूमिका निर्वाह गर्ने
६. आयोगलाई नीति अध्ययन, अनुसन्धान, मूल्यांकनको आधारमा अनुसन्धान केन्द्रको रूपमा विकास गर्नुपर्ने
७. राष्ट्रिय तथ्यांक विकास रणनीति ल्याई राष्ट्रिय आवश्यकता, बदलिँदो परिवेश तथा अन्तराष्ट्रिय मूल्य मान्यता र मापदण्ड अनुरूपको व्यवस्थित तथ्यांक प्रणालीको विकास गर्नुपर्ने,

८. राष्ट्रिय गौरव, रुपान्तरणकारी, राष्ट्रिय प्राथमिकता प्राप्त कार्यक्रम तथा आयोजना निर्धारणमा आयोगले नीतिगत, कानूनी आधार र मापदण्डमा निर्णायक भूमिका निर्वाह गर्ने
९. आयोगको संस्थागत क्षमता सुदृढ गरी दक्ष र बिज संस्थाको रूपमा विकास गर्ने
१०. आयोगको सचिवालयलाई छरितो र व्यवसायिक बनाउने
११. आयोगले प्रशासनिक काम हरु क्रमशः छोड्दै जाने र अनुसन्धानात्मक कार्यहरूमा बढी संलग्न हुने
१२. हाम्रो योजनाहरु समस्याको पहिचान गर्न जति सफल मानिन्छन त्यो भन्दा बढी असफल चाहिँ समस्याको कारण र गहिराइको खोजि र सम्बोधनका उपायहरु पहिचान गर्न भएकोले आगामी दिनमा प्रभावकारी अनुगमन र मूल्यांकन गरि यस्ता गल्तीमा सुधार गर्ने

नेपाल सरकारलाई नीतिगत मार्ग दर्शन गर्ने तथा राष्ट्रिय बिकासको योजना तर्जुमा गर्ने प्रमुख भूमिका रहेको राष्ट्रिय योजना आयोग योजना कार्यान्वयन र मूल्यांकनका वृष्टिले असफल प्रायः सावित भएको छ | योजनाहरु राम्रा हुँदाहुँदै पनि लक्षित उद्देश्य प्राप्ति हुन् सकेको छैन | तसर्थ राष्ट्रिय योजना आयोगको हरेक क्रियाकलापले देशको दीर्घकालीन, आर्थिक योजनालाई नै प्रत्यक्ष प्रभाव पार्ने हुनाले राष्ट्रिय योजना आयोगलाई मुलुकमा संघियताको प्रभावकारी अभ्यास गर्ने गरी यसका केही आधारभूत पक्षहरूमा परिवर्तन गरी तिनै तहको Policy Hub र Think Tank को रूपमा विकास गरी आगाडी बढ्न सकेमा तथ्यमा आधारित रणनीतिक योजनाहरुको तर्जुमा र अनुगमन तथा मूल्यांकन प्रभावकारी हुन गइ यसले लिएको लक्ष्य हासिल हुने देखिन्छ |

सार्वजनिक खर्च व्यवस्थापन प्रभावकारी हुन् नसक्नुका कारणहरु बारे आफ्नो विचार लेखुहोस |

जनहितको लागि सरकारले गर्ने खर्च नै सार्वजनिक खर्च हो, जुन पारदर्शी, लागत प्रभावी, जवाफदेही, औचित्यपूर्ण, जनमुखी र नातिजमुलक हुनुपर्ने मान्यतालाई आत्मसाथ गर्न सरकारले विभिन्न नितिगत, संस्थागत तथा कार्यक्रमगत व्यवस्थाहरु गरेको भएपनि सार्वजनिक खर्च व्यवस्थापन प्रभावकारी हुन सकिरहेको छैन | यसका विभिन्न कारणहरु यसप्रकार छन् |

१. Need, Demand and Priority Based बजेट प्रणाली व्यवहारमा लागू नहुनु
२. विनियोजन कुशलता, कार्यान्वयन दक्षता र वितिय अनुशासन कमजोर हुनु
३. बजेट बिनियोजन आवश्यकता भन्दा बढोतरीको सिद्धान्तमा र शक्ति र भक्तिको आधारित हुनु
४. MTEF, Project Bank, Project priority लाई तिनै तहको सरकारहरु बिचको समन्बय बिना बजेट बिनियोजन हुनु
५. आर्थिक बर्षको अन्तमा थप बजेट, निकासा, पुँजीगत खर्च लाई चालु खर्चमा रकमान्तर गर्ने परिपाटी
६. बैदेशिक स्रोतको लागि Counter part बजेट नराख्नु, जग्गा खरिद, मुआब्जा आदिमा प्रयोग्य बजेट बिनियोजन नगर्नु
७. परियोजना पूर्वतयारी बिना बजेट बिनियोजन वा ठुलो आयोजनाको लागि न्यून बजेट बिनियोजन हुनु
८. लामो र झन्झटिलो खरिद प्रक्रिया, दक्ष कर्मचारीको अभावले खरिद प्रक्रिया विवादित हुनु
९. नैतिकता, इमानदारिता, सदचारिता र व्यावसायिकताको कमि सार्वजनिक प्रशासनमा रहनु
१०. नि.व्य. ले ठेक्का लिने तर समयमा काम नगर्ने प्रवृत्ति, नि.व्य लाई राजनैतिक समक्षणको आडमा कारवाहीको दायरा ल्याउन नसक्नु
११. सुचकको आधारमा अनुगमन र मूल्यांकन प्रणाली, दण्ड र पुरस्कार प्रणालीको अभाव हुनु
१२. बजेट खर्च output मा आधारित हुनु तर outcome नहेरिनु

१३. आयोजनामा कर्मचारीको अनियमित सरुवा, राजनीतिक हस्तक्षेप र सरकार पिच्छे कार्यान्वयन Modality र प्राथमिकता फरक पर्नु
१४. सार्वजनिक खर्चमा तिनै तहको सरकारहरु बीच प्रभावकारी समन्वय र समझदारी निर्माण संगै प्रदेश र स्थानीय तहमा आवश्यक कर्मचारीहरु नहुनु
१५. टुक्रे, कस्मेटिक, वितरणमुखी, प्रतिष्पर्धाको आधारमा अनुदान मुखी बजेट तर्जुमा तर उत्पादन र उत्पादकत्वमा बढोतरी हुने आयोजना हरु छनौट नहुनु
१६. रुपान्तरणकारी, राष्ट्रियगैरव र ठुला आयोजनाले बजेट बाहेक अन्य नीतिगत/कानूनी प्रक्रियामा बिशेष प्राथमिकता नपाउनु आदि
१७. नियमनकारी निकाय, समस्या समाधानका लागि स्थापित संयन्त्रहरुको काम कारबाही प्रभावकारी नहुनु
१८. विकासे मन्त्रालय, अर्थ मन्त्रालय, रा.यो.आयोग आदि बीच परियोजना छनौट देखि कार्यान्वयन सम्म प्रभावकारी समन्वय नहुनु र Empire Building सोच सबै शासकीयपात्रले राख्नु आदि
१९. स्थानीय अवरोध, नाजायज माग र बिरोध गर्ने परिपाटी, दण्डहिनता आदि निरन्तर जारी रहनु आदि

लोककल्याणकारी राज्यको अवधारणा सहित संघियतामा तिनै तहबीचको सरकारहरु बीच अन्तर सम्बन्ध, समन्वय र सहकार्य मार्फत नागरिकको अपेक्षालाई सिमित सोतसाधनलाई प्रभावकारी सार्वजनिक प्रशासन मार्फत दक्षतापूर्ण सार्वजनिक खर्च व्यवस्थापन गरि आर्थिक सम्बृद्धि हासिल गर्नुपर्ने आवश्यकता रहेको छ ।

नेपालको बार्षिक बजेटमा बिनियोजन भएको बजेटको एक तिहाई भन्दा कम पूँजीगत बजेट, खर्च न्यून हुनका कारण विश्लेषण गर्दै यसमा गर्नुपर्ने समयसापेक्ष सुधारहरु बारे राय दिनुहोस । वा

नेपालको विकासमा योजना निर्माण, कार्यान्वयन समयमा सम्पन्न नहुनुको कारण हरु बारे चर्चा गर्नुहोस् ।

बार्षिक बजेटको करिव एकतिहाई बजेट मात्र पूँजीगत बजेटको रूपमा विकास कार्यक्रमहरुको लागि बिनियोजन भएको बजेटको खर्च अवस्था हेर्दा विगत दस वर्षको औसत पूँजीगत खर्च गर्ने क्षमता ६० देखि ७५ प्रतिशतको हाराहारीमा रहेको छ भने औसत बजेट (चालु र पूँजीगत बजेट) खर्च गर्ने क्षमता ८३ प्रतिशत रहेको छ। संघीय शासनको चार वर्षको अनुभवमा पनि सो दर बढन सकेन। सोझौ जनतासम्म पुग्ने विकास (पूँजीगत) बजेट न्यून खर्च भए पनि धान्नै नसक्ने गरी चालु (साधारण) खर्च बढिरहेको छ। कुल बजेटको दुईतिहाई रकम दैनिक प्रशासनिक, कर्मचारीको तलबभत्ता लगायतका साधारण काममा खर्च भइरहेको छ। राजस्वले साधारण खर्च धान्न कठिन हुने स्थिति दीर्घकालीन आर्थिक वृद्धिका लागि चुनौतीपूर्ण मानिन्छ। तर, सरकारले यसको नियन्त्रणका लागि खास पहल गरेको छैन।

१. विकासका लागि कम रकम विनियोजन हुने र त्यसमाथि विनियोजित रकम नै खर्च नहुने परिपाटीले विकासको अवसरलाई झन् पर धकेलिरहेको छ। निजी लगानीलाई समेत प्रोत्साहित गर्ने पूँजीगत खर्च नै नहुनु रोजगारी सिर्जना र आर्थिक विस्तारका दृष्टिले अत्यन्तै चिन्ताजनक अवस्था हो ।
२. परियोजनाको कुल लागतको ३० प्रतिशत श्रम खर्च हुने अर्थशास्त्रीय मान्यताका आधारमा हेर्दा पनि पूँजीगत खर्च पर्याप्त नभएर हरेक वर्ष हजारों नेपालीले रोजगारीको अवसर गुमाइरहेका छन्।
३. नेपालको वर्तमान अवस्थामा थप १ प्रतिशत आर्थिक वृद्धिदर हासिल गर्ने रु.१ खर्ब ६० अर्बभन्दा बढी पूँजीगत खर्च गर्नुपर्छ। यसले कमजोर उत्पादकत्व र पूँजीको दक्ष प्रयोग हुन नसकेको देखाउने
४. अहिलेको समग्र परियोजना छनौट र कार्यान्वयनको पद्धतिमा ठूलो समस्या छ ।

समस्याको मूल कारण विश्लेषण

१. विकास प्रक्रियामा देखिएको केन्द्रीकृत सोच र मानसिकता नै पूँजीगत खर्च गर्न नसक्ने र गरेको पनि गुणस्तरीय नहुने समस्याको मूल कारक हो ।

2. विकास प्रशासन कर्मचारीले मात्र गर्ने हो भन्ने १९६० को दशकको शास्त्रीय मान्यतामा रूपान्तरण गरिएन । कर्मचारीतन्त्रको क्षमता र नैतिकताको रूपान्तरण नगरी संघीय शासनको भार बोकाइयो । विकासका नीतिगत र संस्थागत अवरोधहरु हटाउने क्षमता र नैतिकता राजनीतिमा भएन । योजना र बजेट विनियोजन गरेपछि स्वत विकास हुँच भन्ने मनोविज्ञान राजनीतिक नेतृत्वमा देखियो ।
3. संघीय संरचनाको पहिलो ५ वर्ष पूरा हुनै लागदा समेत आयोजनाहरु हस्तान्तरण भएका छैनन् । जबकि २०७६ मा नै मापदण्ड बनाइएको थियो ।
4. संघ प्रदेश र स्थानिय तह समन्वय र अन्तरसम्बन्ध ऐन २०७७ को दफा ४ १ ले साझा अधिकारमध्ये एकभन्दा बढी प्रदेश र तह समेट्ने आयोजनाहरु मात्र संघमा राख्ने भनेको छ तर टोलमा बाटो बनाउने खुट्टे योजना समेत संघ र प्रदेशबाट सञ्चालित भइरहेका छन् ।
५. प्रदेश र स्थानीय तहहरूलाई हस्तान्तरण गरिनुपर्ने शिक्षा, स्वास्थ्य, बन, कृषि, भूमि, सिंचाइ लगायतका कार्यक्षेत्रहरु र संगठनहरु पनि हस्तान्तरण भएकै छैनन् ।

पूँजीगत खर्च कम हुनुका अन्य कारणहरु

१. आयोजनाको पहिचान र छनौटमा समस्या : आयोजनाहरुको मापदण्ड, आर्थिक, सामाजिक, रणनीतिक लगायतका लाभ विश्लेषण नगरी Quick planning and budgeting गर्ने प्रवृत्ति सहित राजनीतिक तथा दलीय आधारमा खल्तीबाट Black Box model अनुरूप आयोजनाहरु छनौट गर्नु ।
२. आयोजनाको पूर्वतयारीमा समस्या : जग्गा प्राप्ति, साइट क्लियर नगरी, वातावरणीय अध्ययन प्रतिवेदन स्वीकार नहुदै, लगानीको मोडालिटी तयार नहुदै, निर्माण सामग्रीको उपलब्धता बारे यकिन नगरी कार्यान्वयनमा हतारिनु ।
३. परियोजना व्यवस्थापनमा समस्या : दक्ष र नैतिकतायुक्त, नेतृत्वलिने परियोजना व्यवस्थापक नियुक्त नहुनु, कागजी बजेट सुनिश्चितताको आधारमा, बैदेशिक स्रोतहरु यकिन नगरी वा नेपाल सरकारले गर्नुपर्ने शर्त पुरा नहुदै, पुर्व तयारी नहुदै स्वार्थअनुकूल Specification, योग्यता निर्धारणका शर्त, हचुवाको भरमा ठेक्काको म्याद निर्धारण, विश्लेषण बिना प्याकेज र स्लाइस आदि गरी ठेक्का लगाउने प्रवृत्ति, QAP बारे अस्पष्ट हुनु, प्रयोगशालाको व्यवस्था नहुनु, समयमा भुक्तानी, सुपरभिजन, रेकर्ड, प्रतितितर वा निर्णय आदि नगर्नु ।
४. निर्माण सामग्रीको उपलब्धता : निर्माणजन्य उधोगको अभावले निर्माण सामग्री र गुणस्तरीय निर्माण सामग्रीको समयमा प्राप्त हुन् नसक्नु ।
५. निर्माण व्यवसायीको क्षमता र आधुनिक प्रविधियुक्त निर्माण उपकरणको समस्या : न्यून निर्माण क्षमता, धेरै ठेक्का अगोटने प्रवृत्ति, निर्माण क्षेत्रलाई उधोगको रूपमा विकास नगरी पारिवारिक व्यवसायको रूपमा विकास गर्ने प्रवृत्ति रहनु, प्राविधिक जनशक्तिको कमि, कठिन काममा भारतीय कामदारमा भेर पर्नु, नयाँ र आधुनिक निर्माण उपकरण जस्तै ट्रेन्च कटर, Pile Boring Machine, अस्टरबर्ग सेल, precast technology, Concrete Paver, infra-doctor आदि प्रयोगमा नल्याउनु, ठुला नि.व्य.हरूले ठेक्का आफू लिने तर पेटी वा सब contractorलाई बिचमै बेच्ने प्रवृत्ति आदि ।
६. परियोजनालाई स्रोत दुरुपयोगको माध्यम मान्नु : परियोजनालाई राजनीतिक, प्रशासन, निजि क्षेत्र सबै बाट आर्थिक लाभ लिने स्रोत का रूपमा दुरुपयोग गर्नु जस्तै चमेलिया, मेलम्ची का गाडीहरु मन्त्री र उच्च सरकारी पदाधिकारीले प्रयोग गर्नु ।
७. निकायगत समन्वयको समस्या र असहयोग : सार्वजनिक खरिद कार्यालयले समय सापेक्ष खरिद सम्बन्ध, खरिद विधि सम्बन्धि कागजात, मापदण्ड, प्राविधिक निर्देशिका तयार नगर्नु, अनुगमनको नाममा नियामक

निकायहरूले खरिदकै चरणमा, निर्माणकै चरणमा महिनौ सम्म निर्णय नदिने प्रवृति, समयमा बजेट फुकुवा, निकासा, सोघभर्ना नदिने वा आर्थिक बर्षको अन्तमा बजेट दिने, रुख कटानको वा राष्ट्रिय बन प्रयोगको स्वीकृतीमा बर्षै लाग्ने प्रवृति, खरिद प्रशासनमा अदालतको प्रवेश तथा मध्यस्तताको निर्णयमा सबै तहको अदालत जाने प्रवृति र समयमा निर्णय नहुने समस्या ।

८. नीति नियम, प्राविधिक समस्या र प्रक्रियागत समस्या: डिजाइन तथा पूर्वानुमान गरिएको भन्दा फरक अवस्था कार्यस्थलमा देखिनु, कार्यान्वयन चरणमा नयाँ थप क्रियाकलाप वा डिजाइन परिवर्तन हुनु, कार्यस्थलमा उत्तम प्राविधिक समाधान भन्दा राजनीतिक परिवेश हावी भइ प्रियताको मार्गमा राजनीतिक नेतृत्व उभिनु, लागत अनुमान, डिजाइन सदर, म्याद थप. भेरियेशन स्वीकृत गर्ने प्रक्रिया र निर्णय गर्ने अधिकार माथिल्लो निकायमा केन्द्रीकरण हुनु, बाह्य सोतमा निर्माण हुने परियोजनामा ऋण समझौताका शर्तका कारण संलग्न अन्तराष्ट्रिय निव्य. हरुलाई कारवाही गर्ने प्रक्रिया झन्झटिलो हुनु, निर्माण खरिदसंग सम्बन्धित व्यवस्थाहरू ऐन, नियमावलीको असल मनसाय सहित राखेका प्रावधानहरू हचुवाको भरमा छिटो छिटो परिवर्तन वा संसोधन हुनु, नुन देखि सुन सम्म, सियो देखि बोइंग सम्मको खरिद प्रक्रिया एकै किसिमको हुनु, राष्ट्रिय गैरव र रुपान्तरणकारी भनिएका आयोजनाहरूले कुनै बिशेष सहुलियत प्राप्त नगर्नु ।
९. सामाजिक मूल्य, मान्यता र संस्कृतिजन्य समस्या: परियोजनामा नागरिक सहभागिता न्यून हुनु वा नहुनु, पुर्वाधारहरू सामाजिक मूल्य मान्यता स्वीकार गर्ने बिषयबस्तुहरू सम्बोधन नहुदा जनताले बिश्वास र अपनत्व ग्रहण नगर्नु, विविध किसिमका चाडबाडका लागि बिदा र कार्यस्थलमा छुट्टी गर्ने परम्परा कायम रहनु ।
१०. भौगोलिक, भौगोर्भिक र जलबायु परिवर्तन सहितको मौसमी समस्या :हिमाली पहाडी, भिरालो सतहमा काम गर्दा ढिलो हुने, मौसमी समस्याका कारण निर्माण सामग्रीको उपलब्धता, दुवानी र काम गर्ने समय कम पाउनु, जलबायु परिवर्तनका कारण काम गर्ने सिजनमा समेत अतिबृष्टि, अनावृष्टि हुनु आदि ।
११. अनुगमन, मूल्यांकन र पृष्ठपोषण तथा दिगोपना सम्बन्धित समस्या :परियोजना आफैको र नियामक निकाय समेतको अनुगमन र मूल्यांकन कर्मकाण्डी र देखावटी, औपचारिकता र तिर्थाटनमा सिमित, नाम मात्रको कार्य सम्पादन समझौता, अनुगमन र मूल्यांकनबाट दण्ड र पुरस्कार सहित व्यवस्था लागू नहुनु, भविष्यमा हुने उस्तै गल्ती गरिरहनु, निर्माण तथा मर्मतका असल अभ्यासहरूको निरन्तरता नदिनु आदि
१२. परियोजनामा संलग्न कर्मचारीको व्यावसायिकता, पेशागत आंचारसहिता, नैतिकता, सदचारिता र निष्ठाको अभावले गैरनैतिक स्वार्थ तथा आर्थिक अपचलनमा केन्द्रित रहनु, आफ्नो जिम्मेवारी र उत्तरदायित्वबाट पनिधने समस्या आदि ।
१३. प्राकृतिक बिपत तथा Force majeure जस्तै भुकम्प, नाकाबन्दी, Covid, ठुलो पहिरो, लागायतका मानवीय क्षमता भन्दा बाहिरका समस्याहरू ।

उपायहरू

१. माथि उल्लेख भएका समस्याहरू समाधान गर्न नीतिगत, कानूनी, र संरचनागत बिषयबस्तुमा सुधारात्मक उपायहरू लागू गर्ने ।
२. परियोजना छनोट गर्दा पूर्व संभाव्यता अध्ययन डिपिआर निर्माण तथा साइट क्लियर गरेर मात्र बजेट बिनियोजन गर्नुपर्छ ।
३. हरेक तहका सरकारहरूले अनिवार्य रूपमा परियोजना बैंक निर्माण गरेर मात्र सो बाट योजना निर्माण गर्ने बाध्यकारी व्यवस्था गर्नुपर्छ ।

४. आयोजना व्यवस्थापन कानून तर्जुमा गरी कार्यान्वयनमा ल्याउन धैरै ढिलो भइसकेको छ । यस कानूनमा आयोजना कार्यान्वयनमा प्रत्यक्ष संलग्न पदाधिकारी एवं ठेकेदार र परामर्शदातालाई तोकिएको जिम्मेवारीप्रति उत्तरदायी बनाउने, केन्द्रले कार्यान्वयनको चरणमा रहेका साना तथा मझौला आयोजनाहरू स्थानीय तह र प्रदेशमा हस्तान्तरण गर्ने एवं खर्चको गुणस्तर र समयलाई केन्द्रविन्दुमा राखेर आयोजना कार्यान्वयन गर्न सकियो भने आगामी दिनमा पूँजीगत खर्च बढ्ने छ ।
५. प्रक्रिया र पद्धतिका मसिना कुरा केलाएर अप्लायारा नसुलझाएसम्म विकासको अवरोध कायम हुने भएकोले निर्देशनको साटो काम किन हुन सकेन भनेर अनुगमन र मूल्यांकन प्रभावकारी बनाउनुपर्छ ।
६. सार्वजनिक खरीद ऐनले उत्पन्न गरेको अप्टेरो के हो भन्ने पहिचान गरेर समस्यालाई सम्बोधन गर्नुपर्छ ।
७. ठेक्का प्रणालीमा पनि पुनरावलोकनको आवश्यकता छ । ठेकेदारले समयमा काम अगाडि नबढाए, बीचैमा छोडे वा कुनै किसिमले ठेक्का तोडनुपरेमा उसले गरेको कामको मूल्यांकन गरी क्षतिपूर्ति भराई बाँकी भुक्तानी दिने प्रावधान लागू गर्नुपर्छ । बाँकी कामको हकमा सोही बाँकी ठेक्का रकममा नेपाल राष्ट्र ब्याइकले प्रकाशन गर्ने वार्षिक राष्ट्रिय मूल्यवृद्धि सूचकांक अनुसार वृद्धि गरी दोस्रो कम ठेक्का कबोल गर्ने ठेकेदार वा त्यसले नचाहेमा तेस्रोलाई दिने व्यवस्था गर्ने र मूल्यवृद्धिबाट बढ्ने रकम ठेक्का तोडिने ठेकेदारसँग क्षतिपूर्तिको रूपमा असुल उपर गर्ने व्यवस्था गर्नु उपयुक्त हुन्छ ।
८. पहिलो चौमासिक अवधिमा कुनै आयोजनाको कार्यान्वयन प्रक्रिया अगाडि नबढेमा तत्काल स्वतः बजेट तान्ने गरी अन्यत्र दिन सकिने व्यवस्था विनियोजन ऐनमै गर्ने, पूर्व योग्यता निर्धारणको माध्यमबाट ठेक्का लगाउने प्रणालीले मूल्यमा प्रतिस्पर्धा नहुने र मिलेमतोमा आयोजना बाँडफाँड हुने जस्ता विकृतिहरू पनि देखिएका छन् । यस प्रक्रियामा संशोधन गरी आयोजना कार्यान्वयनमा बढीभन्दा बढी ठेकेदारले प्रतिस्पर्धा गर्न पाउने किसिमको बनाउनुपर्छ ।
९. सवारी साधन, कार्यालयका सामान, जग्गा, सफ्टवेयर जस्ता स्थिर सम्पत्ति र सामग्रीहरूको खरीदबाट पूँजीगत खर्च वृद्धि हुनुलाई प्रगति मान्ने मान्यताबाट बाहिर निस्किएर आयोजना प्रमुख, विभागीय प्रमुख र सम्बन्धित लेखा उत्तरदायी अधिकारीलाई आफ्नो दायित्वप्रति कानूनी रूपमै जवाफदेही बनाउन सकिएन भने बजेट कार्यान्वयनका समस्या ज्यूँका त्यूँ रहनेछन् ।
१०. राष्ट्रिय सतर्कता केन्द्रबाट आयोजनाको निर्माण गुणस्तरको प्राविधिक परीक्षण गर्ने जिम्मेवारी कुशलतापूर्वकवहन गर्न सकेमा गुणस्तरीय निर्माणको आशा राख्न सकिन्छ ।
११. प्रधानमन्त्रीको अध्यक्षतामा रहेको राष्ट्रिय विकास समस्या समाधान समितिलाई अङ्ग बढी सक्रिय बनाई यसैको मातहतमा रहने गरी प्रभावकारी अनुगमन संयन्त्र निर्माण गर्ने, राष्ट्रिय योजना आयोगले यस समितिका निर्णय र निर्देशन कार्यान्वयनको नियमित अनुगमन गर्ने, अन्य विषयगत मन्त्रालय, प्रधानमन्त्री कार्यालय र अर्थ मन्त्रालयसँग समन्वय गरी संयुक्त अनुगमन प्रणालीको विकास गर्ने जस्ता कार्यलाई प्राथमिकताका साथ कार्यान्वयन गर्नुपर्छ ।
१२. सार्वजनिक खरीद ऐन संशोधन गर्दा सबै वस्तु तथा सेवा र निर्माणको खरीद प्रणाली एउटै नगराई अहिले देखिएका समस्यालाई ध्यानमा राखी फरक-फरक किसिमको प्रक्रिया र विधि अपनाउन सक्ने र ठेकेदारले एक पटकमा बढीमा पाँच वटा मात्र ठेक्काको काम गर्न पाउने गरी संशोधन गर्नु उचित हुन्छ ।
१३. निगरानी गर्ने निकायले पनि काम शुरू नगर्दे वा कार्यान्वयनको चरणमा रहेको बेलामा फाइल झिकाई छानबिन गर्नुभन्दा काम सम्पन्न भएपछि विस्तृत छानबिन गर्दा कार्यान्वयनमा बाधा पुग्दैन ।

१४. बजेट खर्च नहुनुमा मूल जिम्मेवारी राजनीतिक नेतृत्वको भए पनि कर्मचारीतन्त्रले पनि अवरोध गरिरहेको देख्छन्। “समग्र विकास प्रशासन नै यति अक्षम भइसकेको छ कि त्यसलाई आमूल सुधार नगर्दासम्म प्रतिफल आउँदैन।
१५. विकास प्रशासनका कर्मचारीलाई जवाफदेही र परिणाममुखी बनाउन सेवासुविधा तथा वृत्तिविकासलाई परिणामसँग जोड्ने प्रणाली आवश्यक रहेको।
१६. पूर्वतयारी नै नगरिएका आयोजनालाई रकम विनियोजन गर्ने पद्धति हटाउन र कर्मचारीलाई जवाफदेही बनाउने प्रणाली बनाउन आवश्यक छ।

सार्वजनिक नीति, योजना, कार्यक्रम, आयोजना र दिगो विकासका लक्ष्यको अनुगमन तथा मूल्याङ्कनलाई कसरी प्रभावकारी बनाउन सकिन्छ।

कुनै नीति, योजना, आयोजना तथा परियोजना संचालन भैरहेको अवस्थामा ति नीति, योजना, आयोजना आदिले निर्धारित उद्देश्य र लक्ष्यअनुसार ठीक तरिकाले निर्दिष्ट कामकाज गरेका छन् वा छैनन् भने कार्य सम्पन्न के कस्ता कठिनाईहरु उत्पन्न भएका छन् के कारणले गर्दा अवरोध उत्पन्न भएको हो र त्यस्ता समस्याहरु समाधानको लागि के गर्नुपर्दछ भन्ने कुरा समेत पता लागे बिना रोकावट कार्यको प्रवाह र कामकाजमा सुचारु ल्याउनका लागि गरिने निरन्तर सुपरिबेक्षण, अवलोकन र दृष्टिगोचरलाई अनुगमन भनिन्छ। मुल्यांकनले कुनै नीति, योजना, कार्यक्रम, आयोजना वा संगठनको निष्पक्ष, स्वतन्त्र, र व्यवहारिक ढंगबाट गुण, दोष, कार्य, प्रगति, दक्षता, असर, प्रतिफलको लेखाजोखा सहित सम्बन्धित जिम्मेवार अधिकारीको जवाफदेही निर्वाह क्षमताको विश्लेषण गर्दछ।

नेपालमा अनुगमन तथा मूल्याङ्कनका लागि संस्थागत व्यवस्था तथा जिम्मेवारीहरु, प्रतिवेदन तथा समीक्षा प्रक्रिया, सूचकहरु, सूचनाको स्रोत र सूचनाको प्रयोगका बारेमा प्रष्ट व्यवस्था गरिएको छ। नतिजा सूचकहरूको प्रयोग वृद्धि भई अनुगमन तथा मूल्याङ्कन प्रक्रिया नतिजामूलक हुँदै गएको छ। सूचना प्रविधिको प्रयोगले प्रतिवेदन तथा समीक्षा प्रणालीमा सुधार भएको छ। अनुगमन तथा मूल्याङ्कनको क्षमता क्रमशः वृद्धि हुँदै गएको छ। यी सकारात्मक पक्षहरु हुँदाहुँदै पनि एकीकृत योजनाका अभावमा अनुगमन तथा मूल्याङ्कनसम्बन्धी कार्यमा दोहोरोपना रहनु, गुणस्तरीय मूल्याङ्कन अपेक्षित रूपमा विस्तार हुन नसक्नु, संस्थागत संयन्त्र कमजोर रहनु र अनुगमन तथा मूल्याङ्कनबाट प्राप्त सूचना एवम् सुझावहरूको कार्यान्वयन नहुनु जस्ता कमजोरीहरु देखिएका छन्। अनुगमन तथा मूल्याङ्कन ऐन कार्यान्वयनमा ल्याउने, मूल्याङ्कनलाई ध्यान दिई संस्थागत र व्यक्तिगत क्षमता विकास गर्ने, विद्यमान संस्थागत संयन्त्रलाई प्रभावकारी बनाउने र सबै विकास कार्यहरूको अनुगमन तथा मूल्याङ्कन हुने व्यवस्था हुनुपर्दछ।

मुलुकको सार्वजनिक नीति, योजना, कार्यक्रम, आयोजना र दिगो विकासका लक्ष्यको अनुगमन तथा मूल्याङ्कनलाई प्रभावकारी बनाउन देहायका सुझावहरु अवलम्बन गर्न सकिन्छ।

१. नीति अनुगमनलाई व्यवस्थित गरी विस्तार गर्नु जरुरी छ। नीति अनुगमन तथा मूल्याङ्कनको प्रभावकारिताका लागि नीति कार्यान्वयन योजना प्रमुख आधार हो। त्यसैले प्रत्येक नीतिको कार्यान्वयन योजना बनाएर मात्रै कार्यान्वयनमा लैजान अनिवार्य गर्नुपर्छ।
२. नीतिको गुणस्तरीय मूल्याङ्कन गर्नका लागि धेरै साधन स्रोत, समय, क्षमता आवश्यक पर्ने हुँदा यस्तो मूल्याङ्कन गर्दा विषय क्षेत्रगत नीतिको सम्पूर्णतामा वा त्यसका प्रमुख पक्षहरूको आंशिक रूपमा मूल्याङ्कन गर्न सकिन्छ।

3. कतिपय अवस्थामा कार्यक्रम तथा आयोजनाका माध्यमबाट विषयगत नीतिहरूको कार्यान्वयन गरिन्छ । त्यसैले नीतिसँग सम्बन्धित प्रमुख कार्यक्रम तथा आयोजनाको मूल्याङ्कन गरी नीतिको समग्र प्रभावकारिता हेन सकिन्छ । तर्जुमाकै क्रममा नीति, कार्यक्रम तथा आयोजनाबीचमा अन्तरसम्बन्ध स्थापना भएमा नै यस्तो मूल्याङ्कनको प्रभावकारिता बढ्छ ।
4. प्रमाणमा आधारित नीति निर्माण प्रक्रिया संस्थागत भए मात्रै गुणस्तरीय नीति मूल्याङ्कनको माग बढ्नसक्ने देखिन्छ । त्यसैले यसका लागि अनुकूल वातावरण सिर्जना गरिनुपर्दछ । संसदीय तथा संबैधानिक निकायको निगरानी र नागरिक निगरानीमार्फत् यस्तो वातावरण सिर्जना हुन सक्दछ ।
5. सन् २०३० सम्म दिगो विकास लक्ष्य हासिल गर्न लिइएका नीति र कार्यान्वयनमा रहेका कार्यक्रम तथा आयोजनाको अनुगमन तथा मूल्याङ्कनलाई प्रभावकारी गराउनु जरुरी छ । कसैलाई पछाडि नछोड्ने स्प्रिट अनुसार खण्डीकृत सूचना संकलन र विश्लेषण गर्नुपर्नेछ । यसका लागि विद्यमान सर्वेक्षणहरूलाई दिगो विकास लक्ष्यमैत्री बनाइनु पर्छ । यी लक्ष्यको अनुगमनका अतिरिक्त मूल्याङ्कनमा विशेष ध्यान केन्द्रित गरिएमा नीति तथा कार्यक्रमहरू तथा निर्णय प्रक्रियालाई तथ्यपरक बनाउन मद्दत पुग्दछ ।
6. नीति, कार्यक्रम तथा आयोजना तर्जुमा गर्दा अपनाइएको प्रक्रियाको दस्तावेजीकरण गर्ने र परिवर्तनको सिद्धान्त बनाउने परिपाटीलाई संस्थागत गर्नु जरुरी छ । यसले मूल्याङ्कनका समयमा कुनै आयोजनाले अपेक्षित नतिजा हासिल गर्न नसक्नुमा कार्यान्वयनको असफलता हो वा सिद्धान्तकै असफलता हो एकीन गर्न सजिलो गराउँछ । तर्जुमाका क्रममा परिवर्तनको सिद्धान्त तयार नभएको भए मूल्याङ्कनकर्ताले तयार गरी त्यसकै आधारमा मूल्याङ्कन गर्नुपर्छ ।
7. आयोजनाको अनुगमनलाई संकुचित रूपमा माथिल्लो निकायले गर्ने सुपरीवेक्षण वा स्थलगत निरीक्षणका रूपमा मात्र नबुझ्न अभिमुखीकरण गर्नु जरुरी छ । अनुगमनलाई आयोजना व्यवस्थापनले आफैले गर्नुपर्ने एक कार्यका रूपमा लिई लक्ष्य अनुसार काम भए नभएको परीक्षण गर्ने, कुनै काम कार्ययोजना अनुरूप हुन नसकेको भए त्यसको कारण पहिचान र समयमै समाधान गर्नेगरी व्यवस्थापकीय कार्यसंस्कृतिको विकास गर्नुपर्छ । निर्माण व्यवसायीसँग भएको समझौता पालना भए नभएको अनुगमन गर्ने र कार्यतालिका बमोजिम काम नभएको भए कानून तथा समझौता बमोजिम कारबाही गर्नुपर्छ ।
8. आयोजनाको अनुगमन तथा मूल्याङ्कनको एक प्रमुख आधारका रूपमा रहने सोच तालिका अनिवार्य गरिएको करिव दुई दशक पुगेको छ । आयोजनाको लगफेम तयार गरिए पनि अनुगमन तथा मूल्याङ्कनमा यसको प्रयोग बिरतै हुने गरेको पाइन्छ । त्यसैले लगफेममा रहेका सूचकका आधारमा लगानी, प्रक्रिया र प्रतिफलको अनुगमन गर्नुपर्छ । अनुमान तथा जोखिमको पूर्वानुमान र व्यवस्थापनमा पनि लगफेम उपयोगी हुन्छ । यसमा रहेका सूचक प्रयोग गरी प्रतिफल, उद्देश्य, लक्ष्य, असर तथा प्रभावको मूल्याङ्कन गर्नुपर्छ ।
9. राष्ट्रिय सतर्कता केन्द्रबाट हुने प्राविधिक परीक्षणको क्षेत्र तथा संख्या निकै कम रहेकाले विस्तार गरिनु जरुरी छ । यस्तो परीक्षणलाई पूर्वाधार निर्माणसम्बन्धी आयोजनाहरूको गुणस्तर कायम गर्न केन्द्रित गरि नुपर्दछ । क्षमता विकास र परीक्षण पद्धतिमा सुधार गरी यस्ता प्राविधिक परीक्षणको गुणस्तर वृद्धि गरिनु पर्छ ।
10. सार्वजनिक खरिद अनुगमन कार्यालयबाट हुने विद्युतीय खरिदसम्बन्धी कार्यको अनुगमनमा बोलपत्रको सूचना प्रकाशन, प्राप्त बोलपत्रको मूल्याङ्कन, ठेक्का समझौता, म्याद थप, भेरियसन अर्डर लगायत ठेक्कापट्टा, कार्यसम्पादन स्थिति, अधूरा कार्य लगायतका विवरण सहितको सूची समय समयमा प्रकाशन गर्नुपर्छ । यसले आयोजनालाई निर्माण व्यवसायीको क्षमता मूल्याङ्कन गरी ठेक्कासम्बन्धी निर्णय गर्न तथ्यहरू उपलब्ध हुन्छ ।

११. नीति, कार्यक्रम तथा आयोजना सबैको मूल्याङ्कनको आवश्यकता पहिचान गर्ने, सहजीकरण गर्ने, मूल्याङ्कन गर्ने र प्राप्त सुझावको प्रयोग गर्ने कार्यमा संलग्न सबैको क्षमता विकास गर्नु जरुरी छ | आयोजनाको प्रभाव मूल्याङ्कन गर्ने क्षमता विकास गरी यसलाई संस्थागत गर्नुपर्छ | यसको संयोजन राष्ट्रिय योजना आयोगले सम्बन्धित विजहरूको समाज एवम् विकासका साझेदारसँग सहकार्य समेत गरी गर्नसक्नेछ |
१२. अनुगमन तथा मूल्याङ्कन संयन्त्रहरूको प्रभावकारिता वृद्धि गर्नु जरुरी छ | राष्ट्रिय विकास समस्या समाधान समितिमा पेस हुने समस्या आवश्यकता अनुसार अनुसन्धानमा आधारित विश्लेषणसहित अन्तरनिहित कारण पहिचान गरी समाधानका विकल्पसहित पेस हुने र त्यसउपर विस्तृत छलफल गरी निर्णय लिने व्यवस्था गर्नुपर्दछ | यसो गरेमा एउटै समस्यामा पटक पटक निर्णय लिनुपर्ने वा निर्णय कार्यान्वयन नहुने समस्या समाधान हुनसक्छ | केन्द्रीय अनुगमन तथा मूल्याङ्कन समितिको बैठकलाई नियमित गराउने र आवश्यकता अनुसार विजहरूबाट अध्ययन गराई प्रमाणमा आधारित छलफल तथा निर्णय लिने व्यवस्था मिलाउन सकिन्छ |
१३. तत्काल समस्या समाधान केन्द्रको प्रभावकारिता बढाउन यस केन्द्रसँगको सञ्जालमा रहने आयोजनाको विस्तार गर्न जरुरी छ | केन्द्रको उद्देश्य अनुरूप सम्बद्ध उच्च नेतृत्वबाटै भर्चुअल माध्यमबाट आयोजनाको अनुगमन गर्ने र समस्या देखिए तत्काल समाधान गरी यसको उपादेयता वृद्धि गर्नुपर्छ |
१४. अनुगमन तथा मूल्याङ्कन ऐन छिटो पारित गरी अनुगमन मूल्याङ्कनलाई अनिवार्य गराएमा यसको प्रभावकारिता विस्तार हुन्छ | प्रधानमन्त्री तथा मन्त्रिपरिषद्को कार्यालय, राष्ट्रिय योजना आयोग, अर्थ मन्त्रालय र राष्ट्रिय सतर्कता केन्द्र समेतले एकीकृत अनुगमन तथा मूल्याङ्कन योजना बनाई संयुक्त शासन र प्रशासन ल दृढ अनुगमन गरेमा दोहोरोपना हट्ने, साधनको सदुपयोग हुने र अनुगमन तथा मूल्याङ्कनको समग्र प्रभावकारिता बढाने देखिन्छ |
१५. प्रदेश र स्थानीय तहबाट सञ्चालित आयोजनाहरूको नियमित अनुगमन तथा मूल्याङ्कन गर्ने र हासिल भएका उपलब्धिहरू बारे केन्द्रमा प्रतिवेदन हुने व्यवस्थालाई संस्थागत गर्न बाँकी नै छ | प्रदेश तहका लागि राष्ट्रिय योजना आयोगबाट प्रेषित नमूना अनुगमन तथा मूल्याङ्कन दिग्दर्शनको कार्यान्वयन र प्रधानमन्त्री तथा मन्त्रिपरिषद्को कार्यालयबाट पठाइएका सूचकका आधारमा प्रतिवेदन गर्ने प्रक्रियाको पालना गर्नु जरुरी छ | जिल्ला समन्वय समिति र स्थानीय तहबाट हुने अनुगमन तथा मूल्याङ्कनका लागि समेत कार्यविधि तयार गर्ने, त्यसको आधारमा अनुगमन गर्नका लागि क्षमता विकास गर्ने र नियमित रूपमा नियमित सम्प्रेषण तथा प्रतिवेदन हुने व्यवस्था मिलाउनु पर्दछ |

अनुगमन तथा मूल्याङ्कनबाट सिर्जित सूचना र प्रमाणका आधारमा गरिने निर्णय प्रक्रियाले विकास नीति तथा कार्यक्रमको प्रभावकारिता बढाउँछ | नीति तथा कार्यक्रमबाट अपेक्षित प्रभाव हासिल हुन सकेमा मुलुकको समृद्धि र नागरिकको जीवनस्तर सुधारका लागि योगदान पुग्ने अपेक्षा गर्न सकिन्छ |

१. नेपालमा विकास नीति, योजना, कार्यक्रम तथा आयोजनाको अनुगमन तथा मूल्याङ्कन सम्बन्धित व्यवस्था र संलग्न निकायहरू बारे उल्लेख गर्नुहोस् ।

नीति, योजना तथा आयोजनाको कार्यान्वयनको क्रममा गरिने लगानी अपनाइएका प्रक्रिया, हासिल भएको प्रतिफल बारे जानकारी लिने र समयमै समस्या पहिचान एवम् समाधानका लागि निरन्तर रूपमा जाँचबुझ गर्ने व्यवस्थापकीय प्रक्रिया अनुगमन हो | कार्यान्वयन योजनाका आधारमा सहज रूपमा कार्यान्वयन गरी समयमै र अनुमानित लागतभित्रै, लक्षित परिमाण तथा गुणस्तरमा आयोजनालाई सम्पन्न गराउनु अनुगमनको प्रमुख उद्देश्य रहेको हुन्छ | आयोजनाको तर्जुमाको क्रममा, कार्यान्वयनको क्रममा वा सम्पन्न भएपछि पटके रूपमा गरिने समीक्षा तथा विश्लेषण कार्य मूल्याङ्कन

हो । मूल्याङ्कनमा आयोजनाबाट हासिल भएका प्रतिफल र प्रभाव बारे लेखाजोखा तथा विश्लेषण गरिन्छ । मूल्याङ्कन बिगतबाट सिक्न वा कसैलाई जवाफदेही गराउने उद्देश्यले गरिन्छ । मूल्याङ्कनमा सान्दर्भिकता, सामान्जस्यता, प्रभावकारिता, कार्यदक्षता, दिगोपना र प्रभाव जस्ता ६ वटा आधारहरू अन्तर्गत रही विश्लेषण तथा निष्कर्ष निकालिन्छ ।

नेपालको अनुगमन तथा मूल्याङ्कन पद्धतिका सैद्धान्तिक तथा कानूनी आधारहरू

नेपालमा प्रचलित अनुगमन तथा मूल्याङ्कन पद्धतिको विकास गर्दा मूलतः देहायका तीनवटा सैद्धान्तिक आधारहरू लिइएको पाइन्छः नतिजामूलक व्यवस्थापन अपवादका आधारमा गरिने व्यवस्थापन र बहु तहगत एकीकृत अनुगमन तथा मूल्याङ्कन प्रणाली । आवधिक योजना दस्तावेजमा रहेका नतिजा खाका र बजेट बक्तव्यमा निर्दिष्ट नतिजा सूचकका आधारमा विषय क्षेत्रगत अनुगमन गरिन्छ । आयोजना दस्तावेजमा रहने लगफ्रेमलाई आधार मानी वार्षिक कार्यक्रम फाराममा निर्दिष्ट सूचकका आधारमा आयोजनाको अनुगमन तथा मूल्याङ्कन गरिन्छ । अतः नेपालको अनुगमन तथा मूल्याङ्कन व्यवस्थाले नतिजामूलक व्यवस्थापनका विशेषतालाई अँगालेको छ । यसैगरी प्रमुख आयोजनाको संक्षिप्त प्रगति, प्रगति हुन नसकेका विषय, समस्या तथा अन्तर्निहित कारणहरू मात्र उच्च तहमा प्रतिवेदन गर्ने र सोही उपर छलफल तथा समाधान खोजिने गरी अपवादका आधारमा व्यवस्थापनको अवधारणालाई आत्मसात गरिएको छ । साथै सबै तह र निकायगत अनुगमन तथा मूल्याङ्कनका आधारमा राष्ट्रिय तहमा एकीकृत अनुगमन तथा मूल्याङ्कन हुनेगरी यो पद्धतिको विकास तथा कार्यान्वयन गरिएको छ ।

प्रचलित अनुगमन तथा मूल्याङ्कन पद्धतिका केही निर्देशक कानूनी आधारहरू पनि छन् । नेपालको संविधानमा निर्दिष्ट राज्यका निर्देशक सिद्धान्त, नीति र दायित्वको कार्यान्वयनका सम्बन्धमा गरेका काम र प्राप्त उपलब्धि सहितको वार्षिक प्रतिवेदन नेपाल सरकारले राष्ट्रपतिसमक्ष पेस गर्ने र राष्ट्रपतिले त्यस्तो प्रतिवेदन प्रधानमन्त्रीमार्फत सङ्घीय संसदमा पेस गर्ने व्यवस्था धारा ५३ मा छ । धारा ५४ मा राज्यका निर्देशक सिद्धान्त, नीति र दायित्वको प्रगतिशील कार्यान्वयन भए नभएको अनुगमन तथा मूल्याङ्कन गर्न सङ्घीय संसदमा कानूनबमोजिम एक समितिको व्यवस्था रहेको छ । धारा २२० अनुसार जिल्ला सभा र जिल्ला समन्वय समितिलाई विकास निर्माणसम्बन्धी कार्यमा सन्तुलन कायम गर्ने र सो को अनुगमन गर्ने जिम्मेवारी रहेको छ । धारा २९३ मा प्रतिनिधि सभाका समितिले राष्ट्रिय मानव अधिकार आयोग बाहेकका अन्य संबैधानिक निकायका प्रतिवेदन लगायतका काम कारवाहीको अनुगमन तथा मूल्याङ्कन गरी आवश्यक निर्देशन वा राय सल्लाह दिनसक्ने व्यवस्था छ ।

नेपालमा अनुगमन तथा मूल्याङ्कनसम्बन्धी पृथक ऐन हालसम्म जारी भएको छैन । अनुगमन तथा मूल्याङ्कनको उद्देश्य, नीतिगत तथा प्रक्रियागत व्यवस्था, आधारहरू, संस्थागत तथा प्रतिवेदन व्यवस्था, सूचनाको प्रयोग लगायतका विषयहरू समावेश गरी तयार गरिएको अनुगमन तथा मूल्याङ्कनसम्बन्धी विधेयक संसदमा विचाराधीन छ । प्रचलित सुशासन ऐन बमोजिम मन्त्रालय तथा विभाग र अन्य केन्द्रीयस्तरका सरकारी निकायले प्रत्येक आर्थिक वर्ष वार्षिक प्रतिवेदन तयार गर्नुपर्छ । यस्तो प्रतिवेदनमा सो वर्षभरि सञ्चालन गरेको कार्यक्रम, सम्पादन गरेको काम र त्यस्तो कामको अवस्थिति तथा प्रगति र लागतलगायतका अन्य आवश्यक कुराहरूसमेत समावेश गर्नुपर्ने व्यवस्था छ । यस्तो प्रतिवेदन मन्त्रालय वा केन्द्रीय स्तरका निकायले भए प्रधानमन्त्री तथा मन्त्रिपरिषद्को कार्यालयमा, विभागले भए सम्बन्धित मन्त्रालयमा र अन्य कार्यालय तथा निकायले भए तालुक कार्यालयमा पेस गर्नुपर्छ । यस्ता प्रतिवेदनका आधारमा प्रधानमन्त्रीले प्रत्येक वर्ष शासकीय सुधार र सुशासन सम्बन्धमा भए गरेका उल्लेखनीय प्रगति सम्बन्धमा नेपालको संविधानको धारा ५३ बमोजिमको प्रतिवेदनमा समावेश गरी सङ्घीय संसदसमक्ष पेस गर्नुपर्ने व्यवस्था छ ।

उक्त ऐन बमोजिम सरकारी सेवा र सुविधालाई प्रभावकारी बनाई प्रशासनतन्त्रलाई सेवाप्रदायकको रूपमा रूपान्तरण गर्ने तथा प्रचलित कानून बमोजिम अधिकारप्राप्त अधिकारीले सम्पादन गर्नुपर्ने काम कारबाहीलाई प्रभावकारी तथा गुणस्तरीय ढङ्गबाट सम्पादन भए वा नभएको कुराको अनुगमन तथा मूल्याङ्कन गर्ने मुख्य सचिवको संयोजकत्वमा एक केन्द्रीय अनुगमन तथा मूल्याङ्कन समिति रहेको छ । यस्तै प्रयोजनका लागि प्रदेश तथा जिल्ला स्तरमा समेत अनुगमन तथा मूल्याङ्कन समिति गठन गर्न सकिने व्यवस्था सो ऐनले गरेको छ । केन्द्रीय अनुगमन तथा मूल्याङ्कन समितिको सचिवालय प्रधानमन्त्री तथा मन्त्रिपरिषद्को कार्यालयमा रहेको छ । यस समितिलाई सहयोग गर्ने प्रत्येक मन्त्रालयमा तोकिए बमोजिमको मूल्याङ्कन तथा अनुगमन संयन्त्र रहने व्यवस्था उक्त ऐनले गरेको छ । अनुगमन तथा मूल्याङ्कनसम्बन्धी पृथक ऐन जारी हुने प्रक्रियामा रहे पनि राष्ट्रिय योजना आयोगबाट जारी भएको राष्ट्रिय अनुगमन तथा मूल्याङ्कन दिग्दर्शनबाट नै हाल यससम्बन्धी काम निर्देशित तथा व्यवस्थित भैरहेको छ । उक्त दिग्दर्शनमा नीतिगत तथा प्रक्रियागत व्यवस्था, आधारहरू, संस्थागत व्यवस्था, प्रतिवेदन प्रणाली तथा समीक्षा व्यवस्था, समष्टिगत तथा विषयगत सूचकहरू, सूचनाको संकलन, विश्लेषण तथा प्रयोग लगायतका विषयहरू समावेश गरिएका छन् । आयोगले प्रदेश तहका लागि समेत नमूना अनुगमन तथा मूल्याङ्कन दिग्दर्शन बनाई पठाएको छ । यिनै दिग्दर्शनमार्फत नै तहगत अनुगमन तथा मूल्याङ्कन प्रणालीबीच अन्तरसम्बन्ध स्थापना गर्ने प्रयास भएको देखिन्छ ।

विकास कार्यक्रम तथा आयोजनाको अनुगमन तथा मूल्याङ्कन र संलग्न निकायहरू

विद्यमान व्यवस्था तथा प्रयासहरू कार्यान्वयनका क्रममा आयोजनामा भएको लगानी, क्रियाकलाप र प्रतिफलको अवस्था परीक्षण गर्ने कार्य अनुगमनमार्फत गरिन्छ । कार्यान्वयन प्रक्रिया मा हुने अनुगमन अन्तर्गत समय व्यवस्थापन, लागत व्यवस्थापन, गुणस्तर व्यवस्थापन, खरिद तथा ठेक्का व्यवस्थापन, निर्माण सामग्रीको व्यवस्थापन, जनशक्तिलगायत साधन व्यवस्थापन र हासिल हुने उपलब्धिको अनुगमन गरिन्छ । यसका अतिरिक्त समस्या पहिचान तथा समाधानको व्यवस्था र जोखिमको पहिचान र व्यवस्थापन समेत अनुगमन गर्दा हेनुपर्छ । गुणस्तरको अनुगमन अन्तर्गत मूलतः लगानीको कार्यदक्षता, निर्माण सामग्रीको गुणस्तर, सिपयुक्त श्रमिकहरूको परिचालनलगायत समग्र कार्यान्वयन प्रक्रिया र हासिल भएको प्रतिफलको गुणस्तरको अनुगमन गरिन्छ । यिनै अवधारणालाई नेपालको विकास आयोजनाको अनुगमन तथा मूल्याङ्कन पद्धतिले आत्मसात गरेको छ ।

१. विकास आयोजना आँफैले गर्ने अनुगमन

अनुगमन आयोजना व्यवस्थापनले सम्पादन गर्नुपर्ने प्रमुख कार्यहरू भित्रै पर्दछ । अनुगमन गर्दा लगफ्रेम, गान्ट चार्ट, वार्षिक योजना, वार्षिक कार्यक्रम फाराम, गान्टचार्ट, क्रिटिकल पाथ मेथड एवम् कार्यक्रम मूल्याङ्कन तथा समीक्षा विधि, माइलस्टोन, बजेट अनुगमन तथा नियन्त्रण आदि विधिहरूको प्रयोग गर्नुपर्छ । निर्धारित कार्ययोजना अनुरूप काम भए नभएको, लक्ष्यअनुसार काम गर्ने आवश्यक बजेट, जनशक्ति, कार्यविधिहरू रहे नरहेको, समझौता बमोजिम समयमा निर्माण व्यवसायीले काम गरे नगरेको, सरोकारवालाहरूको सहभागिता तथा सहयोग प्राप्त भए नभएको जस्ता विषयको आयोजना आँफैले अनुगमन गर्नुपर्दछ । यसका अतिरिक्त आयोजनामा कुनै समस्या भए सो को पहिचान वा संभाव्य समस्या तथा जोखिमको पूर्वानुमान आयोजना व्यवस्थापनकै जिम्मेवारी हो । यसो गर्दा वास्तविक समयको सूचनाका आधारमा आयोजनाले आवश्यक निर्णय लिनसक्ने स्थिति हुन्छ । आँफै समाधान गर्न नसक्ने समस्याका हकमा सम्बन्धित मन्त्रालय वा सुपरीवेक्षक कार्यालयको निर्णयको लागि प्रतिवेदन गर्नुपर्छ । यसले समयमै पूर्व निर्धारित लागत भित्रै लक्षित परिमाण र गुणस्तरमा आयोजना सम्पन्न गराउन मद्दत पुग्दछ ।

२. सम्बन्धित मन्त्रालय र मन्त्रालयस्तर विकास समस्या समाधान समितिबाट हुने अनुगमन

मन्त्रालयअन्तर्गत सञ्चालित कुनै पनि कार्यक्रम तथा आयोजनाको अनुगमन तथा मूल्याङ्कन गर्ने जिम्मेवारी सम्बन्धित मन्त्रालयको हो । यसका लागि आयोजनाहरूबाट चौमासिक तथा वार्षिक रूपमा प्राप्त प्रगति समीक्षा गर्ने र कुनै समस्या भए पहिचान गरी समाधान गर्ने कार्य मन्त्रालयस्तरबाट हुनुपर्छ । आयोजनासँग सम्बन्धित समस्याहरू जनशक्तिको आपूर्ति, बजेट व्यवस्था, जग्गा प्राप्ति र बहुबर्षीय ठेक्कालगायत वार्षिक कार्यक्रमसम्बन्धी समस्या अन्तरमन्त्रालय प्रकृतिका हुन्छन् । यस्ता समस्या समाधानका लागि मन्त्रालयहरूमा सम्बन्धित मन्त्रीको संयोजकत्वमा मन्त्रालयस्तर विकास समस्या समाधान समिति(MDAC) को व्यवस्था छ । उक्त समितिमा राष्ट्रिय योजना आयोग, अर्थ मन्त्रालय र सड्घीय मामिला तथा सामान्य प्रशासन मन्त्रालयको प्रतिनिधित्व रहेको छ । प्रत्येक चौमासिक अवधि बिते पश्चात् वा वर्षमा कम्तीमा तीनपटक बस्ने यस समितिको बैठकले आयोजनाहरूको प्रगति समीक्षा र समस्या समाधान गर्नेगर्छ । यस समितिबाट समाधान हुन नसकेका विषयहरू राष्ट्रिय विकास समस्या समाधान समितिमा पेस गर्न सिफारिस गर्छ । मन्त्रालयमा अनुगमन तथा मूल्याङ्कनसम्बन्धी सबै कार्य गर्नका लागि अनुगमन तथा मूल्याङ्कन महाशाखा वा शाखाहरू रहेका छन् ।

3. राष्ट्रिय योजना आयोग र राष्ट्रिय विकास समस्या समाधान समितिबाट हुने अनुगमन तथा मूल्याङ्कन

राष्ट्रिय योजना आयोगका चार प्रमुख जिम्मेवारी मध्येमा अनुगमन, अनुसन्धान तथा मूल्याङ्कन कार्य पनि पर्दछ । आयोगले चौमासिक तथा वार्षिक रूपमा आयोजनाहरूको प्रगति संकलन गरी समीक्षा गर्ने गरेको छ । आयोगको सम्पूर्ण संयन्त्र नै अनुगमन तथा मूल्याङ्कनमा संलग्न रहने भए पनि अनुसन्धान तथा मूल्याङ्कन महाशाखा यसमा बढी केन्द्रित रहने गर्दछ । अनुगमन तथा मूल्याङ्कनलाई व्यवस्थित गर्नका लागि आयोगले राष्ट्रिय अनुगमन तथा मूल्याङ्कन दिग्दर्शन कार्यान्वयनमा ल्याएको छ । यस दिग्दर्शनमा अनुगमन मूल्याङ्कनको अवधारणा सहित यसको प्रक्रिया, संस्थागत संयन्त्र, दिगो विकास लक्ष्यमा आधारित सूचकहरू सहितको अनुगमन कार्ययोजना, प्रतिवेदन प्रक्रिया र मूल्याङ्कनसम्बन्धी विशेष व्यवस्था समेटिएको छ । आयोगका उपाध्यक्षको संयोजकत्वमा रहेको राष्ट्रिय विकास समस्या समाधान उपसमितिले आयोजनाहरूको प्रगतिको विस्तृत समीक्षा र सम्बन्धित निकायहरूबीच समन्वय गराउँछ । मन्त्रालयस्तरबाट सिफारिस भई आएका समस्यामध्ये यस उपसमितिमा छलफल भई समाधान हुन नसकेका केही समस्याहरू समाधानका लागि प्रस्तावित उपायसहित राष्ट्रिय विकास समस्या समाधान समितिको बैठकमा पेस गरिन्छ । सम्माननीय प्रधानमन्त्रीको अध्यक्षतामा रहेको राष्ट्रिय विकास समस्या समाधान समितिमा सबै मन्त्रीहरू, सबै प्रदेशका मुख्यमन्त्रीहरू, योजना आयोगका उपाध्यक्ष तथा सदस्यहरू सदस्य तथा योजना आयोगको सचिव सदस्य सचिव रहने व्यवस्था छ । समितिको बैठक कम्तीमा चार महिनामा एक पटक बसी प्रगति समीक्षा सहित विकास आयोजनाले झेल्नुपरेका नीतिगत तथा अन्तरमन्त्रालय प्रकृतिका समस्याहरूको समाधान गर्ने गर्छ । सबै आयोजनाको विस्तृत प्रगति समीक्षा गर्नुको सट्टा यस समितिमा अपवादका आधारमा गरिने व्यवस्थापनको अवधारणा अनुरूप अपवादका सवालहरू मात्रै छलफलमा लगी त्यसको समाधानसम्बन्धी निर्णय लिइन्छ । आयोगबाट विकास आयोजना तथा कार्यक्रमहरूको आन्तरिक वा स्वतन्त्र तेसो पक्षलाई समेत संलग्न गराई मूल्याङ्कन हुने गरेको छ । बिगत दुई दशकमा आयोगबाट ४० वटाभन्दा बढी तेसो पक्षबाट र १० वटा आन्तरिक मूल्याङ्कन भएका छन् । कार्यान्वयन भैरहेका र सम्पन्न आयोजना तथा कार्यक्रमको संख्याका तुलनामा मूल्याङ्कन भएकाको संख्या निकै न्यून रहेको छ । मूल्याङ्कनमा निरन्तरता देखिँदैन । बिगतमा कुनै वर्ष त एउटा आयोजनाको पनि मूल्याङ्कन भएको पाईँदैन । मूल्याङ्कनमा अपनाइएको विधि तथा सूचना विश्लेषण पनि कमजोर रहेकाले मूल्याङ्कनको गुणस्तरमा प्रश्न रहने गरेका छन् । क्षमता विकासको आवश्यकता महसुस गरी आयोगले मूल्याङ्कनकर्ताहरूको सञ्जाल र विकासका साझेदारहरूसँग समेत सहकार्य गरी विगत केही वर्षदेखि मूल्याङ्कनसम्बन्धी तालिम सञ्चालन गर्ने गरेको छ ।

4. प्रधानमन्त्री तथा मन्त्रिपरिषद्को कार्यालयबाट हुने अनुगमन

प्रधानमन्त्री तथा मन्त्रिपरिषद्को कार्यालयबाट विषय क्षेत्रगत नीतिहरूको समीक्षा तथा अनुगमन, वार्षिक नीति कार्यक्रमको कार्यान्वयनको अनुगमन र विषय क्षेत्रगत सूचकका आधारमा नितिजाको अनुगमन गर्ने गरिएको छ । यस कार्यालयबाट प्रमुख विकास आयोजनाको प्रगति समीक्षा तथा कार्यान्वयनलाई प्रभावकारी बनाउन सहजीकरण गर्ने गरिन्छ । सम्माननीय प्रधानमन्त्री र अन्य उच्च पदाधिकारीबाट राष्ट्रिय गौरव लगायतका आयोजनाको भर्चुअल रूपमा अनुगमन गरी समस्या पहिचान तथा समाधान गर्ने उद्देश्यले उक्त कार्यालयमा स्थापित तत्काल समस्या समाधान केन्द्र बाट काम भैरहेको छ । महत्वपूर्ण आयोजनाको मासिक प्रगति लिई समीक्षा गर्ने पद्धति संस्थागत गराईएको छ । प्रधानमन्त्री तथा मन्त्रिपरिषद्को कार्यालयबाट अन्य निकायबाट भैरहेको अनुगमनको अनुगमन पनि गर्ने गरिन्छ ।

५. अन्य निकायहरूबाट हुने अनुगमन तथा मूल्याङ्कन

अर्थ मन्त्रालयबाट हुने अनुगमन तथा समिक्षामा विकास खर्चको स्थिति, साधनको सदृपयोग र बैदेशिक सहयोग परिचालनलाई प्रमुख जोड दिइएको हुन्छ । महालेखा नियन्त्रक कार्यालयबाट हुने अनुगमनमा सार्वजनिक खर्च व्यवस्थापनका विविध पक्षहरू, आन्तरिक नियन्त्रण तथा आन्तरिक लेखापरीक्षण र वित्तीय जवाफदेहिताका पक्षहरू समेटिने गरेको छ । वित्तीय व्यवस्थापन सूचना प्रणालीका माध्यमबाट राजस्व तथा खर्चको वास्तविक समयमा आधारित तयार हुने प्रतिवेदनले निर्णय प्रक्रियालाई सुसूचित गर्ने मद्दत पुर्याएको छ । वित्तीय जवाफदेहितासम्बन्धी अनुगमनले समग्र नितिजामूलक अनुगमन प्रणालीलाई आधार प्रदान गरेको छ । राष्ट्रिय सतर्कता केन्द्रले गर्ने प्राविधिक परीक्षणले आयोजनाको गुणस्तर सुनिश्चित गर्न केही सघाउ पुगेको छ । यस्तै सार्वजनिक खरिद अनुगमन कार्यालयबाट आयोजनाको बिद्युतीय खरिदको सहजीकरण तथा ठेक्कापट्टाको स्थितिको अनुगमन हुने गरेको छ । महालेखा परीक्षकको कार्यालयबाट हुने लेखा परीक्षण मूलतः कार्यसम्पादनमूलक लेखा परीक्षणलाई मूल्याङ्कनकै स्वरूप ग्रहण गरेको मान्न सकिन्छ । लेखा परीक्षण र अनुगमन मूल्याङ्कनलाई अन्तरसम्बन्धित गराउँदा यसको प्रभावकारिता बढ्नसक्छ । व्यवस्थापिका संसद तथा संसदीय समितिहरूबाट समेत विकास आयोजनाको पटके रूपमा भए पनि सीधै अनुगमन गर्ने गरिएको छ ।

२. विकास कार्यक्रम तथा आयोजनाको अनुगमन तथा मूल्याङ्कन देखिएका समस्याहरू र समाधानका उपायहरू बारे आफ्नो मन्तब्य राख्नुहोस् ।

नीति, योजना तथा आयोजनाको कार्यान्वयनको क्रममा गरिने लगानी अपनाइएका प्रक्रिया, हासिल भएको प्रतिफल बारे जानकारी लिने र समयमै समस्या पहिचान एवम् समाधानका लागि निरन्तर रूपमा जाँचबुझा गर्ने व्यवस्थापकीय प्रक्रिया अनुगमन हो । कार्यान्वयन योजनाका आधारमा सहज रूपमा कार्यान्वयन गरी समयमै र अनुमानित लागतभित्रै, लक्षित परिमाण तथा गुणस्तरमा आयोजनालाई सम्पन्न गराउनु अनुगमनको प्रमुख उद्देश्य रहेको हुन्छ । आयोजनाको तर्जुमाको क्रममा, कार्यान्वयनको क्रममा वा सम्पन्न भएपछि पटके रूपमा गरिने समीक्षा तथा विश्लेषण कार्य मूल्याङ्कन हो । मूल्याङ्कनमा आयोजनाबाट हासिल भएका प्रतिफल र प्रभाव बारे लेखाजोखा तथा विश्लेषण गरिन्छ । मूल्याङ्कनमा सान्दर्भिकता, सामाजिकस्यता, प्रभावकारिता, कार्यदक्षता, दिगोपना र प्रभाव जस्ता ६ वटा आधारहरू अन्तर्गत रही विश्लेषण तथा निष्कर्ष निकालिन्छ ।

नेपालमा अनुगमन तथा मूल्याङ्कन सम्बन्धी पृथक ऐन हालसम्म जारी भएको छैन । अनुगमन तथा मूल्याङ्कनको उद्देश्य, नीतिगत तथा प्रक्रियागत व्यवस्था, आधारहरू, संस्थागत तथा प्रतिवेदन व्यवस्था, सूचनाको प्रयोग लगायतका विषयहरू समावेश गरी तयार गरिएको अनुगमन तथा मूल्याङ्कनसम्बन्धी विधेयक संसदमा विचाराधीन छ । प्रचलित सुशासन ऐन बमोजिम मन्त्रालय तथा विभाग र अन्य केन्द्रीयस्तरका सरकारी निकायले प्रत्येक आर्थिक वर्ष वार्षिक

प्रतिवेदन तयार गर्नुपर्छ । यस्तो प्रतिवेदनमा सो वर्षभरि सञ्चालन गरेको कार्यक्रम, सम्पादन गरेको काम र त्यस्तो कामको अवस्थिति तथा प्रगति र लागतलगायतका अन्य आवश्यक कुराहरूसमेत समावेश गर्नुपर्ने व्यवस्था छ । यस्तो प्रतिवेदन मन्त्रालय वा केन्द्रीय स्तरका निकायले भए प्रधानमन्त्री तथा मन्त्रिपरिषद्को कार्यालयमा, विभागले भए सम्बन्धित मन्त्रालयमा र अन्य कार्यालय तथा निकायले भए तालुक कार्यालयमा पेस गर्नुपर्छ । यस्ता प्रतिवेदनका आधारमा प्रधानमन्त्रीले प्रत्येक वर्ष शासकीय सुधार र सुशासन सम्बन्धमा भए गरेका उल्लेखनीय प्रगति सम्बन्धमा नेपालको संविधानको धारा ५३ बमोजिमको प्रतिवेदनमा समावेश गरी सङ्घीय संसदसमक्ष पेस गर्नुपर्ने व्यवस्था छ ।

उक्त ऐन बमोजिम सरकारी सेवा र सुविधालाई प्रभावकारी बनाई प्रशासनतन्त्रलाई सेवाप्रदायकको रूपमा रूपान्तरण गर्न तथा प्रचलित कानून बमोजिम अधिकारप्राप्त अधिकारीले सम्पादन गर्नुपर्ने काम कारबाहीलाई प्रभावकारी तथा गुणस्तरीय ढङ्गबाट सम्पादन भए वा नभएको कुराको अनुगमन तथा मूल्याङ्कन गर्न मुख्य सचिवको संयोजकत्वमा एक केन्द्रीय अनुगमन तथा मूल्याङ्कन समिति रहेको छ । यस्तै प्रयोजनका लागि प्रदेश तथा जिल्ला स्तरमा समेत अनुगमन तथा मूल्याङ्कन समिति गठन गर्न सकिने व्यवस्था सो ऐनले गरेको छ । केन्द्रीय अनुगमन तथा मूल्याङ्कन समितिको सचिवालय प्रधानमन्त्री तथा मन्त्रिपरिषद्को कार्यालयमा रहेको छ । यस समितिलाई सहयोग गर्ने प्रत्येक मन्त्रालयमा तोकिए बमोजिमको मूल्याङ्कन तथा अनुगमन संयन्त्र रहने व्यवस्था उक्त ऐनले गरेको छ । अनुगमन तथा मूल्याङ्कनसम्बन्धी पृथक ऐन जारी हुने प्रक्रियामा रहे पनि राष्ट्रिय योजना आयोगबाट जारी भएको राष्ट्रिय अनुगमन तथा मूल्याङ्कन दिग्दर्शनबाट नै हाल यससम्बन्धी काम निर्देशित तथा व्यवस्थित भैरहेको छ । उक्त दिग्दर्शनमा नीतिगत तथा प्रक्रियागत व्यवस्था, आधारहरू, संस्थागत व्यवस्था, प्रतिवेदन प्रणाली तथा समीक्षा व्यवस्था, समष्टिगत तथा विषयगत सूचकहरू, सूचनाको संकलन, विश्लेषण तथा प्रयोग लगायतका विषयहरू समावेश गरिएका छन् । आयोगले प्रदेश तहका लागि समेत नमूना अनुगमन तथा मूल्याङ्कन दिग्दर्शन बनाई पठाएको छ । यिनै दिग्दर्शनमार्फत नै तहगत अनुगमन तथा मूल्याङ्कन प्रणालीबीच अन्तरसम्बन्ध स्थापना गर्ने प्रयास भएको देखिन्छ ।

विकास कार्यक्रम तथा आयोजनाको अनुगमन तथा मूल्याङ्कनमा रहेका समस्याहरू

1. आयोजनाको अनुगमन व्यवस्थापन आँफैले गर्ने काम भन्दा पनि माथिल्लो निकायले गर्ने सुपरीवेक्षण वा स्थलगत निरीक्षणका रूपमा मात्र बुझ्ने चलनले गर्दा आयोजना आँफैले गर्ने अनुगमन तथा मूल्याङ्कन प्रभावकारी हुन सकेको छैन । विशेषतः ठेकापट्टा लगाई काम भैरहेका आयोजनाहरूमा आयोजना र निर्माण व्यवसायीबीचको सम्झौताको कार्यतालिका बमोजिम निर्दिष्ट समयमा काम भए नभएको अनुगमन गर्ने, नभएको भए ताकेता गर्ने, कारण पहिचान गरी समाधान गर्ने वा निजलाई कार्वाही गर्नेजस्तो महत्वपूर्ण काम आयोजना आँफैले गर्ने हो । यो केन्द्रले अनुगमन गरी आयोजनालाई निर्देशन दिइरहनु पर्ने विषयहरूहोइन ।
2. नेपालमा आयोजनाहरूको अनुगमन गर्ने निकायहरू धैरै छन् । यी निकायले गर्ने अनुगमन तथा मूल्याङ्कनमा प्रशस्त दोहोरोपना भेट्न सकिन्छ । कुनै आयोजनाको अनुगमन विभिन्न निकायबाट पटकपटक हुने र अन्य कुनै आयोजनाको अनुगमन नै नहुने स्थिति रहेको छ । मेलमची खानेपानी, भैरहवा विमानस्थल, माथिल्लो तामाकोशी जलविद्युत आयोजना धैरै अनुगमन भैरारङ्गे आयोजनामा पर्छन् ।
3. अनुगमन तथा मूल्याङ्कनको प्रमुख उद्देश्य समयमा सूचना लिई निर्णय प्रक्रियालाई प्रमाणमा आधारित बनाउनु हो । तर, आयोजनाको अनुगमन तथा मूल्याङ्कनबाट प्राप्त सूचनाको व्यवस्थित रूपमा प्रयोग हुने गरेको छैन । अनुगमनबाट समस्या पहिचान गरी सुझाव आइरहने तर, त्यसको कार्यान्वयन नहुने स्थितिले अनुगमनको सकारात्मक प्रभाव आयोजनाको कार्यान्वयनमा पर्न सकेको छैन । त्यसैले अनुगमन कमजोर छ भन्नुभन्दा पनि अनुगमन तथा मूल्याङ्कन पछिको कारबाहीमा समस्या देखिन्छ ।

४. अनुगमन तथा मूल्याङ्कनको प्रभावकारिताका लागि स्थापना गरिएका विभिन्न समिति तथा संस्थाहरू प्रभावकारी देखिएका छैनन् । एउटै विषयमा दोहर्यारी वा सो भन्दा बढी निर्णय लिँदा पनि कतिपय निर्णयहरूको कार्यान्वयन हुन नसकेको वा प्रभावकारिता कमजोर पाइएको छ ।
५. विविध प्रयासका वावजूद नेपालमा विकास कार्यक्रम तथा आयोजनाको प्रभाव मूल्याङ्कन संस्थागत हुन सकेको छैन । यस्तो मूल्याङ्कनको सहजीकरण तथा मूल्याङ्कन गर्ने क्षमता कमजोर देखिन्छ । सीमित रूपमा भएका यस्ता मूल्याङ्कनका सुझावको समेत कार्यान्वयन नभएको देखिएको छ ।
६. नतिजामूलक व्यवस्थापनलाई संस्थागत गर्ने क्रममा आयोजनाहरूको अनिवार्य रूपमा लगफ्रेम बनाउन पर्ने व्यवस्था भए पनि अनुगमन तथा मूल्याङ्कनमा लगफ्रेमको प्रयोग खासै हुने गरेको छैन । असर र प्रभाव तहका कतिपय सूचकका लागि सर्वेक्षणमा आधारित सूचना आवश्यक पर्ने भए पनि त्यस्ता सर्वेक्षण हुने गरेको छैन ।
७. उपयुक्त आधारहरू तयार नहुँदा कुनै आयोजना मूल्याङ्कन गर्दा त्यसले अपेक्षित नतिजा हासिल गर्न नसक्नुमा कार्यान्वयनको असफलता हो वा सिद्धान्तको असफलता हो एकीन गर्न कठिन छ ।
८. प्रधानमन्त्री तथा मन्त्रिपरिषद्को कार्यालयमा रहेको तत्काल समस्या समाधान केन्द्रको उद्देश्य निकै महत्वपूर्ण भए पनि यसको भूमिका प्रभावकारी हुन सकेको छैन ।
९. राष्ट्रिय सर्तकता केन्द्रबाट निकै थोरै आयोजनाको मात्रे प्राविधिक परीक्षण हुने गरेको छ । यस्तो परीक्षणको गुणस्तर पनि कमजोर रहेको छ । सार्वजनिक खरिद अनुगमन कार्यालयबाट विद्युतीय खरिदसम्बन्धी सफ्टवेयरबाटै ठेकका व्यवस्थापनका सबै चरणको अनुगमन नभई बोलपत्र खोल्ने प्रक्रियासम्मको मात्र अनुगमन हुने गरेको छ ।
१०. अनुगमन तथा मूल्याङ्कनमा संलग्न जनशक्तिको सेवा निरन्तरता, क्षमता विकास र मनोवल उँचो राख्नुपर्ने सवाल अझै समाधान भएको छैन ।
११. प्रदेश तहका लागि प्रतिफल, असर तथा प्रभाव सूचकहरूसमेत गरी ५० भन्दा बढी सूचकहरू तयार गरी प्रधानमन्त्री तथा मन्त्रिपरिषद्को कार्यालयमार्फत् पठाइएको भए पनि त्यसको प्रतिवेदन हुन सकिरहेको छैन । स्पष्ट निर्देशिका तथा प्राविधिक क्षमताका अभावमा जिल्ला समन्वय समितिबाट हुनुपर्ने विकास निर्माणसम्बन्धी आयोजनाको अनुगमन प्रभावकारी हुन सकेको छैन ।

समाधानका उपायहरू

१. नीति, कार्यक्रम तथा आयोजना तर्जुमा गर्दा अपनाइएको प्रक्रियाको दस्तावेजीकरण गर्ने र परिवर्तनको सिद्धान्त बनाउने परिपाटीलाई संस्थागत गर्नु जरुरी छ । यसले मूल्याङ्कनका समयमा कुनै आयोजनाले अपेक्षित नतिजा हासिल गर्न नसक्नुमा कार्यान्वयनको असफलता हो वा सिद्धान्तकै असफलता हो एकीन गर्न सजिलो गराउँछ । तर्जुमाका क्रममा परिवर्तनको सिद्धान्त तयार नभएको भए मूल्याङ्कनकर्ताले तयार गरी त्यसकै आधारमा मूल्याङ्कन गर्नुपर्छ ।
२. आयोजनाको अनुगमनलाई संकुचित रूपमा माथिल्लो निकायले गर्ने सुपरीवेक्षण वा स्थलगत निरीक्षणका रूपमा मात्र नबुझ्न अभिमुखीकरण गर्नु जरुरी छ । अनुगमनलाई आयोजना व्यवस्थापनले आफैले गर्नुपर्ने एक कार्यका रूपमा लिई लक्ष्य अनुसार काम भए नभएको परीक्षण गर्ने, कुनै काम कार्ययोजना अनुरूप हुन नसकेको भए त्यसको कारण पहिचान र समयमै समाधान गर्नेगरी व्यवस्थापकीय कार्यसंस्कृतिको विकास गर्नुपर्छ । निर्माण व्यवसायीसँग भएको सम्झौता पालना भए नभएको अनुगमन गर्ने र कार्यतालिका बमोजिम काम नभएको भए कानून तथा सम्झौता बमोजिम कारबाही गर्नुपर्छ ।

3. आयोजनाको अनुगमन तथा मूल्यांकनको एक प्रमुख आधारका रूपमा रहने सोच तालिका अनिवार्य गरिएको करिव दुई दशक पुगेको छ | आयोजनाको लगफ्रेम तयार गरिए पनि अनुगमन तथा मूल्यांकनमा यसको प्रयोग बिरलै हुने गरेको पाइन्छ | त्यसैले लगफ्रेममा रहेका सूचकका आधारमा लगानी, प्रक्रिया र प्रतिफलको अनुगमन गर्नुपर्छ | अनुमान तथा जोखिमको पूर्वानुमान र व्यवस्थापनमा पनि लगफ्रेम उपयोगी हुन्छ | यसमा रहेका सूचक प्रयोग गरी प्रतिफल, उद्देश्य, लक्ष्य, असर तथा प्रभावको मूल्यांकन गर्नुपर्छ ।
4. राष्ट्रिय सतर्कता केन्द्रबाट हुने प्राविधिक परीक्षणको क्षेत्र तथा संख्या निकै कम रहेकाले विस्तार गरिनु जरुरी छ | यस्तो परीक्षणलाई पूर्वाधार निर्माणसम्बन्धी आयोजनाहरूको गुणस्तर कायम गर्न केन्द्रित गरिनुपर्दछ ।
5. सार्वजनिक खरिद अनुगमन कार्यालयबाट हुने विद्युतीय खरिदसम्बन्धी कार्यको अनुगमनमा बोलपत्रको सूचना प्रकाशन, प्राप्त बोलपत्रको मूल्यांकन, ठेकका समझौता, म्याद थप, भेरियसन अर्डर लगायत ठेकका व्यवस्थापनका सम्पूर्ण चरण र पक्षलाई समेट्नु पर्दछ | यही कार्यालयले निर्माण व्यवसायीसँग रहेका ठेककापट्टा, कार्यसम्पादन स्थिति, अधूरा कार्य लगायतका विवरण सहितको सूची समय समयमा प्रकाशन गर्नुपर्छ | यसले आयोजनालाई निर्माण व्यवसायीको क्षमता मूल्यांकन गरी ठेककासम्बन्धी निर्णय गर्न तथ्यहरू उपलब्ध हुन्छ ।
6. नीति, कार्यक्रम तथा आयोजना सबैको मूल्यांकनको आवश्यकता पहिचान गर्ने, सहजीकरण गर्ने, मूल्यांकन गर्ने र प्राप्त सुझावको प्रयोग गर्ने कार्यमा संलग्न सबैको क्षमता विकास गर्नु जरुरी छ | आयोजनाको प्रभाव मूल्यांकन गर्ने क्षमता विकास गरी यसलाई संस्थागत गर्नुपर्छ | यसको संयोजन राष्ट्रिय योजना आयोगले सम्बन्धित विजहरूको समाज एवम् विकासका साझेदारसँग सहकार्य समेत गरी गर्नसक्नेछ ।
7. अनुगमन तथा मूल्यांकन संयन्त्रहरूको प्रभावकारिता वृद्धि गर्नु जरुरी छ | राष्ट्रिय विकास समस्या समाधान समितिमा पेस हुने समस्या आवश्यकता अनुसार अनुसन्धानमा आधारित विश्लेषणसहित अन्तरनिहित कारण पहिचान गरी समाधानका विकल्पसहित पेस हुने र त्यसउपर विस्तृत छलफल गरी निर्णय लिने व्यवस्था गर्नुपर्दछ | यसो गरेमा एउटै समस्यामा पटक पटक निर्णय लिनुपर्ने वा निर्णय कार्यान्वयन नहुने समस्या समाधान हुनसक्छ | केन्द्रीय अनुगमन तथा मूल्यांकन समितिको बैठकलाई नियमित गराउने र आवश्यकता अनुसार विजहरूबाट अध्ययन गराई प्रमाणमा आधारित छलफल तथा निर्णय लिने व्यवस्था मिलाउन सकिन्छ ।
8. तत्काल समस्या समाधान केन्द्रको प्रभावकारिता बढाउन यस केन्द्रसँगको सञ्जालमा रहने आयोजनाको विस्तार गर्न जरुरी छ | केन्द्रको उद्देश्य अनुरूप सम्बद्ध उच्च नेतृत्वबाटे भर्चुअल माध्यमबाट आयोजनाको अनुगमन गर्ने र समस्या देखिए तत्काल समाधान गरी यसको उपादेयता वृद्धि गर्नुपर्छ ।
9. अनुगमन तथा मूल्यांकन ऐन छिटो पारित गरी अनुगमन मूल्यांकनलाई अनिवार्य गराएमा यसको प्रभावकारिता विस्तार हुन्छ | प्रधानमन्त्री तथा मन्त्रिपरिषद्को कार्यालय, राष्ट्रिय योजना आयोग, अर्थ मन्त्रालय र राष्ट्रिय सतर्कता केन्द्र समेतले एकीकृत अनुगमन तथा मूल्यांकन योजना बनाई संयुक्त शासन र प्रशासन ल ददृढ अनुगमन गरेमा दोहोरोपना हट्ने, साधनको सदुपयोग हुने र अनुगमन तथा मूल्यांकनको समग्र प्रभावकारिता बढाने देखिन्छ ।
10. प्रदेश र स्थानीय तहबाट सञ्चालित आयोजनाहरूको नियमित अनुगमन तथा मूल्यांकन गर्ने र हासिल भएका उपलब्धिहरू बारे केन्द्रमा प्रतिवेदन हुने व्यवस्थालाई संस्थागत गर्न बाँकी नै छ | प्रदेश तहका लागि राष्ट्रिय योजना आयोगबाट प्रेषित नमूना अनुगमन तथा मूल्यांकन दिग्दर्शनको कार्यान्वयन र प्रधानमन्त्री तथा मन्त्रिपरिषद्को कार्यालयबाट पठाइएका सूचकका आधारमा प्रतिवेदन गर्ने प्रक्रियाको पालना गर्नु जरुरी

छ | जिल्ला समन्वय समिति र स्थानीय तहबाट हुने अनुगमन तथा मूल्याङ्कनका लागि समेत कार्यविधि तयार गर्ने, त्यसको आधारमा अनुगमन गर्नका लागि क्षमता विकास गर्ने र नियमित रूपमा नियमित सम्प्रेषण तथा प्रतिवेदन हुने व्यवस्था भिलाउनु पर्दछ ।

विकास नीति तथा कार्यक्रमको प्रभावकारिता बढाउन उपयुक्त अनुगमन तथा मूल्याङ्कन प्रणालीबाट सिर्जित सूचना र प्रमाणका आधारमा गरिने निर्णय प्रक्रियाले मुलुकमा समृद्धि र नागरिकको जीवनस्तर सुधार हुने अपेक्षा गर्न सकिन्छ ।

भौतिक पूर्वाधार तथा यातायात मन्त्रालय सहित सङ्क बिभाग सम्बन्धि बिषयबस्तु

Ministry of Physical Infrastructure and Transport (MoPIT) was established in 2000 in order to bring important infrastructural development under the umbrella of a single Ministry. The main aim of organization is to harmonize the policies and bring efficiencies and effectiveness in the provision of infrastructural services.

The MoPIT is the central authority of Government of Nepal charged with the responsibilities for enhance the economic and social development of country by linking various geographical and economic regions through the national strategic transport network. MoPIT is responsible for linking rural areas of country with markets to support various economic activities and projects related with tourism, agricultural, electrical, industrial and other sectors of Nepal. Moreover, the key role of the Ministry lies with preparing plans, policies and programs regarding development of physical infrastructures such as roadways, railways, waterways, subways, flyovers and ropeways; Transport (except Air Transport) and transit management and its operation related plans, policies and programs; its implementation; monitoring and evaluation; inspection.

Physical Infrastructure and Transport Minister remains at the Apex in the Ministry, whereas, bureaucratically it is headed by Physical Infrastructure and Transport Secretary. For practical purposes, the Ministry is further divided into various Divisions and Departments. The Divisions are located within the Ministry and manned by the Joint Secretaries, Under Secretaries, Engineers, Section Officers and other supporting staffs.

- Administration Division
- Foreign Aid and Quality Standards Division
- Planning Monitoring and Evaluation Division
- Work and Transport Division

Department and Institutes Under Ministry:

- Department of Roads
- Department of Transport Management
- Department of Railways
- Road Board Nepal
- Nepal Engineering Council
- नेपाल पानीजहाज कार्यालय
- नेपाल पूर्वाधार निर्माण कम्पनि लिमिटेड
- नेपाल रेल्वे कम्पनि लिमिटेड

कार्यक्षेत्र

नेपाल सरकार (कार्यविभाजन) नियमावली, २०७२ बमोजिम यस मन्त्रालयलाई देहायका कार्यहरु गर्नेगरी कार्यक्षेत्र निर्धारण गरिएको छ:

- भौतिक पूर्वाधारको विकाससम्बन्धी नीति, योजना तथा कार्यक्रमको तर्जुमा, कार्यान्वयन, अनुगमन र मूल्याङ्कन।
- यातायात (हवाई यातायातबाहेक) तथा परिवहन व्यवस्थापन र सञ्चालनसम्बन्धी नीति, योजना तर्जुमा, कार्यक्रम कार्यान्वयन, अनुगमन, नियमन र मूल्याङ्कन।
- स्थलमार्ग, जलमार्ग, रेलमार्ग, सव-वे, फ्लाइओभर र रज्जुमार्गको निर्माण तथा विकाससम्बन्धी नीति र योजनाको नियमन, स्वीकृति तथा कार्यान्वयन।

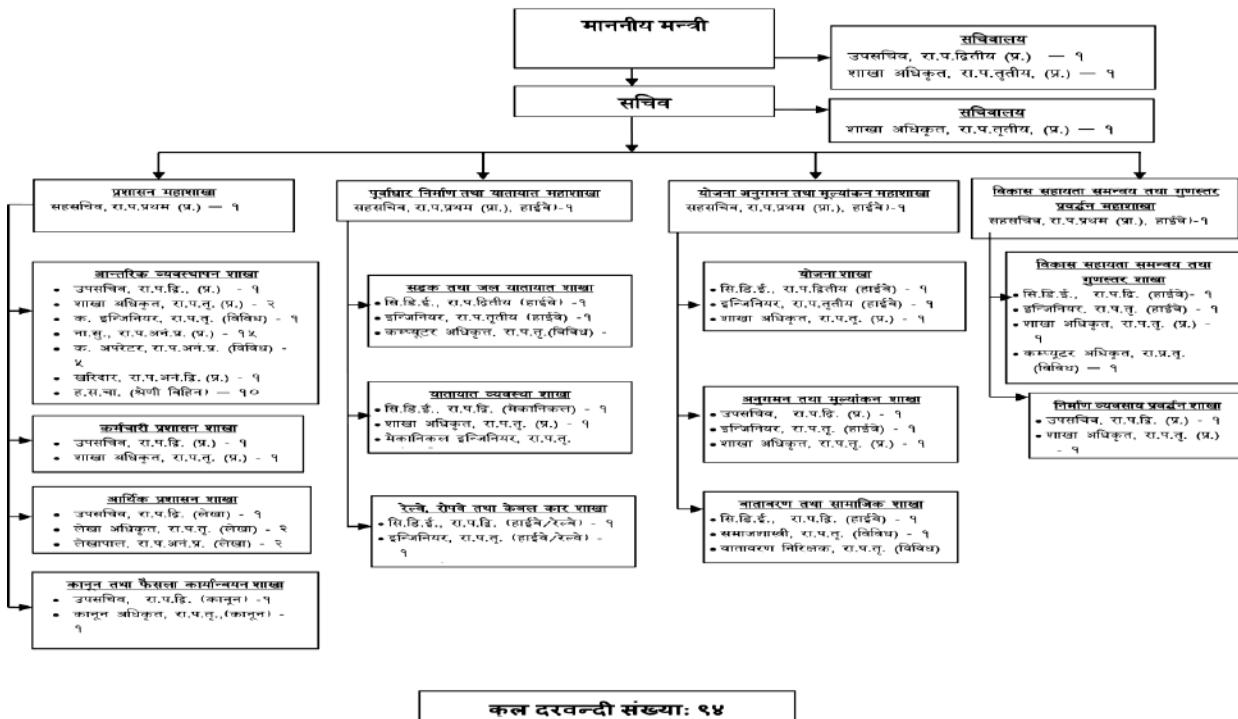
- रणनीतिक सडक (गोरेटो/घोडेटो बाटो र स्थानीय सडकबाहेक) तथा पुल (झोलुङ्गे पुलबाहेक) को निर्माण, मर्मत, सम्भार तथा संरक्षण।
- स्थलमार्ग तथा रञ्जुमार्गको निर्माणसँग सम्बन्धित अन्तर्राष्ट्रिय संस्थासँगको सम्पर्क।
- यातायात (हवाई यातायातबाहेक) तथा परिवहन व्यवस्थापन र सञ्चालनसँग सम्बन्धित, कम्पनी तथा सङ्गठन।
- यातायात (हवाई यातायातबाहेक) सेवा नियमन, व्यवस्थापन र सञ्चालनसँग सम्बन्धित अन्तर्राष्ट्रिय संस्था तथा निकायसँग सम्पर्क सम्बन्धी कार्य।
- यातायातसम्बन्धी अ॒द्ययन, अनुसन्धान, तथ्याङ्क सङ्कलन तथा विश्लेषण।
- सडक बोर्डलगायत सडक, रेल तथा यातायात व्यवस्थासम्बन्धी अन्य निकाय।
- नेपाल इन्जिनियरिङ तथा इन्जिनियरिंग परामर्श सेवा (कन्सल्टेन्सी) र सो सम्बन्धी संस्था।
- रेलमार्ग, मेट्रो निर्माण सञ्चालन र सम्भार।
- नेपाल इन्जिनियरिङ सेवा, सिभिल इन्जिनियरिंग समूहको हाईवे र रेल उपसमूहको सञ्चालन।

मुख्य कार्यहरू:

- स्थल, जल, रेल्वे तथा रञ्जुमार्गको निर्माण र विकास सम्बन्धी नीति, योजना तथा कार्यक्रम तर्जुमा, कार्यान्वयन, अनुगमन र मूल्याङ्कन गर्ने गराउने।
- सडक (घोडेटो बाटो बाहेक) तथा पुल (झोलुङ्गे पुल बाहेक) निर्माण, मर्मत सम्भार एवं संरक्षण सम्बन्धी काम गर्ने।
- विभिन्न स्थलमार्ग, जलमार्ग र रञ्जुमार्गहरूको निर्माण सम्बन्धी कार्य गर्ने।
- भौतिक योजना क्षेत्रहरूका अन्तराष्ट्रिय वा क्षेत्रीय संघ संस्थाहरूसँग सम्पर्क र सहयोग सम्बन्धी कार्य गर्ने।
- स्थलमार्ग, जलमार्ग तथा रञ्जुमार्गको निर्माणसँग सम्बन्धित अन्तराष्ट्रिय संघ संस्थाहरूको सम्पर्क सम्बन्धी कार्य गर्ने।
- नेपाल इन्जिनियरिङ सेवाको हाईवे उपसमूह, सम्बन्धी नियुक्ति, सरुवा, बढुवा शुरु नियुक्तिको न्यूनतम शैक्षिक योग्यता र बढुवामा गणना हुने सम्बन्धित विषयको शैक्षिक योग्यता निर्धारण तथा विभागीय कारवाही आदि सम्बन्धी कार्य गर्ने।

२. मन्त्रालयको संगठनिक संरचना र कार्यविवरण

भौतिक पूर्वाधार तथा यातायात मन्त्रालयमा माननीय मन्त्रीज्यु. र सचिवज्युको सचिवालयहरु, ४ बटा महाशाखा तथा १५ बटा शाखाहरु छन् । मन्त्रालयको संगठन निम्नानुसार प्रस्तुत गरिएको छ ।



12 | चा.र्टिक प्रगति पनि वे दन २०२३ / ३३

लक्ष्य

सडक, रेल, जलमार्ग तथा रज्जुमार्ग जस्ता पूर्वाधारको विकास गरी राष्ट्रिय रणनीतिक यातायात सञ्जाल मार्फत देशका विभिन्न भौगोलिक तथा आर्थिक क्षेत्रहरूलाई एक अर्कासँग आबद्ध गरी मुलुकको आर्थिक एवं सामाजिक विकास अभिवृद्धि गर्नुका साथै देशका ग्रामीण क्षेत्रहरूलाई स्थानीय बजारहरूसँग आबद्ध गरी पर्यटन, कृषि, विद्युत, उद्योग लगायत विभिन्न आर्थिक क्षेत्रसँग सम्बन्धित कृयाकलाप एवं आयोजनाहरूलाई टेवा पुऱ्याउने ।

द्रुदण्डि

राष्ट्रिय एकीकरण, आर्थिक सामाजिक विकास, गरिबी निवारण र दिगो शान्तिको लागि पूर्वाधारको विकासमा योगदान पुग्ने गरी स्तरीय, भरपर्दो, सुलभ र सुरक्षित यातायात सञ्जाल विस्तार गर्ने ।

उद्देश्य

- देशका विभिन्न भौगोलिक तथा आर्थिक क्षेत्रहरूलाई परिपूरक हुने गरी विभिन्न मार्गहरूलाई एक अर्कासँग आवद्ध गरी आर्थिक तथा सामाजिक क्षेत्रको विकासमा टेवा पुऱ्याउन सडक, पुल, मूल बाटाहरु, रज्जुमार्ग र जलमार्गहरूको समर्पणीयता विकास, विस्तार, प्रवर्द्धन गरी राष्ट्रिय यातायात प्रणालीको विकास गर्ने ।
- देशका ग्रामीण क्षेत्रका गाउँहरूलाई बजारसँग आवद्ध गर्नुका साथै पर्यटन, कृषि, उद्योग, विद्युत आदि विभिन्न आर्थिक क्षेत्रसँग सम्बन्धित राष्ट्रिय महत्वका र अन्य आर्थिक क्षेत्रको विविध कृयाकलाप एवं आयोजनाहरूमा टेवा पुऱ्याई सन्तुलन कायम गर्ने

प्रशासन महाशाखा

- मन्त्रालय तथा अन्तर्गत सबै निकायहरुमा काम सुचारू रूपले संचालन गर्न संगठनात्मक स्वरूप तथा कार्य प्रक्रिया सम्बन्धी अध्ययन विश्लेषण गरी नीतिगतरूपमा राय पेश गरी स्वीकृत भई आए बमोजिमको व्यवस्था गर्ने।
- मन्त्रालय तथा अन्तर्गत कार्यालयहरुमा आवश्यक जनशक्तिको व्यवस्थाको क्रममा दरवन्दी सृजना, रिक्त पद पूर्ति सम्बन्धमा पेश गर्ने।
- मन्त्रालयको प्रचलित ऐन नियम नीति अध्ययन गरी संशोधन परिमार्जन गर्नु पर्ने भएमा राय साथ पेश गर्ने।
- मन्त्रालय र अन्तर्गत निकायहरुका कर्मचारीहरु कर्मचारी प्रशासन सम्बन्धी पेश भएका फाइलहरुमा राय सहित सचिव समक्ष पेश गर्ने र निर्णयानुसार कार्यहरु सम्पादन गर्ने गरउने।
- मन्त्रालयको लागि बजेट माग गर्ने, केन्द्रिय तथा कार्य संचालन स्तरको लेखा संचालन र लेखा परीक्षणको व्यवस्था गर्न लगाउने।
- विभिन्न मन्त्रालय, विभाग तथा कार्यालयहरुबाट मागिएको परामर्शमा राय दिने वा आवश्यकता अनुसार राय सहित पेश गरी निर्णयानुसार जानकारी दिने व्यवस्था मिलाउने।
- मन्त्रालयलाई आवश्यक बजेट भौतिक सामाग्री र जनशक्तिको नियमित आपूर्तिको व्यवस्था मिलाउने।
- महाशाखा बीच समन्वय कायम गर्ने र शाखा महाशाखाबाट भइरहेको कामहरुको समन्वय र सुपरीवेक्षण गर्ने/गराउने।
- अधिनस्थ कार्यको प्रगती विवरण तयार गराई आवश्यक निर्देशन दिने र सचिव समक्ष राय सहित पेश गर्ने।
- स्वदेशी तथा बिदेशी तालिम सम्बन्धी मनोनयनमा छात्र बृति वितरण आदी पेश भएका विषयहरुमा प्रचलित ऐन नियम, परिपत्र र कायम भएको नीति बमोजिम गर्ने गराउने।
- बेरुजु फर्झ्यौट गतिबिधि सम्बन्धमा रेखदेख गरी आवश्यक निर्देशन दिने।
- तोकिए बमोजिमको रकमान्तर खर्चको स्वीकृती, ठेक्का पट्टा सदर बदर तथा लिलाममा बिक्रि र मिनाह सम्बन्धी कार्यहरु गर्ने।
- स्टोर निरीक्षण गराउने र प्राप्त प्रतिवेदन अनुरूप आवश्यक कारवाही गराउने।
- आफ्नो महाशाखा अन्तर्गतका विषयमा मन्त्रिपरिषद्मा पेश हुने प्रस्तावको मस्यौदा तयार गरी पेश गर्ने।
- भौतिक सामाग्री, भवन, सवारी साधन आदीको संरक्षण, संभार, मर्मत आदी विषयमा रेखदेख नियन्त्रण समन्वय गर्ने।
- अधिनस्थ कर्मचारीको काममा मार्ग दर्शक भुमिका निर्वाह गरी कर्मचारिहरुको सुपरीवेक्षण र आवश्यकता अनुसार निर्देशन र नियन्त्रण समेत गर्ने।

विकास सहायता समन्वय तथा गुणस्तर महाशाखा

- बैदेशिक ऋण, अनुदान सहयोग बाट संचालन हुने आयोजनाहरुको योजना तर्जुमा, सम्भाव्यता अध्ययन, तालिम तथा कार्यन्वयनका विभिन्न पक्षमा सम्बन्धित निकाय तथा महाशाखाहरुबाट राय परामर्श प्राप्त गर्ने, बिदेशी प्रतिनिधिहरु संग सम्पर्क तथा समन्वय गर्ने र सचिवज्यूमा राय पेश गर्ने र निर्देशानुसार MOU सम्बन्धी कार्य गर्ने तथा अन्य महाशाखा तथा बैदेशिक संस्थाहरु संग समन्वय र लेखापढि गर्ने।
- विभिन्न चालु आयोजनाहरु तथा पुरा भइसकेका आयोजनाहरु समेतको तेसो पक्षीय परीक्षण (Third Party Audit) नियमित रूपमा गर्ने गराउने र प्राबिधिक पक्ष र लगानीको प्रभावकारिता पक्ष लगायत समष्टिगत

गुणस्तर बारे पृष्ठपोषण एवं सुधारका कारवाहिहरुमा ठोस कदमहरु चाल्न राय परामर्श पेश गर्ने तथा निर्देशानुसार कारवाही गर्ने ।

- सार्वजनिक निर्माण निर्देशिका (Public Works Directive) तयार गर्ने र नियमित रूपमा प्रकाशन तथा वितरण गर्ने/गराउने ।
- निर्माण व्यवसाय बिकास परिषद् र कार्यन्वयन समिति सम्बन्धी काम गर्ने र निर्माण व्यवसायी विकास ऐन बमोजिमका कामहरु गर्ने/गराउने ।
- मन्त्रालय अन्तर्गतका सार्वजनिक पूर्वाधार संरचनाहरुको निर्माण संचालन तथा हस्तान्तरण प्रक्रियामा निजि क्षेत्रलाई संलग्न गराउने सम्बन्धी सचिवालयहरुको स्थापना तथा सुदृढीकरण गर्ने, योजना पहिचान तथा अद्ययन गर्ने/गराउने र नेपाल सरकारको स्वीकृत नीति बमोजिमका काम कारवाही गर्ने मन्त्रालयको Focal Point को रूपमा काम गर्ने। सार्वजनिक निर्माण कार्यको गुणस्तर तथा पुर्वाधार संरचना सम्बन्धमा आवश्यक अनुसन्धान गर्ने/गराउने तथा मापदण्ड निर्धारण सम्बन्धी गर्ने/गराउने ।
- सार्वजनिक निजी साझेदारी तथा निजी लगानी सम्बन्धी कार्यहरु गर्ने/गराउने ।
- उपरोक्त बाहेक बैदेशिक सहयोग तथा क्रृष्ण संग सम्बन्धित सबै पक्षमा यस मन्त्रालयको नीति निर्देशन अनुसार अर्थ मन्त्रालय संग सम्बन्धित कार्यमा सम्पर्क महाशाखाको हैसियतले कार्य गर्ने/गराउने ।

योजना अनुगमन तथा मूल्यांकन महाशाखा:

- विकास आयोजना, तर्जुमा, कार्यन्वयन, मूल्यांकन सम्बन्धी कार्य गर्ने ।
- विकास सम्बन्धी नीति तर्जुमा गर्ने ।
- विकास आयोजनाहरुको प्रगति समिक्षा गर्ने ।
- आयोजनाहरुको निरीक्षण गर्ने ।
- क्षमता अभिवृद्धि सम्बन्धी कार्यक्रम संचालन गर्ने ।
- बैदेशिक सहयोगबाट संचालित आयोजना सम्बन्धमा गुणस्तर तथा बैदेशिक सहयोग महाशाखासंग समन्वय गर्ने
- सामयिक प्रगति विवरण तयार गरी सम्बन्धित निकायमा पठाउने ।
- वातावरण संरक्षण, लैडिगिक, सामाजिक समावेशीकरण र संघ संस्था सम्बन्धी कार्यको समन्वय गर्ने ।
- मन्त्रालयको प्रवक्ता र सूचना अधिकारी सम्बन्धी काम गर्ने ।
- विपत्त व्यवस्थापन सम्बन्धी कार्य गर्ने ।
- अनुगमन तथा मूल्यांकन शाखा:
- आयोजना कार्यन्वयनको निरीक्षण गर्ने ।
- आयोजनाहरुको अनुगमन गर्ने ।
- विकास आयोजनाहरुको प्रगति समिक्षा गर्न सहयोग गर्ने ।
- मन्त्रालयको प्रगति प्रतिवेदन तयार गरी सम्बन्धित निकायमा पठाउने ।
- मन्त्रालयको प्रगति विवरण प्रकाशन गर्ने ।
- सहायक सूचना अधिकारी तथा सहायक प्रवक्ता सम्बन्धी कार्य गर्ने ।

पूर्वाधार निर्माण तथा यातायात महाशाखा

- स्थेल, जल, रेलवे, रज्जुमार्ग तथा यातायात व्यवस्था सम्बन्धी आयोजनाहरु सम्बन्धित निकाय तथा महाशाखाहरु संग समन्वय गरी आयोजनाको निर्माणमा आवश्यक समन्वयन गर्ने/गराउने ।

- मन्त्रालय अन्तर्गत चालु रहेका विभिन्न आयोजनाहरूको प्राबिधिक पक्ष र लगानीको प्रभावकारिता सम्बन्धमा तथा आयोजनाको समष्टिगत गुणस्तर बारे Feedback लिई आवश्यक सुधारका लागि ठोस कदमहरू चाल्न राय परामर्श पेश गर्ने /गराउने ।
- नेपाल इन्जिनियरिङ कन्सल्टेन्सि सर्भिसेज, नेशनल कन्स्ट्रक्शन कम्पनी तथा नेपाल मल्टीमोडल ट्रान्जीट र ट्रेड विकास समिति सम्बन्धी आवश्यक समन्वय गर्ने गराउने ।
- आवश्यकता अनुसार ऐन नियम तथा नीति तर्जुमा तथा हेरफेर गर्नको लागि राय प्रतिक्रिया पेश गर्ने ।
- नेपाल इन्जिनियरिङ काउन्सिल तथा नेपाल इन्जिनियरइंग एसोसियसन सम्बन्धी सम्पर्क समन्वय गर्ने

सडक विभाग र अन्तर्गत संचालित राष्ट्रिय गौरव लगायतक महत्पूर्ण आयोजनाहरू

सडक विभागको परिचय र उद्देश्य

वि.सं. २००७ सालभन्दा अगाडि बाटोकाज गोञ्चारा कार्यालय निर्माण भएको एउटा मात्र लेनमा दुङ्गा छापेका भिमफेदी अमलेखगांज सडक, बुटवल भैरहवा सडक, राजधानी र तराईका केही शहरहरूमा ईट्टा र दुङ्गाले छापेका सडक निर्माण तथा मर्मत कार्य गरीन्थ्यो । वि.सं. २०१४ सालमा सार्वजनिक निर्माण विभाग (Public Work Department) स्थापना भयो । भारत सरकारको सहयोगमा काठमाडौं-भैसे (भिमफेदी-अमलेखगांज सडकमा पर्ने) सडक निर्माण गरी मोटरबाटो भारतसँग जोडियो । हेटौडा-नारायणगढ सडक वि.सं. २०१५ सालमा निर्माण गरी पूर्व-पश्चिम राजमार्गको मध्य भागमा यातायात सञ्चालन भयो ।

उत्तर-दक्षिण व्यापारिक मूल बाटोलाई यातायात सञ्चालन गर्ने उद्देश्यले वि.सं. २०१४ सालमा Road Transport Organization (RTO) स्थापना गरीयो । RTO योजना PWD अन्तर्गत नभई छुट्टै योजनाको रूपमा स्थापना भयो । उक्त योजना वि.सं. २०१८ सालमा बन्द गरीयो ।

वि.सं. २०१८ सालमा PWD द्वारा पूर्व-पश्चिम राजमार्ग निर्माण गर्ने कार्य तर्जुमा भई निर्माण कार्य शुरु भयो । वि.सं. २०२४ सालमा पहिलो दीर्घकालीन सडक योजना तर्जुमा अघि बढाईयो साथै वि.सं. २०२७ सालमा PWD बाट भवन विभाग छुट्टिएर सडक विभाग नामाकरण गरी नयाँ विभाग स्थापना भयो । सोही सालबाट राजमार्ग तथा सहायक राजमार्गको अवधारणा अनुरूप सडक निर्माण कार्य अघि बढाईयो । यसैसँगै सहायक राजमार्गहरूको निर्माण कार्य तीव्र रूपमा वि.सं. २०३८ सालबाट अघि बढाईयो ।

वि.सं. २०५१ सालमा मुलुकभर रणनीतिक सडक सञ्चाल (Strategic Road Network-SRN) लाई १५ वटा राजमार्ग र ५१ वटा सहायक राजमार्गहरूमा विभाजन गरी सडक विभागबाट निर्माण/मर्मत सम्भार कार्य अगाडि बढाईयो । सोही समयदेखि दुई देशीय सम्बन्ध र विभिन्न दातृसंस्थाहरू- एशियाली विकास बैंक, विश्व बैंक र JICA को सहयोगमा सामरिक महत्वका सडकहरूलाई निर्माण/मर्मत सम्भार गर्ने कार्य अघि बढाईयो ।

वि.सं. २०५३ साल देखि रणनीतिक सडक सञ्चाल (SRN) मा पेरेका सडकहरूलाई निर्माण/मर्मत सम्भारको प्रभावकारी रूपमा निरन्तरता दिन प्राथमिक लगानी योजना (PIP) तथा २० बर्षे सडक योजना तर्जुमा गरी कार्य आरम्भ गरीयो । वि.सं. २०५८ साल देखि रणनीतिक सडकहरूलाई अझ प्रभावकारी एवं व्यवस्थित गर्न भौगोलिक सूचना प्रणाली (GIS) मा आवद्ध गरीयो । पूर्वाधार विकासका लागि सडक यातायातको महत्व अत्यन्त बढी भएको कुरा सडक विकासका लागि जनता र जनप्रतिनीधिहरूबाट भइरहेको मागबाट पनि स्पष्ट बुझ्न सकिन्द्य ।

नवौं पञ्चवर्षीय योजनामा यातायात क्षेत्र, सडक उपक्षेत्रको मूल लक्ष्यको रूपमा "कूल यातायात खर्च न्यूनतम राख्ने" भन्ने निर्धारण गरीएको थियो । उक्त लक्ष्य प्राप्त गर्नका लागि सडक विभागले "देश भित्र तथा वाह्य क्षेत्र सँगको सम्पर्क वृद्धि गरी सडक पहुँच नपुगेका क्षेत्रमा पहुँच पुर्याउनुका साथै सडक यातायातलाई भरपर्दो, सुरक्षित र कम खर्चिलो बनाउन आवश्यक योजना तर्जुमा, निर्माण तथा संभार कार्यहरूको प्रभावकारी व्यवस्थापन गर्ने" उद्देश्य निर्धारण गरेको थियो । सडक विभागको रणनीति पत्र (The DoR Strategy १९९५) मा नेपाल सरकारको सडक उपक्षेत्रको नीतिलाई व्यावहारिक रूपमा लागू गर्ने निकायको रूपमा सडक विभागका कार्यहरू निम्नानुसार परिभाषित गरीएको छ ।

- देशको यातायात सेवाको आवश्यकता पूरा गर्ने गरी सामारिक महत्वका सडक सञ्चाल (Strategic Road Network, SRN) को निर्माण गर्ने,
- निश्चित स्तरको सेवा प्रदान हुने गरी सडक सञ्चालको संभार गर्ने, र
- पैदल यात्रु लगायत सम्पूर्ण सडक प्रयोगकर्तालाई सडक प्रयोगमा यथोचित सुरक्षा प्रदान गर्ने।

आ.व.०७५/७६ को अन्त्य सम्ममा देशका एउटा जिल्ला सदरमुकाम सिमकोट बाहेक सबै जिल्ला सदरमुकाम सडक यातायात सँग जोडिएका छन् भने सामरिक महत्वका करिब १५ हजार कि.मी. सडक र स्थानीय सडक सञ्चालमा करिब ७० हजार कि.मी. भन्दा बढी सडक निर्माण भएको अवस्था छ। यसरी हालको अवस्थामा सडक सञ्चाल विकासको न्यूनतम आवश्यकता करिब करिब पूरा भएको अवस्था छ भने निर्माण सम्पन्न सडकहरूको सुदृढीकरण, सडक सेवा स्तरमा र सुरक्षा अवस्थामा सुधार र सडघीय संरचना अनुरूप सडक सञ्चालको विकास गरी देशको आर्थिक सामाजिक विकासमा प्रभावकारी र दिगो रूपमा टेवा पुर्याउनु सडक उपक्षेत्रको आजको आवश्यकता बनेको छ।

भरपर्दो एवं वातावरणमैत्री राष्ट्रिय सडक सञ्चालको निर्माण तथा स्तरोन्नतिद्वारा यातायात सुविधाको विकास गरी क्षेत्रीय तथा सामाजिक असन्तुलनमा कमी ल्याउन एवं उच्च तथा दिगो आर्थिक वृद्धिद्वारा गरीबी न्यूनीकरण गर्न सहयोग पुर्याउने तथा सडक सम्पतीको संरक्षण गरी दिगो, भरपर्दो र सुरक्षित सडक यातायात सेवा सञ्चालन गर्ने उद्देश्य लिई सडक विभागले निरन्तर रूपमा कार्य गर्दै आएको छ। गत आर्थिक बर्ष २०७५/०७६ सम्म सडक विभाग अन्तर्गत २१ वटा राजमार्ग तथा २०९ वटा सहायक राजमार्ग निर्माण/मर्मत सम्भार भईरहेकामा नेपालको संविधान २०७२ को अनुसूची ५ मा भएको व्यवस्था अनुसार राष्ट्रिय यातायात नीति तथा राष्ट्रिय लोकमार्ग व्यवस्थापन मात्र संघको जिम्मेवारीमा रहने हुँदा नेपाल सरकारको मिति २०७६/०२/०६ को निर्णय अनुसार ८० वटा राजमार्गलाई राष्ट्रिय राजमार्ग भनी निर्णय गरेको छ।

Vision

"Managing Roads for National Integration and Socio-Economic Development" is the vision for the development of roads in Nepal. The overall goal is to contribute in achieving sustainable socio-economic development by providing safe affordable public road infrastructure services through building of a cost-effective, efficient and reliable road network system. At the end of its plan period, the 20-year Master Plan for Strategic Road Network envisages the following outcomes from the implementation of the proposed road program:

- Motorable access to all the 75 District Headquarters in the country with Bituminous sealed road to almost all District HQ;
- Doubling of the length of the present Strategic Road Network with a target road density of 15 km per 10,000 populations.
- Ensuring more than 95 percent of SRN in a good/fair annual condition;
- Substantially reducing the walking distance of 13 days to 3 days in extreme cases to reach the motor-head in High Himalayas & Mountains; and reducing the walking distance of 4 hours to reach motor-head in Terai and Hills;
- Establishment and functioning of Autonomous Road Agency to manage central road network with an increased level of user's involvement;
- Establishment and functioning of the monitoring system for effective and efficient service delivery through an independent annual user's satisfaction survey; and
- Substantial reduction in accidents rate.

Mission

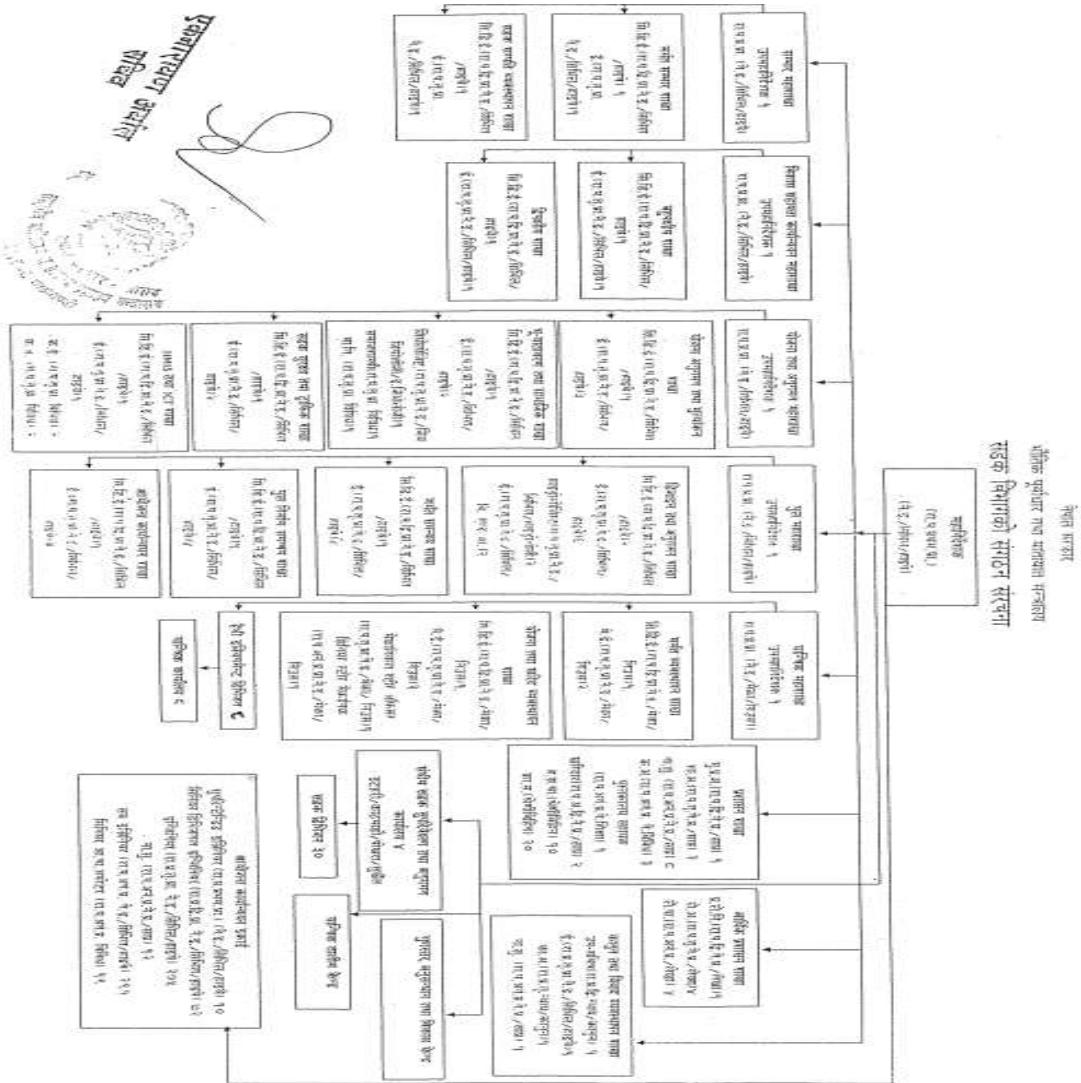
The mission statement for the Department of Roads is "To Contribute Towards the Betterment of Living Conditions of the People through Effective, Efficient, Safe and Reliable Road Connectivity"

Objective

With the ultimate objective of directly contributing to the alleviation of poverty in Nepal, the main objective of road development is to develop, expand and strengthen the road network in a sustainable way for enhancing the overall socio-economic development and integration of the country through balanced regional development by providing due consideration for remote areas and deprived communities.

In order to realize the objective of the road sector, the study carried out for the Road Master Plan has identified the following development priorities as presented in the previous Chapter 3:

- To maintain road network effectively and efficiently (Asset Preservation): Mechanism is now in place to address the basic issue of an adequate and stable flow of funds for maintenance. The establishment of Roads Board with all the support from the stakeholders including donors is taken as a pioneer step in this direction.
- To provide access to all District Headquarters to strengthen social, economic, administrative linkages: Access to essential services is a basic ingredient in improving the quality of life and, thereby, reducing poverty. The priority for the Government is to provide efficient and reliable motorable access to all District Headquarters. In order to bring the Districts into the road network map, the Government has committed itself to first opening up motorable access to these districts.
- To improve existing access to District Headquarters for safe, reliable and cost-effective travel: Efficient and improved road condition has found to have significant impact on economic development of the region. The target is to provide all weather bituminous pavements to the existing roads connected to District Headquarters within 11th Plan period. Bridges on these roads are also proposed to get completed by the end of the 11th Plan.
- To develop roads to supplement Poverty Reduction Program and to improve accessibility in Mid-hills and Terai: The basic thrust is for a gradual build-up of two Highways of national importance -- Mid Hill and Postal. As for the national highway through the Mid Hill, there remains a significant length of access not yet opened. On the other hand, the Postal Road has access but is in need of substantial improvement of existing track/road. Postal Roads need a careful consideration & incorporation of the surrounding drainage pattern integrated into the road system while developing this important road corridor.
- To develop and expand the existing SRN to facilitate effective and efficient movement of goods and services and to foster economic growth;
- To develop and adopt cost effective measures by initiating innovativeness in road pavement and bridge design;
- To develop roads to support other infrastructure development and to link areas of significant social and economic importance; and,
- To encourage private sector participation in the development, maintenance and management of roads.



सडक विभागमा सूचना प्रविधिको अवस्था

सडक विभाग अन्तर्गत सर्वप्रथम यान्त्रिक महाशाखाले आ.व. २०४८/४९ मा “**Equipment inventory Database**” तयार गरी विभिन्न Heavy Equipment को computer based Database राखे कार्य सुरुवात गरेको थियो । तत् पश्चात आ.व. २०५०/५१ मा योजना महाशाखाको Monitoring & Evaluation Unit बाट “**Project Monitoring Software**” बाट वार्षिक कार्यक्रम चौमासिक प्रगति को ,विनियोजित बजेट , Database तयार गरी software मार्फत राष्ट्रिय योजना आयोगको format मा Report Generation र अनुगमन तथा मूल्यांकन को सुरुवात भएको थियो । सुचना प्रविधिको आवश्यकता अनुरूप आ.व. २०५०/५१ मा HMIS-ICT (Highway Management Information System- Information Communication Technology) Unit को स्थापना गरीयो र “**dROAD** ” version 5 को खरिद गरी सडकको dedicated database राखे कार्यको सुरुवात भयो ।

- RSSDU मा कर्मचारीको bio-data शैक्षिक ,सरुवा ,योग्यता र training को विवरण राखे कार्य को “**Personal Information System (PIS)**” software बाट सुरुवात भयो ।
- Road Maintenance Project अन्तर्गत योजना महाशाखा र Traffic Police को computer मा “**MAAPS** ” (developed by TRL, UK) को installation गरेर traffic accident database राखे कार्यको सुरुवात भयो ।

- आ.व. २०५१/५२ मा RMRP rehabilitation projects बाट “**HDM III**” ”Highway Design and Maintenance को (installation गरी model calibration को कार्य सुरुवात भयो ।
- आ.व. २०५२ /५३ मा GEU(Geo-Environmental Unit) मा ADB को Technical Assistance मार्फत सडकको IEE/EIA को कार्यको लागि “**CALYX-ADB** ” version को installation गेरे screening,scoping र reporting को कार्य सुरुवात भयो ।
- आ.व. २०५२/५३ मा HMIS मा “**dMAP**” मार्फत road link लाई digitize गरी National Strategic Road Network लाई road condition survey data राखी report generation को कार्य सुरुवात भयो ।
- आ.व. २०५२ /५३ मा Bridge Unit बाट “**Bridge inventory Database**” तयार गरी करिब २०० वटा पुलको अभिलेख तयार गरीयो ।

S.N	F/Y	Name of Software Application	Unit/Branch	Remark
1	2048/49	Equipment inventory Database	Mechanical Branch	1 st database software in DOR
2	2050/51	Project Monitoring Software	Monitoring & Evaluation Unit (MEU)	
3	2050/51	dROAD version 5	HMIS	
4	2051/52	Personal Information System (PIS)	RSSDU	
5	2051/52	“MAAP5” (developed by TRL, UK)	Design Branch	Traffic Police
6	2051/52	“HDM III” (Highway Design and Maintenance)	HMIS-ICT	RMRP projects
7	2052/53	“CALYX-ADB” version	GEU(Geo-Environmental Unit)	
8	2052/53	“dMAP”	HMIS	
9	2052/53	“Bridge inventory Database”	Bridge Unit	

➤ बतमान अवस्था

वार्षिक रूपमा Road Boards Nepal को funding बाट Road Condition Data (IRI,SDI र Traffic Count को कार्य (HMIS-ICT Unit बाट हुने गेरेको र यो data को आधारमा नै ARMP मार्फत maintenance budget को सीमा तयार गरीने गरीएको छ । त्यसै गरी World Bank को funding बाट Road Inventory तयार भएको अवस्था छ । नेपाल सरकारको नीति अनुरूप Centralized e-mail मा mail.dor.gov.np को domain मा shift भई official mail संचालन मा रहेको छ ।

ठेका अनुगमन प्रणाली (Contract Monitoring System, CMS)

हाल सडक विभाग अन्तर्गत रहेका ठेकाहरूको विवरण ठेका अनुगमन प्रणालीमा प्रविष्ट गरीएको छ । यसबाट ठेका शुरु, हालसम्मको प्रगति र सम्पन्न हुने समय समेत प्रस्त देखिने गरी तयार गरीएको छ

हाल सडक विभागको आफ्नै server मा तपसिल बमोजिम को विभिन्न software हरु संचालनमा रहेका छन् ।

S.N	Name of Software Application	Type	URL	Colocation	Remarks
1	RMIS (Road Inventory Management System)	Web based	http://202.166.197.27:8080/webgis	DOR Server	Running
2	CMS (Contract Monitoring System)	Web based	cms.dor.gov.np	DOR Server	Running
3	FMIS (Finacial Management Information System)	Web based	fmis.dor.gov.np	DOR Server	Running
4	PMIS (Progress Monitoring Information System)	Web based	pmis.dor.gov.np	DOR Server	Running
5	GRMS (Grievance Redress Management System)	Web based	grms.dor.gov.np	DOR Server	Running
6	EIS (Emergency Information System)	Web based	eis.dor.gov.np	DOR Server	Running
7	DMS (Document Management System)	Web based	dms.dor.gov.np	DOR Server	Running
8	Store Inventory System	Web based	Spare.dor.gov.np	DOR Server	Running
9	DOR website	Web based	www.dor.gov.np	DOR Server	Running
10	DOR mail	Web based	mail.dor.gov.np	NITC Server	Running
11	Distance Calculator	Web based	https://dor.gov.np/home/getdistancecalc	DOR Server	Running
12	PIS (Personnel Information System)	Desktop application		Desktop	Running
13	BMIS (Bridge Management Information System)	Web based	http://bms.softavi.com/	Service Provider	Running
14	SSRN (Statistics of Strategic Road Network)	Web based	http://ssrn.aviyaan.com/	Service Provider	Running
15	ARMP (Annual Road Maintenance Plan)	Web based	http://armp.aviyaan.com/	Service Provider	Running

➤ आगामी कार्ययोजना

World Bank को funding बाट तयार गरीएको RMIS (Road Inventory Management System) लाई upgrade गरेर Road Assets Management System (RAMS) बाट अनुगमन, मुल्यांकन, वर्गीकरण गरी Project Prioritize गरी सडक सम्पतिको संरक्षण कार्यलाई अगाडी बढाउने ।

पन्थौ आवधिक योजनाको लक्ष्य र प्रगति

१५ औ आवधिक योजनाले सम्बन्धित मन्त्रालयको सिफारिस, स्रोत लगानीको सुनिश्चितता भएको, वातावरणीय अध्ययन भएको, विस्तृत आयोजना प्रतिवेदन तयार भएको आयोजना मध्ये क्षेत्रगत, रणनीतिक, दिगो विकासका लक्ष्य, लैंगिक समानता आदिमा गर्ने योगदानको आधारमा राष्ट्रिय योजना आयोगले राष्ट्रिय प्राथमिकता आयोजनाको रूपमा वर्गीकरण गर्न सक्ने व्यवस्था रहेको छ ।

नेपाल सरकारले पहिलोपल्ट आ.व. २०६८/०६९ देखि विभिन्न दृष्टिकोणले महत्वपूर्ण देखिएका १७ वटा आयोजनाहरूलाई राष्ट्रिय गैरवका आयोजनाका रूपमा वर्गीकरण गरेको विभिन्न समयमा थप सहित हाल सम्म २४ वटा राष्ट्रिय गैरवका आयोजनाहरू रहेकामा १८ वटा मात्र संचालनमा छन् । १५ औ आवधिक योजनाले राष्ट्रिय गैरवका आयोजना हुनलाई आर्थिक सामाजिक विकासमा योगदान, बृहत पूर्वाधार निर्माण, सांस्कृतिक तथा वातावरण संरक्षण सम्बन्धि रणनीतिक

महत्वलाई आधार मान्ने गरेको छ । त्यसैगरी १५ औं आवधिक योजनाले लिएका राष्ट्रिय लक्ष्य हासिल गर्न, बृहत प्रभाव पार्ने, सबल अर्थतन्त्र, प्रादेशिक सन्तुलन र दोहोरो अंकको आर्थिक वृद्धिमा योगदान गर्ने र विशिष्ट प्रकृतिका आयोजनालाई रूपान्तरणकारी आयोजनाको रूपमा राखेको छ ।

१५ औं योजनाको नतिजा सूचकको चालु आ.व. चौथो त्रैमासिकसम्मको प्रगति स्थिति-सडक विभाग

क्र. सं.	नतिजा सूचक	एकाइ	आधार वर्ष (२०७५/७६)	२०७७/७८		२०७८/७९		जिम्मेवार निकाय
				लक्ष्य	प्रगति	लक्ष्य	प्रगति	
१	राष्ट्रिय राजमार्ग (दुई लेनसम्म कालोपत्रे)	कि.मी.	५९९४	८४९४	६८४७	९७९४	७२३७	भौ.पू.त.या./स.वि.
२	राष्ट्रिय राजमार्ग (दुई लेनमाथी द्रुतमार्ग समेत)	कि.मी.	९६	२२५	१९२	३४५	२०४	भौ.पू.त.या./स.वि.
३	राष्ट्रिय राजमार्ग (नयाँ ट्रयाक निर्माण, वार्षिक)	कि.मी.	२६०	३५०	९२	४००	१४५	भौ.पू.त.या./स.वि.
४	राष्ट्रिय राजमार्ग पुनर्स्थापना तथा पुनर्निर्माण (वार्षिक)	कि.मी.	१८२	२२५	४७४	२२५	१५५	भौ.पू.त.या./स.वि.
५	राष्ट्रिय राजमार्ग आवधिक मर्मत सम्भार (वार्षिक)	कि.मी.	३२०	७२९	४२४	७५०	२५०	भौ.पू.त.या./स.वि.
६	राष्ट्रिय राजमार्ग नियमित मर्मत सम्भार (वार्षिक)	कि.मी.	९१५५	७१८७	७१८७	७२००	७८००	भौ.पू.त.या./स.वि.
७	सडक पुल निर्माण	वटा	३००	३००	१९२	३००	२८२	भौ.पू.त.या./स.वि.

राष्ट्रिय गौरवका आयोजनाहरूको विस्तृत विवरण (आ.व. २०७८/०७९ को प्रगति)

सडक विभाग अन्तर्गत ५ वटा आयोजनाहरू क) पुष्पलाल (मध्यपहाडी) राजमार्ग आयोजना, ख) हुलाकी राजमार्ग आयोजना, र उत्तर दक्षिण करिडोर अन्तर्गत ग) कोशी करिडोर, घ) कालिगण्डकी करिडोर, ड) कर्णाली करिडोर राष्ट्रिय गौरवका आयोजनाका रूपमा निर्माण/स्तरोन्नति कार्य भैरहेको छ ।

६.१ पुष्पलाल (मध्य-पहाडी) राजमार्ग आयोजना

१) पृष्ठभूमि

पूर्वाधारको पनि पूर्वाधारको रूपमा रहेको सडक यातायात देशको सर्वाङ्गिण विकासको लागि मेरुदण्ड मानिन्छ । नेपाल जस्तो भूपरिवेष्टित एवं भौगोलिक विविधता भएको मुलुकको आर्थिक तथा सामाजिक विकासको सम्भावना रहेको हुँदा यो क्षेत्रलाई सुदूरीकरण गर्दै अगाडी बढ्नु जरुरी छ । राष्ट्रिय राजमार्ग तथा सडक यातायात संजालको विकास गरी सडक प्रयोगकर्ताहरूलाई सरल, सजिलो र सुलभ यात्रा उपलब्ध गराउन आवश्यक सडक र पुल जस्ता भौतिक संरचनाहरूको विकास तथा विस्तार गर्न अपरिहार्य छ ।

सडक सञ्चालको विकासलाई आत्मसात गर्दै, नेपालको मध्य पहाडी भुभागका जिल्लाहरूलाई यातायात सञ्चालनमा जोडी उक्त क्षेत्रको आर्थिक, सामाजिक, सास्कृतिक, पर्यटकीय र शैक्षिक तगायतका समग्र क्षेत्रको सन्तुलित विकास गर्ने अभिप्रायले तराईका जिल्लाहरू समेटेर निर्माण गरीएको पूर्व पश्चिम राजमार्ग जस्तै पहाडी क्षेत्रको पूर्वमा पाँचथर जिल्लाको चियोभड्याङ्ग (नेपाल भारत सिमाना) देखि पश्चिममा बैतडी जिल्लाको झुलाघाट (महाकाली नदी) सम्म पुने गरी करीब १८७९ कि.मी. लम्बाईको वैकल्पिक राजमार्ग निर्माण गर्ने उद्देश्यका साथ नेपाल सरकारको आन्तरिक श्रोतवाटै सम्पूर्ण खर्च व्यहोर्ने गरी आ.व. २०६४/०६५ देखि मध्य पहाडी राजमार्ग आयोजना संचालनमा रहेको छ । आ.व. २०६४/६५ देखि शुरु भएको यस आयोजनाको कुल लागत ८४ अर्ब ३३ करोड रहेकोमा आ.व. २०७६/७७ सम्म रु ४६ अर्ब १४ करोड खर्च भैसकेको छ । १५ औं पञ्चवर्षीय योजनामा व्याख्या भए बमोजिम उक्त आयोजनाको सम्पुर्ण कार्य आ.व. २०७९/८० भित्र सम्पन्न गर्ने लक्ष्य रहेको छ ।

२) राजमार्गको रेखाङ्कन

प्रारम्भ बिन्दुः पाँचथर जिल्लाको पुर्वी भेगमा पर्ने चियोभन्जयाङ्ग, (नेपाल भारत सिमा) बाट शुरु भई बैतडी जिल्लाको झुलाघाट (नेपाल—भारत सिमा) सम्म पुग्ने गरी नेपाल सरकारबाट स्वीकृत रेखाङ्कन निम्न उल्लिखित स्थानहरू हुँदै निर्माण गरीने निर्णय भएको छ।

प्रदेश नं. १: चियोभञ्जयाङ्ग, च्याङ्गथापु, ओयाम, थर्पु, गणेशचोक, गोपेटार, जोरसाल, तमोर नदी, सक्रान्ती बजार, म्याङ्गलुङ्ग, बसन्तपुर, हिले, लेगुवाघाट, भोजपुर, दिक्तेल, हलेसी, हिलेपानी, टोकसेलघाट (घुर्मी)

प्रदेश नं. ३: घुर्मी, खुर्कोट, राकाथुम, चौरीखोला, दोलालघाट, बाहुनेपाटी, पातीभञ्जयाङ्ग—सानो कात्तिके, छहरे, त्रिशुली, सल्यानटार, गोरखा सिमाना (आरुघाट)

प्रदेश नं. ४: गोरखा सिमाना (आरुघाट), पालुङ्गटार, भोर्लेटार, भगवतीटार, भैसे, पोखरा, बागलुङ्ग, बुर्तिवाङ्ग, वागलुङ्ग (रुकुम सिमाना)

प्रदेश नं. ५: रुकुम सिमाना, लुकुमगाँउ, रुकुमकोट

प्रदेश नं. ६: मुसिकोट, चौरजहारी, जगातीपुर, बेस्ताडा, दैलेख, दुल्लु, जम्बुकाँध, सात्तला, साइजिउला, बेलखेत

प्रदेश नं. ७: बेलखेत, बिनायक, साफेबगर, सिलगढी, डडेलधुरा, पाटन, सतबाँझ, झुलाघाट

हालसम्मको समष्टिगत प्रगति आ.ब. २०७८/०७९ सम्म

- आयोजनाको लक्ष्य: कुल लम्बाई १८७९ कि.मि. सडक निर्माण तथा स्तरोन्नति र १३७ वटा पुल निर्माण
- आयोजनाको अवधि : शुरु आ.ब २०६४/६५, सम्पन्न हुने आ ब २०७९/८०
- आयोजनाको लागत: ८४ अर्ब ३३ करोड (संशोधित)

हाल सम्मको समष्टिगत प्रतिशत:

- भौतिक प्रगति: ६४.१६%
- वित्तीय प्रगति: ६९.७९% (५८ अर्ब ८५ करोड)
- कुल १८७९ मध्ये आयोजनाबाट ७९७ कि.मि., अन्य निकायबाट ४६२ कि.मि गरी १२५९ कि.मि. कालोपत्रे, कुल १३७ पुल मध्ये ९३ वटा पुल सम्पन्न, ४१५ कि.मि. सडक र २५ वटा पुल निर्माणाधिन तथा २०५ कि.मि. सडक र १९ वटा पुलको ठेक्का व्यवस्थापन हुन बाँकी।

हुलाकी राजमार्ग आयोजना

राजमार्ग तथा सडक यातायात संजालको विकास गरी सडक प्रयोगकर्ताहरूलाई सरल, सजिलो र सुलभ यात्रा उपलब्ध गराऊन आवश्यक सडक र पुल जस्ता भौतिक संरचनाहरूको विकास तथा विस्तार गर्न अपरिहार्य छ। राष्ट्रिय सडक संजालले देशको विकासोन्मुख देशको आर्थिक, सामाजिक र सास्कृतिक रूपान्तरणमा योगदान दिई, सरकारले अघि सरेको “सम्बूद्ध नेपाल, सुखी नेपाली” को मुल नारालाई यथार्थमा परिणत गर्न महत्वपूर्ण भुमिका खेल्ने विषयमा दुई मत छैन।

यही आवश्यकता र त्यसका उपलब्धिहरूलाई आत्मसात गर्दै, नेपालको तराई मधेश भुभागका जिल्लाहरूलाई यातायात सञ्जालमा जोडी उक्त क्षेत्रको आर्थिक, सामाजिक, सास्कृतिक, पर्यटकीय र शैक्षिक लगायतका समग्र

क्षेत्रको सन्तुलित विकास गर्ने अभिप्रायले तराईका २१ जिल्लाहरु समेटेर निर्माण गरीएको पूर्व पश्चिम राजमार्ग जस्तै तराई मधेशको दक्षिणी क्षेत्रको पूर्वमा मेची देखि पश्चिममा महाकाली सम्म पुग्ने गरी करीब ९७५ कि.मी. हुलकी राजमार्ग र अन्य सहायक मार्गहरु द१७ कि.मी. समेत गरी जम्मा १७९२ कि.मी. लम्बाईको सडक निर्माण गर्ने उद्देश्यका साथ भारत सरकारको सहयोगको साथै नेपाल सरकारको आन्तरिक श्रोतवाट खर्च व्यहोर्ने गरी आ.व. २०६६/६७ देखि हुलाकी राजमार्ग आयोजना संचालनमा रहेको छ।

राजमार्गको रेखाङ्कन विवरण

प्रारम्भ बिन्दुः झापा जिल्लाको भद्रपुर स्थित मेची पुल (भद्रपुर, नेपाल भारत सिमा) देखि कञ्चनपुर जिल्लाको दोधारा (नेपाल—भारत सिमा) सम्म जोडिने गरी नेपाल सरकारबाट निम्न उल्लिखित स्थानहरु हुँदै जानेगरी रेखांकन स्विकृति प्राप्त भएको छ।

प्रदेश नं. १: मेची पुल (भद्रपुर), रतुवा, केशलिया, लौकाहि (पुल्चोक), कोशी व्यारेज (मरामा)।

प्रदेश नं. २: कोशी व्यारेज (म.रा.मा.), भारदह, कञ्चनपुर, राजविराज, वलान, कमला, जनकपुर, बसविती, हर्दी, मलंगवा, वागमती (वर्द्धवा), महेशपुर, अरुवा, कलैया, वारा, विरगंज, अमुवा पोष्ट।

प्रदेश नं. ३: अमुवा पोष्ट, माडी रियू खोला, जगतपुर, वहुवन।

प्रदेश नं. ४: वहुवन, त्रिवेणी

प्रदेश नं. ५: त्रिवेणी, बरुवा, नारायणचोक, परासी, मोवा, भैरहवा, लुम्बिनी, कोठी, तौलिहवा, बहादुरगंज, रामनगर, चराई नाका, कालाकाटे, गोवरडिहा, गढवा, राजपुर, गोठुवा, कुम्वर, वेतहनी, नेपालगंज, मानखोला, गुलरिया, कोठियाघाट, राजापुर, कर्णाली (सती)।

प्रदेश नं. ७: कर्णाली (सती), धनगढी, कञ्चनपुर वोर्डर, काजागाँऊ, दोधारा।

हालसम्मको प्रगति

आ.व. २०६६/६७ देखि शुरु भएको यस आयोजनाको शुरु लागत ४७ अर्ब २४ करोड रहेकोमा हाल विभिन्न स्थानमा रेखाङ्कन परिवर्तन र मुल्य वृद्धिको कारण संशोधित कुल लागत ६५ अर्ब २० करोड अनुमान गरीएको छ। आ.व. २०७६/७७ सम्ममा भारतीय अनुदान तर्फ ५ अर्ब ५२ करोड समेत गरी जम्मा रु ३५ अर्ब ४० करोड खर्च भैसकेको छ। आ.व. २०७६/७७ मा १३.६ अर्ब बजेट (२.०५ अर्ब भारतीय अनुदान समेत) विनियोजन भएको छ। १५ औ पञ्चवर्षीय योजनामा व्याख्या भए बमोजिम उक्त आयोजनाको सम्पुर्ण कार्य आ.व. २०७९/८० भित्र सम्पन्न गर्ने लक्ष्य रहेको छ। आयोजना शुरु गर्दा पहिले नै संचालनमा रहेका अधिकांश सडकलाई राजमार्गमा समावेश गरीएको र केही थप नयाँ सडक निर्माण गर्नुपर्ने देखिएकोमा पछि विभिन्न खण्डमा रेखाङ्कन परिवर्तन हुन गई नयाँ सडकको लम्बाई बढ्न गएको र शुरु लागतमा पनि वृद्धि भएको देखिन्छ। आ.व. २०७६/७७ सम्ममा कुल १७९२ कि.मी. मध्ये ५१२ कि.मी. कालोपत्रे, २८८ कि.मी. ग्रामेल सम्पन्न, बाँकी ५४४ कि.मी. मध्ये ३८६ कि.मी. सडकको ठेक्का सम्झौता भएको वटा पुल ९५ पुल मध्ये २१९ कुल, सम्पन्न भएको र समिगत भौतिक प्रगति ५४ प्रतिशत रहेको छ।

आ. ब. २०७८/०७९ सम्मको प्रगति

- आयोजनाको लक्ष्यः कुलै लम्बाई १७९२ कि.मि. सडक निर्माण तथा स्तरोनन्ति र सो राजमार्गमा पर्ने २१९ वटा पुल समेत निर्माण गर्ने
- आयोजनाको अवधि: आ.व. २०६६ /६७ देखि २०७९/८० सम्म
- आयोजनाको लागत: रु. ६५ अर्ब २० करोड रहेको छ

हाल सम्मको समष्टिगत प्रतिशतः

भौतिक प्रगति: ६१.१२%; वित्तीय प्रगति : ५२.१८ अर्ब (८०.०३%)

- कुल १७९२ कि.मि. मध्ये ८९१ कि.मि. कालोपत्रे सम्पन्न,
- कुल २१९ पुल मध्ये ११५ वटा पुल सम्पन्न,
- बाँकी मध्ये ४७० कि.मि. सडक निर्माणाधिन अवस्थामा रहेको।

उत्तर दक्षिण राजमार्ग आयोजना (कोशी, कालीगण्डकी र कर्णाली करिडोर)

रणनीतिक, व्यापारिक, ऐतिहासिक र सामरिक महत्त्व भएका उत्तर दक्षिण सडक सञ्चालबाट दुई छिमेकी चीन र भारतसंग व्यापार सम्बन्ध मजबूत गर्ने लक्ष्य अनुरूप नेपाल सरकारले प्रमुख आठवटा सडक सञ्चाल निर्माण गर्ने लक्ष्य राखेको छ । आठवटा उत्तर दक्षिण करिडोर मध्ये तीनवटा सडक लाई नेपाल सरकारले राष्ट्रिय गैरवका आयोजनाको सूचीमा राखेर प्राथमिकताका साथ निर्माण गरीरहेको छ ।

राष्ट्रिय गैरवका तीन आयोजना

नेपाल सरकारले उत्तर-दक्षिण जोड्ने तीनवटा सडक कालीगण्डकी, कोशी र कर्णाली, राजमार्गलाई २०६४ देखि निर्माण थालेको हो । २०६६ देखि नेपाल सरकारले यी राजमार्गहरूलाई राष्ट्रिय गैरवको आयोजनामा सूचीकृत गरेर प्राथमिकताका साथ ट्र्याक खोल्ने, स्तरोन्नति गर्ने कार्य चालु रहेको छ ।

१) योजना कार्यालय र कार्यक्षेत्र विवरणः

कालीगण्डकी करिडोर

पहिलो खण्ड : गैडाकोट-राम्दी -मालदुङ्गा

४४४ कि. मी. सम्पूर्ण खण्ड मध्ये पहिलो खण्ड (गैडाकोट-राम्दी -मालदुङ्गा) सडक (२४५ कि.मी.) स्तरोन्नति कार्य गैडाकोट-राम्दी-मालदुङ्गा सडक योजना पाल्पा बाट कार्यान्वयन भईरहेको छ । सडक सुधार तथा विकास योजना अन्तर्गत गैडाकोट-राम्दी १३२ कि.मी. सडकखण्ड कालोपत्रे गर्ने कार्यको सम्झौता भई निर्माण कार्य भईरहेको छ । राम्दी-मालदुङ्गा खण्ड नेपाल सरकारको लगानीमा उत्तर दक्षिण/व्यापारिक मार्ग निर्देशनालय अन्तर्गत कार्यान्वयन भईरहेको छ । आ. ब. २०७८/०७९ सम्मको प्रगति

ख) कालिगण्डकी करिडोर (गैडाकोट-राम्दी-मालदुङ्गा खण्ड)

- आयोजनाको लक्ष्य : गैडाकोट-राम्दी-मालदुङ्गा (२४५ कि.मी.) सडक ट्र्याक निर्माण तथा स्तरोन्नति गर्ने
- आयोजनाको अवधि : आ.व. २०६६/०६७ - २०८०/८१
- आयोजनाको लागत: रु. २५.२२ अर्ब

हाल सम्मको समष्टिगत प्रगति:

- भौतिक प्रगति: ३०.४०%, वित्तीय प्रगति: २८.९८% (रु. ७.३१ अर्ब) RIDP समेत
- गैडाकोट-पिपलडाँडा खण्ड १३२ (कि.मि) मध्ये १११ कि.मि. कालोपत्रे सम्पन्न भएको।
- जम्मा ५३ वटा पुलहरू मध्ये हालसम्म २३ वटा पुलहरूको निर्माण सम्पन्न भएको।

दोश्रो खण्ड (बेनी-जोमसोम —कोरेला) १८६ कि.मी. स्तरोन्नति गर्ने कार्य बेनी-जोमसोम —कोरेला सडक योजना, जोमसोमवाट निर्माणाधीन छ। मालदुङ्गा देखि बेनी सम्म १३ कि.मी. को सडक विस्तारको लागि ठेका व्यवस्थापनको प्रक्रियामा रहेको छ।

- आयोजनाको लक्ष्य : २०२ कि.मि. ट्र्याक खोल्ने र स्तरोन्नति गर्ने
- आयोजनाको अवधि: आ.व. २०७३/०७४-२०७९/८०
- आयोजनाको लागत: रु. ६.७८ अर्ब

हाल सम्मको समष्टिगत प्रगति:

- भौतिक प्रगति: ८२.१५%, वित्तीय प्रगति: ७९.३५% (५.३८ अर्ब)
- कुल २०२ कि.मि मध्ये सम्पूर्ण ट्र्याक खुलेको, १४० कि.मि. ग्राभेल, २८ कि.मि. कालोपत्रे र ४ वटा पुल निर्माण सम्पन्न भएको।

कोशी करिडोर

दक्षिणी नाका मोरडको रानीदेखि संखुवासभाको किमाथांका जोड्ने यो राजमार्गको ३८५ किलोमिटर लामो छ। खाँदवारी किमाथांका १६२ कि.मी. मध्ये १४ किलोमिटर ट्र्याक निर्माणको कार्य नेपाली सेनावाट भईरहेको छ। रानी देखि संखुवासभाको सदरमुकाम खाँदवारीसम्म कालोपत्रे भइसकेको छ। खाँदवारी-नुम ४० किलोमिटर खण्डमा स्तरोन्नति कार्य चालु रहेको छ।

कोशी राजमार्ग बिराटनगरको रानी भन्सार नाका देखि संखुवासभाको किमाथांका सीमा सम्म पुग्ने राजमार्ग आर्थिक विकास को दृष्टिले अत्यन्त महत्वपूर्ण सडक हो। अरुण नदीको किनारैकिनार चीनको तिब्बती सहर रियूमा

जोडिने उत्तर-दक्षिण यो राजमार्ग बनेमा नेपाल, चीन र भारतबीच व्यापार बढन सक्ने देखिन्छ । यो राजमार्गको उत्तरी सीमाविन्दु किमाथांकाबाट तिब्बतको दोस्रो ठूलो व्यापारिक सहर सिगात्से ३०० कि. मी. दूरीमा पर्छन् । अर्को तर्फ दक्षिणी सीमा विराटनगर भारतको कोलकाताबाट सामान ओसार पसार हुने धेरै पुरानो नाका हो । किमाथांक हुँदै सिगात्से जोडिने सडक अरुण नदीको तिरैतिर पर्ने भएकाले उच्च हिमाली क्षेत्र भए पनि हिउँ बाधक बन्दैन । यो सडक सम्पन्न भएपछि विराटनगर हुँदै बंगलादेश, भारत, चीन र भुटानको समेत व्यापारिक साझेदारी केन्द्रको रूपमा विकास हुन सक्ने देखिन्छ । आ. ब. २०७८/०७९ सम्मको प्रगति

- आयोजनाको लक्ष्य : आयोजनाको कार्यक्षेत्र खाँदबारी देखि किमाथांका सम्म जम्मा १६२ कि.मि. ट्रयाक खोलि स्तरोन्नति गर्ने
- आयोजनाको अवधि: आ.व. २०६५/०६६ देखि २०८३/८४
- आयोजनाको लागत: रु. १६.२० अर्ब (सुरुको)
११.९३ अर्ब (संशोधित)

हाल सम्मको समाइगत प्रगती:

- भौतिक प्रगति: ३८.६०%, वित्तीय प्रगति: ३५.८७% (४.२८ अर्ब)
- कुल १६२ कि.मि मध्ये १५० कि. मि. ट्रयाक खुलेको र ५५ कि.मि. ग्राभेल भएको, ८ वटा पुल निर्माण सम्पन्न भएको
- बाँकी १२ कि.मि. को ट्रयाक खोल्ने कार्य नेपाली सेनाबाट सञ्चालन रहेको ।

कर्णाली राजमार्ग

कर्णाली राजमार्ग उत्तर दक्षिण जोड्ने सडकहरु मध्ये महत्त्वाकांक्षी र सबैभन्दा कठिन भूगोल भएको निर्माण भईरहेको छ । यो राजमार्गले नेपालगन्जको जमुनाह नाकादेखी हुम्लाको सीमा हिल्सासम्म जोड्ने उद्देश्य रहेको छ । यो राजमार्ग उत्तर-दक्षिण जोडिने राजमार्गहरु मध्ये सबैभन्दा लामो ६८२ कि.मि. सडक हुनेछ । खुलालु देखि सलिलसल्ला सम्म (१२४ कि.मी.) सडक नेपाली सेनाबाट ट्रयाक निर्माण कार्य भैरहेकोमा हालसम्म १०६ कि. मी. ट्रयाक निर्माण कार्य सम्पन्न भएको छ । सडक विभागबाट सलिलसल्ला देखि हिल्सा सम्म १४५ कि. मी. सडक निर्माण कार्य भईरहेकोमा सलिलसल्ला देखि सिमकोट ५१ कि.मी. मध्ये १२ कि.मी. ठेक्का व्यवस्थापनको प्रक्रियामा रहेको र अन्य खण्डमा ट्रयाक निर्माण कार्य सम्पन्न भएको छ । हिल्सा र टिंकरवाट करिब दुई घन्टामा गाडीमा ताकलाकोट पुगिन्छ । ताकलाकोटबाट करिब ३० किलोमिटर दूरीमा पुराड सहर आउँछ । पुराडबाट सुदूरपश्चिम तिब्बतको सबैभन्दा ठूलो सहर यारी ३५४ किलोमिटर दूरीमा पर्छ । यस हिसाबले समेत यो सडक कर्णाली जिल्लाको पहुँच काठमाडौं र चीनसम्म हुने देखिन्छ । आ. ब. २०७८/०७९ सम्मको प्रगति सडक विभाग तर्फ

• योजनाको लक्ष्यः (नेपाली सेनाउं बोर्डको) २६९ कि.मि (हिल्स-सिमिकोट सडक खण्ड-९५ कि.मि. तथा सिमिकोट-सल्लीसल्ला सडक खण्ड- ५१ कि.मि. र खुलालु- सल्लीसल्ला सडक खण्ड- १२३) सडक ट्रयाक निर्माण तथा पुल निर्माण १४ वटा।

- आयोजनाको अवधि: आ.व. २०६९/०७० देखि आ.व. २०७९/०८० सम्म।
- आयोजनाको कुल लागत : रु. ४.९० अर्ब

हाल सम्मको समाप्तिगत प्रतिशतः

- भौतिक प्रगति: ३१.२०% वित्तीय प्रगति: ३१.४६ % (१.२९ अर्ब)
- कुल २६९ कि.मि मध्ये २६३ कि.मि. ट्रयाक खुलिसकेको जसमध्ये खुलालु-सल्लीसल्ला १२३ कि.मि. नेपाली सेनावाट ट्रयाक खोलिएको

गल्छी-त्रिशुली-मैलुङ्ग-स्याफुवेशी-रसुवागढी सडक

देशका विभिन्न भौगोलिक तथा आर्थिक क्षेत्रहरूलाई एक अर्कासँग आबद्ध गरी देशको आर्थिक तथा सामाजिक क्षेत्रको विकासमा टेवा पुन्याउने सडक, पुल जस्ता पूर्वाधारको विकास र विस्तार गरी राष्ट्रिय राजमार्ग तथा सडक संजालको विकासमा जोड दिनु आजको प्रमुख आवश्यकता हो। राष्ट्रिय सडक संजालको सुदृढीकरणले मात्र नेपाल जस्तो विकास उन्मुख देशमा आर्थिक तथा सामाजिक क्रान्ति सम्भव हुने भएकाले देशलाई सम्बृद्ध बनाउनको निमित्त यातायात पूर्वाधारलाई सरकारद्वारा उच्च प्राथमिकता दिईएको छ।

नेपाल सरकार मन्त्रिपरिषद्को मिति २०७२/०८/१७ को निर्णय अनुसार गल्छी त्रिशुली मैलुङ्ग स्याफुवेशी रसुवागढी सडक योजनालाई राष्ट्रिय गैरवको आयोजनाको रूपमा निर्णय गरी कार्यान्वयन गरीने निर्णय भएको थियो। धारिंग, नुवाकोट र रसुवा जिल्ला भएर चीनको नाकासम्म पुग्ने यस सडकको कुल लम्बाई ८२ किलोमिटर छ। सो मध्ये आ.व. २०७६/७७ को अन्त्य सम्ममा २१ किलोमिटर कालोपत्रे र ८ किलोमिटर ग्रावेल स्तरमा सम्पन्न भईसकेको छ। नेपाल सरकारले यो सडकलाई देशको उत्तर र दक्षिण तर्फ रहेका प्रमुख व्यापारिक नाकाहरूलाई जोड्ने र दुई छिमेकी चीन र भारतसँग व्यापार सम्बन्ध वृद्धि गर्ने लक्ष्य राखेर कार्यान्वयनमा जान विशेष प्राथमिकता दिईएको छ।

१) रेखांकन र नक्शा

NH 42 को रूपमा स्वीकृत ठोरी-भण्डारा-मलेखु-गल्छी-त्रिशुली-वेत्रावती-मैलुङ्ग-स्याफुवेशी-रसुवागढीको सडकको खण्डको रूपमा रहेको यस गल्छी-त्रिशुली-मैलुङ्ग-स्याफुवेशी-रसुवागढी सडक धारिंगको गल्छीबाट शुरु भई नुवाकोट सदरमुकाम विदुर तथा मैलुङ्ग-स्याफुवेशी हुँदै मित्रराष्ट्र चीनको सीमा क्षेत्र रसुवागढीमा पुग्दछ।

कार्ययोजना विवरण

पहिलो खण्डः

गल्छी-त्रिशुली-मैलुङ्ग खण्डको ४६ किलोमिटर लम्बाईमा ठेका व्यवस्थापन भई सडक तथा पुलहरूको निर्माण कार्य भईरहेको छ। यस खण्डको ६०% निर्माण कार्य सम्पन्न भईसकेको छ।

दोश्रो खण्ड अन्तर्गतको मैलुंग-स्याफुबेशीको कुल लम्बाई १९ किलोमिटर रहेकोमा नेपाली सेनाबाट ट्रयाक खोल्ने कार्य सम्पन्न भई सडक विभागलाई सो खण्ड हस्तान्तरण भईसकेको छ। सडक विभागबाट यसै आर्थिक वर्ष भित्र सो खण्डको ठेका व्यवस्थापनको सम्पूर्ण कार्य सम्पन्न गरी निर्माण कार्य समेत अधि बढाईसकेको छ।

तेस्रो खण्ड अन्तर्गतको स्याफुबेशी-रसुवागढी सडक १६ किलोमिटर चीन सरकारको सहयोगमा निर्माण कार्य शुरू भईसकेको छ। सडक विभागबाट जग्गा अधिग्रहणको कार्य, बिद्युत, खानेपानी, घर टहरा स्थानान्तरण जस्ता काम भईरहेको छ।

आयोजनाको फार्डा (अपेक्षित उपलब्धि)

यो सडकले उत्तरमा रसुवागढी देखि दक्षिणमा ठोरी सम्मको पहुँचलाई सहज बनाउदै उक्त मार्गमा पर्ने तराई मधेश, पहाडी तथा हिमाली जिल्लाहरूको आर्थिक, सामाजिक, साँस्कृतिक, पर्यटकीय तथा शैक्षिक विकासमा टेवा पुर्याउदै राष्ट्रिय एकता कायम गर्न मद्दत गर्दछ। यो सडक निर्माण तथा संचालनको अवधिभर रोजगारीको अवसर सृजना भइ गरीबी निवारणमा टेवा पुग्नेछ। नुवाकोट र रसुवा जिल्लाका करिब ३ लाख २० हजार जनसंख्या प्रत्यक्ष रूपमा लाभान्वित हुने छन्। उक्त क्षेत्रमा यातायातको पहुँचबाट आर्थिक तथा शैक्षिक विकासमा भइ सामाजिक चेतना अभिवृद्धि भई लैङ्गिक समानता तथा समावेशीकरणमा टेवा पुग्नेछ। यातायातको पहुँचबाट कृषि तथा उद्योग क्षेत्रको सहज विकास हुने हुँदा आयात प्रतिस्थापन तथा निर्यात प्रवर्द्धनमा टेवा पुग्नेछ र नयाँ लगानीका क्षेत्रहरूको पहिचान हुने हुँदा वैदेशिक लगानी प्रवर्द्धनमा समेत टेवा पुग्नेछ। यो सडकले पर्यटकीय क्षेत्रको विकासमा मद्दत पुग्ने तथा अन्य पूर्वाधार विकास कार्यमा समेत वृद्धि हुने अपेक्षा गरीएको छ।

हालसम्मको प्रगति आ. ब. २०७८/०७९

आयोजनाको लक्ष्य:	६५ कि.मि. कालोपत्रे सडक (डेडिकेटेड डबल लेन, ११ मिटर चौडा ११ मि. डिविएम र ७ मि. अस्फाल्ट) निर्माण, ३२ वटा पुल निर्माण, १ वटा फ्लाईओभर निर्माण, ४ वटा पहिरो नियन्त्रण कार्य।
आयोजनाको अवधि:	आ.व. २०७२/०७३ देखि आ.व. २०७९/०८० सम्म
आयोजनाको लागत:	१५५० करोड (१५० करोड निर्माण र ६०० करोड मुआव्जा/क्षेत्रिपुर्ति)

हालसम्मको समष्टिगत प्रगति:

भौतिक प्रगति:	५२.२%
वित्तीय प्रगति:	समग्र-रु ८०७.६१ करोड, पुँजिगत-४९२.६५ करोड, मुआव्जा-३१०.५८ करोड) (समग्र-५२.२०%, पुँजिगत-५१.८६%, मुआव्जा/क्षेत्रिपुर्ति-५१.७६%)
मुख्य प्रगति सूचकहरू:	कालोपत्रे- २७.३२४ कि.मि (अस्फाल्ट), डिविएम- ३१.५११ कि.मि., पुल निर्माण- ११ वटा सम्पन्न, १ वटा फ्लाईओभरको संभाव्यता अध्ययन भएको, ३ वटा पहिरोको ठेका भएको। १ वटा पहिरोको फार्डा लेप्चा भएको।

मदन भण्डारी राजमार्ग आयोजना

पृष्ठभूमि

नेपाल जस्तो भूपरिवेष्टित एवं विविधतायुक्त भूगोल भएको मुलुकको सर्वाङ्गीण विकासको सम्भावना सडक पुर्वाधारको विकासमा रहेको हुँदा यो क्षेत्रलाई सुदृढीकरण गर्दै अगाडी बढ्नु आजको आवश्यकता भएको छ। राष्ट्रिय राजमार्ग तथा सडक यातायात संजालको विकास गरी सडक प्रयोगकर्ताहरूलाई सरल, सजिलो र सुलभ यातायात सेवा

उपलब्ध हुन सडक र पुल जस्ता भौतिक संरचनाहरूको विकास तथा विस्तार गर्न अपरिहार्य छ। राष्ट्रिय सडक संजालले नेपाल जस्तो विकास उन्मुख देशको आर्थिक, सामाजिक र प्रसाशनिक क्षेत्रमा देशको सर्वाङ्गीण विकासमा योगदान दिई, सरकारले अघि सारेको ‘सम्बृद्ध नेपाल, सुखी नेपाली’ को मूल नारालाई साकार पार्न सडक यातायातको ठूलो महत्व छ।

जटिल भूगोल र छारिएर रहेका वस्तीहरूलाई एकीकृत विकासको माध्यमबाट यातायात सेवा उपलब्ध गराउने उद्देश्यले नेपाल सरकार मन्त्रिपरिषद्को २०७५/०२/०६ को निर्णय अनुसार मदन भण्डारी राजमार्ग आयोजनालाई आ.व. २०७६/७७ देखि कार्यान्वयनमा ल्याएको छ। पूर्वमा झापाको बाहुनडाँगी देखि सुदूरपश्चिममा डडेल्धुराको रुपाल सम्म जोड्ने यस राजमार्गको अनुमानित लम्बाई १२५० किलोमिटर छ र यो राजमार्गको रेखांकन चुरे क्षेत्रलाई आधार मानेर गरीएको छ। महेन्द्र राजमार्गको समान्तर र उत्तर तर्फ पूर्व-पश्चिम भएर जाने यो राजमार्गलाई बाहै महिना प्रयोग गर्न सकिने गरी रेखांकन गरीने छ।

उद्देश्य

मदन भण्डारी राजमार्ग आयोजनाको मूल उद्देश्य चुरे क्षेत्र (भित्री मधेश)मा बसोबास गर्ने बहुसंख्यक जनतालाई सहज यातायात सुविधा प्रदान गरी जनताको जीवनस्तरमा सकारात्मक प्रभाव पर्न हो। चुरेको बन क्षेत्र र आसपास रहेका भूमिहरू कृषि, पशुपालन, उद्योग तथा वस्ती विकासको लागि अत्यन्तै उपयुक्त मानिन्छन्। महेन्द्र राजमार्ग र मध्यपहाडी राजमार्गको बीचबाट जाने अन्य उत्तर-दक्षिण राजमार्गहरूसंग पनि जोड्ने हुँदा यस राजमार्गले हिमाल, पहाड र तराईलाई राष्ट्रिय यातायातको संजालमा जोड्ने काम गर्ने यो राजमार्गलाई नेपाल सरकारले उच्च प्राथमिकतामा राखेको छ।

स्वीकृत रेखांकन

नेपाल सरकार मन्त्रिपरिषद्को मिति २०७६/०२/०६ को निर्णयानुसार मदन भण्डारी राजमार्गको “रेखांकन”बाहुनडाँगी-शान्तिनगर-धरान-चतरा-गाईघाट-कटारी-सिन्धुलीमाडी-हेटौडा-गैँडाकोट-रामपुर-राम्दी-रिडि-बलकोट-सन्धिखर्क-बिजुवार-सितलपाटी-सुर्खेत-बड्डीचौर-बुडर-जोगबुढा-रुपाल”रहेको छ।

कार्यालयगत कार्यक्षेत्र

हाल मदन भण्डारी राजमार्ग अन्तर्गत चार वटा योजना कार्यालयहरू झापा जिल्लाको दमक, उदयपुर जिल्लाको गाईघाट, मकवानपुरको हेटौडा र गुल्मीको तम्घासमा स्थापना भइ कार्यान्वयनमा ल्याईएको छ। यो राजमार्ग अन्तर्गत धरान-चतरा-गाईघाट-कटारी-सिन्धुली-हेटौडा २४९ कि.मी. सडक खण्डको स्तरोन्नति तथा उक्त खण्डमा आवश्यक पुलहरूको निर्माण कार्य भैरहेको छ। त्यस्तै पश्चिममा तम्घास सिमलटारी प्युठान ४५ कि.मी. सडक खण्डको समेत निर्माण तथा स्तरोन्नतिको कार्य भैरहेको छ। अनुमानित १२५० कि.मी. मध्ये लगभग ४२० कि.मी. अन्य योजना कार्यालय तथा सडक डिजिनहरूले स्तरोन्नति तथा निर्माणको कार्य गरीरहेका छन् भने लगभग ८३० कि.मी. सडक स्तरोन्नति तथा सो खण्डको पुलहरू निर्माण मदन भण्डारी राजमार्ग आयोजनाबाट कार्यान्वयन हुन लागेको छ। पूर्वमा धरान देखि झापाको बाहुनडाँगीसम्म ९५ कि.मी. सडकको DPR तयार भैसकेको छ भने सो खण्ड भित्र पर्ने विभिन्न २६ वटा पुलहरूको ठेका पट्टा व्यवस्थापन भैसकेको छ। त्यस्तै पश्चिममा सुर्खेतको बड्डीचौर देखि कर्णाली नदी सम्म ९४ कि.मी. DPR तयार हुने क्रममा रहेको छ भने डोटीको जोगबुढा देखि डडेल्धुराको रुपाल सम्म १५ कि.मी. सडक खण्डको DPR तयार भैसकेको छ। यस आयोजनाको सम्पूर्ण सडक खण्डको DPR तयार भैसकेपछि आयोजनाको वास्तविक कुल लम्बाई र लागत स्पष्ट हुनेछ। साथै यस आयोजनालाई आ.व. ०८१/८२ सम्म सम्पन्न गर्ने लक्ष्य रहेको छ।

हालसम्मको समर्पित प्रगति आ. ब. २०७८/०७९

- आयोजनाको लक्ष्य: कुल लम्बाई १३९० कि.मि. सडक निर्माण तथा स्तरोनन्ति मध्ये मदन भण्डारी राजमार्ग आयोजना अन्तर्गत ७४० कि.मि. र १८५ वटा पुल निर्माण गर्ने
- आयोजनाको अवधि : शुरु आ.ब २०७५/७६, सम्पन्न हुने आ.ब. २०८१/८२ सम्म
- आयोजनाको लागत: ७५ अर्ब (अनुमानित)

हाल सम्मको समष्टिगत प्रतिशत:

- भौतिक प्रगति: ३७%, वित्तीय प्रगति: ३७% (२७ अर्ब)
- कुल ७४० मध्ये २५९ कि.मि. सडक कालोपत्रे, १८५ मध्ये ९३ वटा पुल सम्पन्न, ८९ कि.मि. सडक निर्माणाधिन, ३९२ कि.मि. सडक खण्डको ठेक्का व्यवस्थापन हुन बाँकी।

नागढुंगा नौविसे सुरुङ्ग मार्ग आयोजना (Tunnel)

आयोजनाको विवरण

देशका प्रमूख शहरहरूसंग सम्पर्क गर्दै काठमाडौं उपत्यका प्रवेश गर्ने प्रमुख सडक नारायणघाट - मुग्लिङ्ग - नौविसे - काठमाडौं खण्डमा पर्ने नागढुंगा भञ्चाड क्षेत्रमा सुरुड मार्गको निर्माण गरी सडक सुधार गर्ने उद्देश्यले नेपाल सरकारबाट जापान सरकारलाई अनुरोध भए बमोजिम जापान अन्तर्राष्ट्रिय सहयोग नियोग (JICA) बाट अनुदान सहायता अन्तर्गत मिति सन् २०१४ को जून देखि शुरु गरी मार्च २०१५ मा Preparatory Survey for Nagdhunga Tunnel Construction in Nepal सम्बन्धी अन्तिम अध्ययन प्रतिवेदन श्री भौतिक पूर्वाधार तथा यातायात मन्त्रालय, सडक विभागको तत्कालिन बैदेशिक समन्वय महाशाखामा पेश गरेको थियो । उल्लिखित प्रतिवेदनमा नागढुंगा क्षेत्रमा सुरुंगमार्ग निर्माण कार्यको सम्भाव्यता र उपयुक्तताको लेखाजोखा गरी काठमाडौं जिल्ला पट्टी त्रिभुवन राजपथको बलम्बु देखि सडक निर्माण शुरुगारी चन्द्रगिरी नगरपालिकाको दहचोक स्थित टुटीपाखा भन्ने स्थानबाट सुरुंगमार्ग निर्माण गरी धारिंग जिल्लाको धुनीवेसी नगरपालिका स्थित सिस्नेखोला नजिकैको स्थानमा निस्किने गरी प्रस्ताव गरेको थियो । सोही प्रतिवेदनलाई आधार मानी नेपाल सरकार र जापान सरकारबीच मिति २२ डिसेम्बर २०१६ मा जापान सरकारबाट जापानीज येन १६,६३६ मिलियन ऋण उपलब्ध गराउने गरी ऋण सहयोग सम्बन्धी समझौतामा हस्ताक्षर भएको थियो । उक्त समझौतामा आधारित रहेर मिति १७ मार्च २०१७ मा विस्तृत सर्वेक्षणको लागि परामर्शदाता नियुक्ति गरी कार्य शुरु भएको थियो ।

यसरी प्रस्तावित सुरुडमार्ग निर्माण कार्य पश्चात तपसिल बमोजिमका लक्ष्यहरु हासिल हुनेछन्:

- १) हालको सडकको रेखांकनमा सुधार हुने;
- २) यातायात संचालनको समय (Travel Time) मा कमि आउने;
- ३) सडक यातायातलाई सुरक्षित र भरपर्दो बनाई काठमाडौं संगको अन्य शहरहरूको सुधार सहितको यातायात संजाल मार्फत देशको आर्थिक विकासमा मद्दत पुग्ने ।

परामर्शदातासंगको समझौता बमोजिम मिति अप्रिल २०१८ मा तयार भएको प्रस्तावित सुरुड मार्ग निर्माण अन्तर्गत प्रमुख रूपमा निम्न बमोजिमका Components हुने गरी डिजाइन तयार गरीएको छ:

१. सुरुड मार्ग (लम्बाई २.६८८ कि.मी.)
२. पहुँच मार्ग (पूर्वी खण्ड र पश्चिम खण्ड गरी २.८७२ कि.मी.)
३. पुल संरचना (७ वटा), बक्स कल्पर्ट - ११ वटा
४. दुवै तर्फ सडक दस्तुर संकलनका लागि (Toll) संरचना
५. सुरुंगमार्गको सम्पूर्ण अवस्थाको अनुगमनका लागि नियन्त्रण कक्ष (Control Office)
६. सुरुड खन्दा निस्केको माटोको व्यवस्थापन (Construction of Service Station)
७. सुरुंगमार्गको लागि छुटै विद्युत लाइन विस्तार
८. फ्लाईओभर ब्रिज (२ वटा)
९. सम्भावित खानेपानीका श्रोतमा हुने क्षतिको व्यवस्थापन आदि ।

आयोजनाको लागि आवश्यक जग्गा अधिग्रहण सम्बन्धी लक्ष्य तथा प्रगति बिवरण:

जग्गा अधिग्रहण कार्य अन्तर्गत पूर्वी खण्डको (काठमाडौं जिल्ला) अधिग्रहण कार्य कार्यका लागि मिति २०७५/३/२६ मा मुआब्जा निर्धारण समितिबाट निर्णय भए अनुसार मुआब्जा वितरण कार्य शुरु भएको र हालसम्म करिब ९०% प्रगति हासिल भएको छ भने पश्चिम खण्डको (धारिंग जिल्ला) मुआब्जा निर्धारण कार्य अन्तर्गत भखरै मुआब्जा निर्धारण समितिबाट निर्णय भएको, सम्बन्धित जग्गाधनीहरूको प्राप्त निवेदन अनुसारका आवश्यक कागजात सहित लगतकट्टाका लागि मालपोत कार्यालयमा पेश गरीएको छ । बाँकी लालपुर्जा नभएका, गुठी लगायतका जग्गाहरूको अधिग्रहण सम्बन्धमा निर्णयहुने प्रक्रियामा रहेको र सो निर्णय अनुसार अगाडि बढ्ने लक्ष्य आयोजनाको रहेको छ ।

हालसम्मको समष्टिगत प्रगति आ. ब. २०७८/०७९

- आयोजनाको लक्ष्य: कुल लम्बाई २.६८८ कि.मि. सुरुंगमार्ग निर्माण, एप्रोच सडक, पुल , Roadside Service Center, Toll Booth, Operation and Management Building, Water Supply Worlds
- ठेक्का संझौता मिति: सेप्टेम्बर २३, २०१९
- ठेक्का शुरुवात मिति: नोभेम्बर १४, २०१९
- निर्माण सम्पन्न गर्नु पर्ने मिति: जुलाई २०, २०२३, (४५ महिना - ठेक्का सुरु मिति देखि)
- आयोजनाको लागत: जापानी येन : ७,४८५,४३८,४५१
अमेरिकी डलर : ६,७१३,५९४.५०
नेपाली रुपैया : ५,५००,२९३,०९९.२९

हाल सम्मको समष्टिगत प्रतिशत:

- भौतिक प्रगति: ३९.००%, वित्तीय प्रगति: ४८.५%

व्यापारिक मार्ग बिस्तार आयोजना

नेपालमा परिवहनको प्रमुख माध्यमको रूपमा सडक रहेको छ । आर्थिक सामाजिक गतिशीलताका लागि सडक यातायातले महत्वपूर्ण सहयोग पुर्याउँछ । त्यसैले विकासमा यातायात पूर्वाधार देशको मेरुदण्ड हो । नेपाल जस्तो भूपरिवेष्टित एवं विविधतायुक्त भूगोल भएको मुलुकको सर्वाङ्गीण विकासको सम्भावना यसैमा रहेको हुँदा यो क्षेत्रलाई सुदृढीकरण गर्दै अगाडि बढ्नु आजको आवश्यकता भएको छ । अन्तरदेशीय नाका र यातायात संजाल जोड्ने सडकहरूको विकास ,विस्तार र

सुदुर्ढीकरण गर्न तथा कृषि, उद्योग, व्यापार, जलविद्युत, पर्यटन, शिक्षा र स्वास्थ्य सेवामा पहुँच बढाउने गरी यातायात विस्तार गर्न कार्यमा सहयोग गर्दछ । साथै आर्थिक बृद्धीलाई योगदान पुग्ने गरी सुरक्षित यातायात पहुँच र सुविधा विस्तारमा टेवा पुर्याउँछ । राष्ट्रिय राजमार्ग तथा सडक यातायात संजालको विकास गरी सडक प्रयोगकर्ताहरूलाई सरल, सजिलो र सुलभ यातायात सेवा उपलब्ध हुन सडक र पुल जस्ता भौतिक संरचनाहरूको विकास तथा विस्तार गर्न अपरिहार्य छ । राष्ट्रिय सडक संजालले नेपाल जस्तो विकासोन्मुख देशको आर्थिक, सामाजिक र प्रशासनिक क्षेत्रमा देशको सर्वाङ्गीण विकासमा योगदान दिई, सरकारले अघि सारेको “सम्बृद्ध नेपाल, सुखी नेपाली” को मूल नारालाई साकार पार्न सडक यातायातको ठूलो महत्व छ ।

क) रानी विराटनगर इटहरी आयोजना

योजनाको विवरण

व्यापारिक मार्ग विस्तार आयोजना अन्तर्गत नेपाल भारत सिमाना बाट पूर्व-पश्चिम लोकमार्ग जोड्ने सडकलाई ६ लेनमा स्तरोन्नती तथा विस्तार गर्ने उदेश्य राखी आ.व. ०६९/७० देखि रानी-विराटनगर-इटहरी-धरान सडक योजना कार्यालयको स्थापना भएको हो । योजनाको कुल लम्बाई ४९ कि.मी. मध्ये हाल सम्म ३४ कि.मी. मा मात्र सडकको विस्तार कार्यको ठेकापट्टा भएको छ र १०.५ कि.मी. सडकको र १ वटा पुलको ठेका व्यवस्थापन गर्ने कार्य बाँकी रहेको छ ।

सडक रेखांकन

रानी विराटनगर इटहरी धरान सडक योजनाको कार्यक्षेत्र विराटनगरको रानी भन्सार देखि इटहरी हुँदै धरानको जिरो कि.मी. सम्म रहेको छ ।

हालसम्मको सम्पूर्णता प्रगति

कुल ४९ कि.मी. सडक मध्ये हाल सम्म ३४ कि.मी. मा मात्र सडकको विस्तार कार्यको ठेकापट्टा भएको छ । कुल सडक मध्ये हाल सम्म ३५ कि.मी. कालोपत्रे भैसेकेको छ । विभिन्न सेक्टर गरी १६ वटा सडक निर्माण कार्यको, १ वटा पुलको, २ वटा विद्युतीय संरचना स्थानान्तरण गर्ने ठेका संचालनमा रहेका छन् ।

ख) जटही जनकपुर आयोजना

योजनाको विवरण

व्यापारिक मार्ग विस्तार आयोजना अन्तर्गत जटही जनकपुर ढल्केबर सडक योजनाद्वारा निर्माणाधिन जटही जनकपुर ढल्केबर सडक नेपाल भारत को सीमानाका जटही देखि पूर्व पश्चिम राजमार्गको ढल्केबरसम्म कुल ४० कि.मी. लम्बाई रहेको यस सडकलाई प्राचीनिक रूपमा ६ लेन भनी सम्बोधन र नामाकरण गरीएको छ । प्रदेश २ को अस्थायी राजधानी जनकपुरलाई भारतको जटही सीमानाका र पूर्व पश्चिम राजमार्गको ढल्केबरसंग जोड्ने हुँदा यो सडकले औद्योगिक तथा व्यापारिक क्षेत्रको विकासमा टेवा पुर्याउने छ । हिन्दू धर्मावलम्बीको धार्मिक केन्द्र जानकी मन्दिर यसै सडकको सेरोफेरो मा रहेको हुदा यस सडकले पर्यटन विकासमा समेत योगदान पुर्याएको छ । भविष्यमा नेपाल भारत को आयात-निर्यातका लागि महत्वपूर्ण नाका हुने जटही नाकाबाट भित्रिने मात बाहक सवारी साधनको आवत-जावत यस सडकको निर्माण पश्चात सहज हुनेछ । यो सडकको निर्माण पश्चात धनुषा र महोत्तरी जिल्ला जिल्लाको आर्थिक, पर्यटकीय लगायत समग्र विकासमा ठुलो योगदान पुर्याई प्रयास सम्भावनाका द्वारहरु खुल्ने छन् ।

आ.व. २०७१-७२ देखि क्रमगत रूपमा ठेका व्यवस्थापन हुँदै आएको यस आयोजनाको सडक तर्फको कुल लागत अनुमान ६ अर्ब ९९ करोड रहेको छ । उक्त सडकको हालसम्मको भौतिक प्रगति ७८% निर्माण कार्य सम्पन्न भइ सकेको छ । साथै यस सडकमा पर्ने बसाई खोला, औरही (महेन्द्रनगर) खोला, सपहि खोला, दुधमती खोला, जल्लाद खोला र जमुनी खोलामा रहेका Single Lane का पुलहरूलाई पनि ६ लेनका पुलहरूमा स्तरोन्नति गर्नको लागि कुल १ अर्ब ६४ करोडको लागतमा ठेका व्यवस्थापन भई निर्माण कार्य सञ्चालनमा रहेको छ । यस सडकको स्तरोन्नतिको क्रममा सडक

सीमा भित्र रहको स्थानीय उपभोक्ता समिति र सिचाई डिभिजन कार्यालयबाट संयुक्त रूपमा सञ्चालनमा रहेको कच्ची सिचाई नहर क्षति भएको हुँदा उक्त नहरलाई पनि कुल ७० करोड ७५ लाखको लागतमा पक्की नहरमा स्तरोन्नति गर्ने ठेक्का व्यवस्थापन भई निर्माण कार्य सञ्चालनमा रहेको छ ।

सडकको रेखांकन

जटही जनकपुर ढल्केबर सडक योजनाको कार्यक्षेत्र जटही (नेपाल भारत सिमाना) देखि ढल्केबर (महेन्द्र राजमार्ग) सम्म रहेको छ ।

हालसम्मको समष्टिगत प्रगति

कुल ३९.९ कि.मी. सडक मध्ये हाल सम्म सम्पूर्ण सडक खण्डमा विस्तार कार्यको ठेक्कापट्टा भइ करिब सबै कार्य सम्पन्न भएको छ ।

ग) विरगंज पथलैया आयोजना

नेपाल सरकारको निर्णय अनुसार विरगंज पथलैया सडक व्यापारिक मार्ग आ.व. २०७२/७३ देखि राष्ट्रिय प्राथमिकता (P1) योजनाको रूपमा कार्यन्वयनमा ल्याएको छ । बारा र पर्सा जिल्ला हुँदै भारतको नाका रक्सौल तथा विरगंजको सुख्खा बन्दरगाह (Dry Port) हुँदै एकीकृत जाँचचौकी (Integrated Check Post) सम्म पुग्ने यस सडकको कुल लम्बाई ३९.२८ कि.मी. रहेको छ । दोश्रो चरणमा गण्डक चोक-घन्टाघार-मितेरी पुल रक्सौल सम्म द कि.मी. सडक विस्तार गर्न बाँकी रहेको छ ।

सडक रेखांकन

विरगंज पथलैया सडक योजनाको कार्यक्षेत्र भारतको नाका रक्सौल देखि विरगंजको सुख्खा बन्दरगाह हुँदै पथलैया (महेन्द्र राजमार्ग) सम्म रहेको छ ।

हालसम्मको समष्टिगत प्रगति

कुल ३९.२८ कि.मी. सडक मध्ये हाल सम्म ३१.२८ कि.मी. सडक खण्डमा विस्तार कार्यको ठेक्कापट्टा भएको छ । कुल सडक मध्ये हाल सम्म सबै कार्य अन्तिम चरणमा रहेको छ ।

घ) बेलहिया बुटवल आयोजना

योजनाको विवरण

व्यापारिक मार्ग विस्तार आयोजना बेलहिया बुटवलद्वारा निर्माणाधिन बेलहिया बुटवल सडक नेपाल भारत को सीमानाका बेलहिया देखि बुटवल गोलपार्क सम्म जम्मा २७.५ कि.मी. लम्बाइ रहेको यस सडकको सडक सीमा (Right Of Way) ५० मी. रहेको छ । प्राविधिक रूपमा यस सडकले ६ लेन भनी सम्बोधन र नामाकरण गरीएको छ । यो सडकमा दुइ वटा मुख्य सडक (Main Carriage Way) प्रत्येकको चौडाइ १०.४० कि.मी चौडाइ, बीच भागमा ३ मिटर चौडाइको डिभाइडर, दुवै तर्फ ४-४ मिटरको रुख विरुवा रोपनलाई हरियाली क्षेत्र (Green Belt), दुवै तर्फ ६ मिटर चौडाइको सहायक सडक (Service Road) तथा सडकको दुवै तर्फ ३.५ मिटर चौडाइको पैदल यात्री का लागि फुटपाथको व्यवस्था समेत गरीएको छ । यस सडकमा २ वटा गाडी हिड्ने पुल एवं ९ वटा पैदल यात्री का निर्मित अपाङ्गमैत्री आकाशे पुल समेत निर्माण गरीएको छ । रात्री समयमा सुरक्षा एवं सहजता का निर्मित Main Carriage Way र Service Lane दुवैमा विजुलीबाट बल्ने सडक बति समेत जडान को क्रममा रहेको छ ।

आ.व. २०६८-६९ देखि क्रमगत रूपमा ठेक्का व्यवस्थापन हुँदै आएको यस आयोजनाको कुल लागत अनुमान ५ अर्ब ९२ करोड रहेको छ । २०६९ असार देखि निर्माण कार्य सुरु भइ हाल ८०% निर्माण कार्य सम्पन्न भैसकेको छ । प्रदेश ५ को अस्थायी राजधानी बुटवल व्यापारिक केन्द्र र नेपाल सरकारद्वारा औद्योगिक क्षेत्रको विकासमा पनि प्राथमिकता मा रहेको हुदा यस सडकले यस क्षेत्रकै औद्योगिक विकासमा महत्वपूर्ण भुमिका खेलेको छ । बौद्ध धर्मावलीको धार्मिक केन्द्र लुम्बिनी यसै सडकको सेरोफेरो मा रहेको हुदा यस सडकले पर्यटन विकासमा समेत योगदान पुर्याएको

छ। नेपाल भारत को आयात-निर्यातका लागि महत्वपूर्ण नाकामा पर्ने बेलहिया नाका बाट भित्रिने र बाहिरिने मालबाहक सवारी साधनको आवत-जावत यस सडकको निर्माण पश्चात सहज भएको छ। यो सडकको निर्माण पश्चात रूपन्देहि जिल्लाको अर्थिक, पर्यटकीय र अन्य पूर्वाधारको विकासमा ठुलो योगदान दिई यो क्षेत्रलाई नयाँ गति प्रदान गरेको छ।

सडक रेखांकन

बेलहिया बुटवल सडक योजनाको कार्यक्षेत्र भारतको नाका बेलहिया देखि भैरहवा हुँदै बुटवल सम्म रहेको छ।

हालसम्मको समष्टिगत प्रगति

कुल २७.५ कि.मी. सडक मध्ये हाल सम्म सम्पूर्ण सडक खण्डमा विस्तार कार्यको ठेकापट्टा भएकोमा सबै कार्य अन्तिम चरणमा रहेको छ।

ड) मोहना अत्तरिया सडक आयोजना

योजनाको विवरण

नेपाल भारत सिमाना (नेपालको धनगढी उपमहानगरपालिका र भारतको उत्तर प्रदेशमा पर्ने गैरिफण्टा नाका) देखि उत्तर तर्फ अवस्थित सुदूरपश्चिम प्रदेश अन्तर्गतका विभिन्न जिल्लाहरु डोटी, डडेल्धुरा, अछाम, बाजुरा, बझाङ्ग, वैतडी र दाचुला सम्म पुग्ने महाकाली राजमार्गको शुरु स्थान धनगढीको मोहनापुल देखि अत्तरिया (पूर्व पश्चिम राजमार्ग र महाकाली राजमार्गको संगम स्थल) सम्मको १४.२ कि.मी. सडक निर्माण विस्तार कार्यको लागि मिति २०७३।०८।२२ गते यस योजना कार्यालयको धनगढीमा स्थापना गरीएको हो। यस योजनाको कार्यक्षेत्रभित्र धनगढी उपमहानगरपालिका र गोदावरी नगरपालिका पर्दछन्। यस सडक खण्डको निर्माण विस्तारको लागि २०७४ जेठ महिनामा २४ महिना (२०७४ जेठ) भित्र सम्पन्न गर्ने गरी ३ वटा प्याकेजमा ठेका संझौता भएको थिए।

सडक रेखांकन

मोहनापुल अत्तरिया सडक योजनाको कार्यक्षेत्र भारतको नाका मोहनापुल देखि अत्तरिया (महेन्द्र राजमार्ग) सम्म रहेको छ।

हालसम्मको समष्टिगत प्रगति

कुल १४.२ कि.मी. सडक मध्ये हाल सम्म सम्पूर्ण सडक खण्डमा विस्तार कार्यको ठेकापट्टा भएको कार्य सम्पन्न हुने अवस्थामा रहेको छ।

वैदेशिक सहयोगमा संचालित मुख्य मुख्य आयोजनाहरू

(क) एशियाली विकास बैंकको ऋण सहयोगमा सञ्चालित सडक योजनाहरू

पृष्ठभूमि

नेपाल सरकार र एशियाली विकास बैंकबीच ऋण/ अनुदान समझौता भइ सडक विभाग मार्फत सञ्चालन हुने सडक निर्माण/स्तरोन्नतिका योजनाहरूको सडक विभाग आयोजना निर्देशनालय (ए.डी.बी.) र यस अन्तर्गत रहेका योजना कार्यालय मार्फत कार्यान्वयन भइरहेको छ। दक्षिण एशियाको उपक्षेत्रीय तहमा अर्थिक गतिविधिहरू अभिवृद्धि गर्ने उद्देश्यले एशियाली विकास बैंकको ऋण सहयोगमा संचालन भइरहेको South Asia Subregional Economic Cooperation (SASEC) आयोजनाबाट सडक विभाग अन्तर्गत विभिन्न सामरिक महत्वका सडकखण्ड हरू हाल

निर्माण/स्तरोन्नति भइरहेका छन् भने २०७२ सालको भुकम्प तथा त्यसबाट उत्पन्न भएका पराकम्पनहरूबाट क्षति पुग्न गएका जिल्लाहरूमा श्री राष्ट्रिय पुनर्निर्माण प्राधिकरणबाट बजेट व्यवस्थापन भइ संचालन गरीएको आकस्मिक भुकम्पीय सहायता परियोजना Earthquake Emergency Assistance Project (EEAP) समेत यसै आयोजना निर्देशनालय मार्फत भइरहेको छ ।

हालसम्मको समष्टिगत प्रगति

SASEC Road Connectivity Project (SRCP) अन्तर्गत सञ्चालनमा रहेका योजनाहरूमध्ये रूपनगर कोशीपुल चतरा नदाह सडक, लेगुवाघाट भोजपुर सडक, हलेसी दिक्केल सडक, मन्थली रामेछाप सडक सम्पन्न भइसकेका छन् भने पक्ली नदाह सडक निर्माण करिब ९२% सम्पन्न भइ निर्माण कार्यको अन्तिम चरणमा रहेको छ । मेचीपुल विर्तामोड सडक योजनाको काम भने उपरोक्त ठेक्का तोडिएसंगै स्थगित भएको छ ।

Earthquake Emergency Assistance Project (EEAP) अन्तर्गत दोलखा सिंगटी सडक र धाँदिंग गोरखा सडक योजनाको निर्माण सम्पन्न भइसकेको छ भने पाँचखाल-मेलम्ची सडक निर्माण ६५% सम्पन्न भएको छ ।

SASEC Road Improvement Project (SRIP) अन्तर्गत निर्माणाधिन नारायणघाट बुटवल सडकको आ.व. २०७८/७९ सम्मको प्रगति करिब २० % रहेको छ भने भैरहवा लुम्बिनी तौलिहवा सडक निर्माणको १०० % प्रतिशत प्रगति रहेको छ ।

SASEC Highway Improvement Project (SHIP) अन्तर्गत निर्माण हुने कन्चनपुर कमला सडकको लागि आ.व. २०७६/७७ मा निर्माण व्यवसायीसंग ठेक्का समझौता भइ १५ प्रतिशत प्रगति भएको छ भने SASEC Mugling-Pokhara Highway Improvement Phase I Project (SMPHIP) अन्तर्गत निर्माण हुने मुग्लिङ पोखरा सडकको आबुखैरेनी पोखरा सडक खण्डको लागि ठेक्का समझौता भइकाम जारीरहेको छ ।

उपरोक्त कार्यहरूको अतिरिक्त पूर्व पञ्चिम राजमार्गको काकडभिट्टा लौकहि खण्ड ठेक्काको क्रममा, पथलैया हेटौडा नारायणघाट खण्ड र बुटवल गोरुसिंगे खण्डको विस्तृत आयोजना प्रतिवेदन तयार सम्पन्न भइ ठेक्काको लागि सम्बन्धित निकाय संग समन्वय भैरहेको छ ।

२) सन्चालनमा रहेका सडक योजनाहरू

सि.नं.	सडक आयोजनाको नाम	संचालित सडक योजनाहरू	लम्बाई (कि.मी.)
१	SASEC Road Connectivity Project (SRCP)	क. रूपनगर कोशिपुल चतरा नदाह सडक योजना	६१.२४
		ख. लेगुवाधाट भोजपुर सडक योजना	६५.५४
		ग. हलेसी दिक्तेल सडक योजना	३५.४३
		घ. मन्थलि रामेछाप सडक योजना	१३.३५
		ड. मेचीपुल विर्तामोड सडक योजना	१२.१६
		च. पकली नदाह सडक योजना	११
२	Earthquake Emergency Assistance Project (EEAP)	क. दोलखा सींगटि सडक योजना	३४.४९
		ख. धाँदिङ गोरखा सडक योजना	४२.१७
		ग. पाँचखाल-मेलम्ची सडक योजना	२२.९७
३	SASEC Road Improvement Project (SRIP)	क. नारायणधाट बुटवल सडक योजना पूर्वी खण्ड	६४.४२
		ख. नारायणधाट बुटवल सडक योजना पश्चिम खण्ड	४८.१४
		ग. भैरहवा लुम्बिनी तौलिहवा सडक	४१.१३
४	SASEC Highway Improvement Project (SHIP)	क. कन्चनपुर कमला सडक योजना पूर्वी खण्ड	३९.४२
		ख. कन्चनपुर कमला सडक योजना पश्चिम खण्ड	४७.४०
५	SASEC Mugling-Pokhara Highway Improvement Phase I Project (SMPHIP)	क. मुग्लिङ पोखरा सडक योजना पूर्वी खण्ड	४०.८०
		ख. मुग्लिङ पोखरा सडक योजना पश्चिम खण्ड	३८.८३

(ख) क्षेत्रीय व्यापारिक मार्ग विस्तार आयोजना (WB)

१) पृष्ठभूमि

नेपाल सरकारको नीति तथा कार्यक्रममा उल्लेख भए अनुसार देशका प्रमुख राजमार्गहरूलाई सवारी साधनको चाप अनुसार दुई देखि चार लेनमा विस्तार गर्ने उद्देश्य अनुरूप (१) नागढुंगा—नौविसे—मुग्लिङ सडक खण्ड (९५ कि.मी.) र (२) महेन्द्र राजमार्गको कमला—ढल्केवर—पथलैया सडक खण्ड (१३० कि.मि) लाई तपशिलमा उल्लेख भए अनुसार विस्तार तथा सुधारको लागि विश्व बैंक समूहको अन्तर्राष्ट्रिय विकास संस्थावाट सडक सञ्चाल तथा व्यापारिक मार्ग सुधार आयोजना अन्तर्गत ऋण सहायताको रूपमा ४५० मिलियन अमेरिकी डलर तथा नेपाल सरकारबाट ३५० मिलियन अमेरिकी डलर गरी कूल ८०० मिलियन अमेरिकी डलरको आयोजनाको लागि नेपाल सरकार र विश्व बैंक बीच यही १७ जुलाई २०२० मा सम्झौता भएको छ । उक्त सहायताको अवधि २०२७ जुलाई सम्म रहेको छ

२) उद्देश्य

देशको प्रमुख राजधानी जोड्ने एक मात्र नागढुंगा—नौविसे—मुग्लिङ सडक खण्ड (९५ कि.मी.) जसमा दिनहुं दसौं हजार सवारी साधनहरू गुड्ने गर्दछन र सडकको विद्यमान दुरावस्थाका कारण जनताले पाईरहको सास्ती लगायत समग्रमा नेपाल सरकारलाई आर्थिक रूपमा भैरहेको आर्थिक क्षतिलाई कम गर्न तथा सडक विस्तार तथा सुधार गरी यातायात सुविधामा सहजता प्रदान गर्नु रहेको छ । विश्व बैंककै ऋण सहयोगमा मुग्लिङ-नारायणगढ खण्ड विस्तार भैसेकेको छ । नेपाल सरकार तथा सडक विभागको प्रमुख कार्ययोजनामा पूर्व —पश्चिम राजमार्गलाई क्रमशः चारलेनमा विस्तार

गर्ने उद्देश्य रहको र सोही अनुसार विभिन्न दातृ निकायको ऋण सहयोगमा हाल कार्य अगाडि बढिरहेको छ र सोही अनुरूप पूर्व—पश्चिम राजमार्गको कमला-ठल्केवर-पथलैया सडक खण्ड (१३० कि.मि) लाई चार लेनमा विस्तार कार्य अगाडि बढेको छ ।

३) सडकको रेखांकन

(१) नागदुंगा—नौविसे—मुग्लिङ्ग सडक खण्ड (९५ कि.मि.)

- त्रिभुवन राजपथको नागदुंगा—नौविसे खण्ड (१२.४ कि.मि.), काठमाण्डौ, धादिङ
- पृथ्वी राजमार्गको नौविसे—मुग्लिङ्ग खण्ड (८२.६ कि.मि.), धादिङ, चितवन

(२) महेन्द्र राजमार्गको कमला—ठल्केवर-पथलैया सडक खण्ड (१३० कि.मि), धनुषा, महोत्तरी, सर्लाही, रौतहट, बारा

४) आयोजनाको कार्ययोजना

सडक सञ्चाल तथा व्यापारिक मार्ग सुधार आयोजना, Strategic Road Connectivity and Trade Improvement Project (SRCTIP) अन्तर्गत मुख्यतः ३ वटा कम्पोनेन्ट रहेको छ र जस मध्ये २ वटा कम्पोनेन्ट सडक विकास क्षेत्र (भौतिक पूर्वाधार तथा यातायात मन्त्रालय, सडक विभाग) संग सम्बन्धित रहेको छ ।

कम्पोनेन्ट नं.	कम्पोनेन्ट	कार्यक्रम	मूल्य कार्य	कैफियत
२	क्षेत्रीय मार्ग विस्तार	नागदुंगा—नौविसे—मुग्लिङ्ग	९५ कि.मि. सडक खण्डलाई कम्तीमा पनि २ लेनमा विस्तार गर्ने साथै ३८ कि.मि. सडकमा क्लाईम्बिङ्ग लेन निर्माण तथा बजार क्षेत्रमा चार लेनमा विस्तार गर्ने, २१ वटा पुल निर्माण कार्य	५ वर्षको मर्मतसंभारको कार्य (PBMC) रहेको
		कमला—ठल्केवर—पथलैया	१३० कि.मि. सडक चार लेनमा निर्माण हुने तथा ७६ वटा नयां २ लेनका पुल निर्माण तथा हाल भैरहेको पुलहरूको मर्मत संभार	५ वर्षको मर्मतसंभारको कार्य (PBMC) रहेको
३	संगठनात्मक अभिवृद्धि	रणनीतिक सडकहरूको सुदृढीकरण तथा सडक सम्पतीको व्यवस्थापनको लागि आवश्यक तालिमहरू प्रदान गर्ने	रणनीतिक सडकहरूको सुदृढीकरण तथा सडक सम्पतीको व्यवस्थापनको लागि आवश्यक तालिमहरू प्रदान गर्ने	
		आवधिक मर्मत कार्य	१७०० कि.मि. कोर रोड नेटवर्कको आवधिक मर्मत सम्पन्न गर्ने	

नागदुंगा—नौविसे—मुग्लिङ्ग सडक विस्तार एवं सुधारको क्रममा शुरुको डिजाईनमा सिस्नेखोला- धार्के खण्ड (११.२ कि.मि.) र विशालटार- फिस्लिङ्ग खण्ड (१५.३ कि.मि.) मा नयां एलाईनमेन्टवाट सडक निर्माण गर्ने भएतापनि विभिन्न कारणहरूले गर्दा हाल कायम रहेको सडकलाईनै सुधार गर्ने गरी ठेकका आव्हान हुने क्रममा रहेको छ ।

५) हालसम्मको समष्टिगत प्रगति

गत आ.व. ०७६/७७ देखि शुरु भएको यस आयोजनाको हाल सम्मको प्रगति निम्नानुसार रहेको छ ।

कम्पोनेन्ट नं.	कम्पोनेन्ट	कार्यक्रम	मूल्य कार्य	हाल सम्मको प्रगति
२	क्षेत्रीय मार्ग विस्तार	नागदुंगा—नौविसे—मुग्लिङ्ग	९५ कि.मी. सडक खण्डलाई कम्तीमा पनि २ लेनमा विस्तार गर्ने साथै ३८ कि.मी. सडकमा क्लाईम्बिङ्ग लेन निर्माण तथा वजार क्षेत्रमा चार लेनमा विस्तार गर्ने, २१ वटा पुल निर्माण कार्य	ठेक्का सम्झौता भइ कार्य शुरु भएको
		कमला—ढल्केवर—पथलैया	१३० कि.मी. सडक चार लेनमा निर्माण हुने तथा ७६ वटा नयां २ लेनका पुल निर्माण तथा हाल भैरहेको पुलहरूको मर्मत संभार	विस्तृत अध्ययन कार्य भैरहेको ।
३	संगठनात्मक अभिवृद्धि	रणनीतिक सडकहरूको सुदृढीकरण तथा सडक सम्पत्तीको व्यवस्थापनको लागि आवश्यक तालिमहरू प्रदान गर्ने		
		आवधिक मर्मत कार्य	१७०० कि.मी. कोर रोड नेटवर्कको आवधिक मर्मत सम्पन्न गर्ने	कोर रोड नेटवर्क पहिचान गरी मन्त्रालयमा स्वीकृती भइ कार्य शुरु भएको ।

सडक सुधार तथा विकास आयोजना (RIDP), EXIM Bank of India

१) पृष्ठभूमि

यातायात पूर्वाधार मध्ये सडक पूर्वाधारलाई राज्यको आर्थिक गतिविधिको धमनी र शिरा मानिन्छ । विकासशील देशमा रूपान्तरित भई गरीबी निवारण, कृषि, शिक्षा, स्वास्थ्य लगायतका क्षेत्रमा फड्को मार्न गुणस्तरीय सडक पूर्वाधारको समुचित विकास हुन अत्यन्त जरूरी छ । गुणस्तरीय सडक पूर्वाधारको विकास गरी समग्र आर्थिक सामाजिक रूपान्तरण गर्ने राज्यको लक्ष्य हासिल गर्ने उद्देश्य अनुरूप भारत सरकार (भारतीय एकिजम बैंक) को ऋण सहयोगमा नेपालभित्रका विभिन्न सडकहरूको स्तरोन्नति/ निर्माण गर्ने उद्देश्यका साथ सडक सुधार तथा विकास आयोजना आ.व. २०६४/६५ वाट सुरु भएको थियो । नेपाल सरकार र भारतीय Exim Bank बीचको Dollar Credit Line Agreement अन्तर्गत हालसम्म तीनवटा ऋण सहायताका चरणहरू कार्यान्वयनमा गईसकेका छन् ।

२) आयोजनाको समष्टिगत प्रगति

Line of Credit Phase- I (LOC-I) का भौतिक कार्यहरू (१२ ठेक्का संख्या, ५०३.२८ कि.मी. सडक) को निर्माण सम्पन्न भईसकेको छ ।

LOC-II अन्तर्गत ११ वटा सडक (१७ ठेक्का संख्या, ३८३.३ कि.मी.) मध्ये ७ वटा ठेक्का सम्पन्न भई Taking over Certificate (ToC) जारी भएको, १ ठेक्का अन्त्य गरीएको र बाँकी ९ वटा ठेक्काको निर्माण कार्य जारी रहेकोमा पौष मसान्त २०७७ भित्र सम्पन्न हुने अपेक्षा गरीएको छ ।

LOC-III अन्तर्गत शुरुमा खरिद प्रक्रियामा गएका १२ सडकका ठेक्का (७६०.८ कि.मी.) मध्ये १० वटा ठेक्कामा कार्य भइरहेको, १ वटा ठेक्का (सेलेघाट-रामेछाप- साँघुटार सडक) मा ठेक्का स्वीकृतीको चरणमा रहेको साथै बाँकी १ वटा (भालुवाड- बागदुल्ला- भिमगिट्टू सडक) को ठेक्का अन्त्य र थप प्रक्रियाको चरणमा रहेको छ ।

सि.नं.	सडकको नाम	लम्बाई, कि.मी.	ठेक्का संख्या	कैफियत
१	भेडेटार-रवि-राँके सडक	१००.३६	१	निर्माणाधीन
२	लामोसाँघु-तामाकोशी-जिरी सडक	५५.४४	१	निर्माणाधीन
३	सेलेघाट-रामेछाप-साँघुटार सडक	४९.८१	१	ठेक्का सम्झौता हुने क्रममा रहेको
४	कालीगण्डकी करिडोर (गैँडाकोट-रामपुर- पिपलडाँडा सडक)	१३१.७	१	निर्माणाधीन
५	बागदुल्ला- भिमगिट्टू सडक	७३.६	१	ठेक्का अन्त्यको प्रक्रियामा रहेको
६	सहजपुर- बोकटान सडक	५०.०२	१	निर्माणाधीन
७	बर्दिबास-जलेश्वर, जलेश्वर सहरी सडक, राजबिराज र सिरहा सहरी सडक	८९.६	१	निर्माणाधीन
८	बसतपुर-कटहरिया-कवागोठ-पिप्रादी-पदम सडक र मलंगवा सहरी सडक	४९.११	१	निर्माणाधीन
९	चन्द्रौटा- कृष्णनगर सडक र कृष्णनगर सहरी सडक	२८.०	१	निर्माणाधीन
१०	गण्डक नहर सडक	६१.९१	१	निर्माणाधीन
११	म.रा.मा.-गुलारिया-रजनवा सडक र नेपालगंज सहरी सडक	५०.९४	१	निर्माणाधीन
१२	लमही-घोराही सडक र घोराही-तुलसीपुर सडक	२८.२७	१	निर्माणाधीन
जम्मा		७६०.७९	१२.०	

यसबाहेक बचत रकमबाट तपसिल बमोजिमका थप ३ वटा सडक (८० कि.मी.) को स्तरोन्नति कार्य अगाडि बढाउन दातृ पक्षबाट सहमति प्राप्त भएको छ ।

क) रामायण सर्किट, धनुषा :- GESU बाट IEE को खरिद कार्य हुँदै ।

ख) सहजपुर-बोकटान - दिपायल सडकको बोकटान दिपायल खण्ड :- GESU बाट EIA भइरहेको, DPR को Final Report आउन बाँकी ।

ग) पन्थडिही- कटहरे- हर्मी- साहिलटार सडक, गोर्खा:- Pre- Qualification Notice प्रकाशित भएको ।

LOC-IV का लागि तीनवटा सडक/सडक खण्डको स्तरोन्नतिका लागि नेपाल सरकारबाट दातृ निकायलाई अनुरोध भएको छ ।

क) सिद्धार्थ राजमार्ग (बुटवल-पोखरा खण्ड)

- लम्बाई १५७ कि.मी. बाट १४२.३३ कि.मी. हुने ।
- ७५२ मी. Tunnel निर्माण हुने (५ स्थानमा): २.२३ कि.मी. सडकको लम्बाई घट्ने ।
- ७८७ मी. Viaduct निर्माण हुने (३८ स्थानमा): ४.२१ कि.मी. सडकको लम्बाई घट्ने ।

ख) रत्न राजमार्ग (कोहलपुर- सुर्खेत सडक)

- लम्बाई ८२ कि.मी. बाट ६६.५३ कि.मी. हुने ।

- ३ कि. मी. Tunnel निर्माण हुने (१ स्थानमा): १४ कि.मी. सडकको लम्बाई घट्ने ।
- १४० मी. Viaduct निर्माण हुने (२ स्थानमा): १ कि.मी. सडकको लम्बाई घट्ने ।
- ग) **म.रा.मा. (बुटवल- चन्द्रौला खण्ड)**
- DPR हुन वाँकी, चार लेनमा स्तरोन्नति गर्ने लक्ष्य रहेको ।

Current issues and Way forward for Department of Roads

Issues	Way forward/Solution
Maintenance approaches: cyclic (C)or intervention (I)	C for low traffic volume roads and I for high traffic volume roads
Poor performing maintenance contracts	Alternative intervention such as PBMC/ROT/Departmental etc.
Performance of length workers particularly aged worker	Easy exit mechanism and new appointment
Lack of road maintenance equipment	Providing budget
Strengthening RBN	Additional technical staff for monitoring, R and D and dedicated budget
Lack of proper maintenance Norms and Specification	Revised and prepare proper norms and specification
Funding Gap	Increase the RBN fund for sustainable maintenance
Inadequate supervision staff in DoR	To fulfill vacant posts and provision of out sourcing
Inadequate supervision vehicle	Continuation of procurement from contingency and support from staff
Encroachment of RoW and DoR assets	Internalization of RAMS and collectively efforts and support from concern entities
Damage of DoR/DROs Building by the recent EQ	Provisioning Re establishment
Scarcity of construction material	Policy decision for construction activities
Over loading vehicle	Effective enforcement mechanism and adequate logistics and staff
Uncontrolled access roads	Policy enforcement and enforcement mechanism
Burden of Non-SRN/NH roads in DoRs	Strict enactment of policy
Increasing backlog	Adequate funding

Intelligent Transport System

Traffic control has been an issue since humans put the first wheels on the first cart. The modern world demands mobility. Cars represent the main method of mobility, but today's congested highways and city streets don't move fast, and sometimes they don't move at all. Intelligent traffic systems (ITS), sometimes called intelligent transportation systems, apply communications and information technology to provide solutions to this congestion as well as other traffic control issues. Intelligent Transportation Systems (ITS) represent a major transition in transportation on many dimensions. ITS is an international program intended to improve the effectiveness and efficiency of surface transportation systems through advanced technologies in information systems, communications, and sensors. ITS (Intelligent Transport Systems) is a system which is designed to promote advance technology, to ensure that the Electronic Toll Collection System (ETC) is effective and to

support safe driving. With this system, people, roads, and vehicles use the latest information communication technology.

The intelligent transport system (ITS) takes the first step towards meeting this challenge by providing effective, reliable and meaningful knowledge to motorists in time. Problems like high traffic congestion, low transportation efficiency, low safety and endangered environment can be solved through innovative and sophisticated ways of handling latest techniques that have emerged in recent years in integrating information technology, electronics and telecommunication with roads and traffic management. Intelligent transportation systems, or ITS, encompass a broad range of wireless and wireline communications-based information, control and electronics technologies.

When integrated into the transportation system infrastructure, and in vehicles themselves, these technologies help monitor and manage traffic flow, reduce congestion, provide alternate routes to travelers, enhance productivity, and save lives, time and money. Intelligent transportation systems provide the tools for skilled transportation professionals to collect, analyze, and archive data about the performance of the system during the hours of peak use. Having this data enhances traffic operators' ability to respond to incidents, adverse weather or other capacity constricting events

Benefits of Intelligent Transport System

The investments in ITS will help increase the benefits and efficiencies of transportation systems, thereby reducing the need for much costlier physical expansion of systems. This optimism is not to be confused as any kind of illusion that new infrastructure expansion in India can be avoided altogether by resorting to ITS. Significant expansion of infrastructure will still be needed in India for a long time to come. But including ITS in the overall development strategy of India's transportation system can increase the number of beneficiaries of the system, significantly enhance the transportation-related safety which is a major concern in most parts of India and in some cases reduce the scale of infrastructure expansion.

The following is a list of identified benefits of ITS projects:

- Reduced rush hour congestion and delay
- Increased safety and personal security
- Time savings and operation efficiencies
- Reduced fuel consumption and emissions
- Improved customer service and reduced frustration
- Reduced road accidents and fatalities and
- Enhanced economic productivity.

Classification of ITS

Advanced public transport system: (APTS)

APTS technologies are a collection of technologies that increase the efficiency and safety of public transportation systems and offer users greater access to information on system operations. The implementation of APTS technologies is transforming the way public transportation systems operate, and changing the nature of the transportation services that can be offered by public transportation systems. The goal is to provide public transportation decision-makers more information to make effective decisions on systems and operations and to increase travelers' convenience and rider ship. APTS technologies can be organized into three broad categories that describe the technologies relevance to transit applications. Each category is comprised of a variety of technology choices that are available to help transport agencies and organizations meet traveler's service needs while increasing safety and efficiency. The three APTS technology categories are: fleet management system, travelers' information system and electronic payment system.

Advanced Traveler Information System: (ATIS)

Advanced travelers information systems (ATIS), a part of new technology applications in transportation, provide accurate and timely information that help travelers to select routes, times of travel and travel modes. They work even better with inclusion of geographic tourist guides and yellow pages that enable travelers to select destinations based on proximity to other places. Deliver data directly to travelers, empowering them to make better choices about alternate routes or modes of transportation. When archived, this historical data

provides transportation planners with accurate travel pattern information, optimizing the transportation planning process.

Advanced Traffic Management System: (ATMS)

This system can benefit the public with improved traffic and public safety, by monitoring the flow of traffic and making appropriate decisions in a timely manner. Additional benefits include less fuel consumption and reduced environmental impact. They employ a variety of relatively inexpensive detectors, cameras, and communication systems to monitor traffic, optimize signal timings on major arterials, and control the flow of traffic.

सडक बोर्ड ऐन सम्बन्धित विषयबस्तु

Roads Board Nepal (RBN) was established under the Roads Board Act 2058 (2002) with the aim of providing sustainable fund for planned maintenance of the roads. The aim of planned maintenance is to keep existing maintainable roads in serviceable condition, reduce vehicle operating cost and provide more comfort to the road users. RBN is a self-governing, self-sustaining and organized entity based on Public-Private Partnership [PPP] model. The major function of RBN is to collect, manage and allocate fund for road maintenance to the Road Agencies (RA). RBN is fully devoted in providing better road service to the road users as they pay in the form of direct road toll, fuel levy and vehicle registration fee.

Moving goods, products, and people becomes prohibitively expensive without cost-effective road transportation in a land locked country with varied topography such as Nepal. It becomes expensive and time consuming. As a result, apart from other, tourism - main foreign currency earning sector - also suffers and the country's competitiveness is reduced. Economic development, commerce, and poverty alleviation are also negatively affected by underinvestment and inadequate management of road maintenance. Unfortunately, the amount of financing and technical skills needed to provide even a reasonable road service is simply not within the means of most public sector agencies.

Nepal's transport sector objective as defined in the National Transport Policy is to provide uninterrupted flow of goods and people with safety and transport services available at least cost, and help poverty reduction effort through broad based economic growth including balancing regional development by generating employment, providing access to the market to local products and accelerating the potential economic growth in other sectors like tourism and hydropower.

In a country with scarce resources and competition between various sectors for resource allocation from the government, challenges to institutionalize road maintenance prevail due to resource constraint and outgrown financial need for road maintenance than the government budget for it. Other challenges include lack of commitment and willingness on maintenance from all concerned together with lack of institutional arrangement and capacity on the part of road agencies. Further, the traditional management system in general is not efficient and effective, and lacks stakeholder participation and ownership.

In order to address to these challenges, an appropriate model of reform based on public-private partnership was the call of the day. New progressive approaches have emerged for more than a decade and gratifyingly the

results are found encouraging. Such reforms have typically entailed restructuring of road network management; improvement in management and sustainability of road assets; introduction of private sector financing and off-budget mechanism, and change in procurement of road maintenance works and quality control/assurance.

Restoration value of existing road asset in Nepal is about Rs eight five billion equivalent to 1.78 billion US\$ at the price of 2000. It is a prime challenge to preserve this asset. This can be achieved by implementing a planned maintenance management system [PMMS] comprising of a series of inter-dependent routine, recurrent, periodic, and emergency activities carried out both on and off the road, and bridges. It reduces rate of deterioration of road prolonging its life, reduces vehicle operating cost, and provides reliable/safer transportation of goods and passengers. Need based budget is required to maintain roads properly and to keep them in good condition. It is estimated that the country requires about one billion rupees annually for the road maintenance whereas the allocation is much less. Apart from under-financing of regular maintenance, the annual increase in road length projected at 6.5 % requires additional fund for its maintenance.

Policies concerned with the road maintenance in Nepal are based on short term, medium term and long term plans such as medium term expenditure framework [MTEF], 10 th five year plan, and 20 year road plan. Central level government agency's role shifts to that of a facilitator. Self-reliant capacity for arrangement of source of investment is to be developed. Priority is given to maintain and upgrade central level transport infrastructure with due attention to environmental concerns, safety, and appropriate institutional arrangement. Local network is to be gradually handed over to local bodies. However, financial requirement for maintenance can not be fulfilled by the government only. Road fund collected from users is the only possible way.

RBN works together with road agencies [RA], which actually implement the road maintenance works. The department of roads [DOR] is identified as the RA for the maintenance of strategic road network [SRN]. Maintenance of urban, district, and local roads is governed through the department of local infrastructure development and agricultural roads [DoLIDAR], which coordinates the district development committees [DDC] and municipalities [MC] recognized as the road agencies for local road network [LRN]. On the other side, the RBN has to report to and communicate with the GoN through the ministry of physical planning and works [MPPW]. Twenty first century public sector service such as roads cannot be managed in isolation. The participation of users shall be defined. Other stakeholders are equally important and their voices shall be heard. Transparency in the process of road maintenance management is of paramount importance. This can be enhanced through the efficient work of RBN as it constitutes representations from government, private and civil sectors.

RBN prepares comprehensive IAP based on annual road maintenance programs [ARMP] submitted by the RA. RBN ensures the optimum utilization of scarce resources based on its prioritization methods. Priority is linked with the traffic flow, terrain type, pavement condition, and maintenance type such as routine, recurrent, periodic, rehabilitation, reconstruction and upgrading. Emergency Maintenance is addressed to through predetermined reserve fund. A Road not in maintainable condition is not given priority for regular maintenance, as it has to be brought to maintainable condition by rehabilitation or reconstruction first. RBN decides final

allocation to RAs. RBN has authority to monitor, control and check, evaluate, and to withhold the money release to non-performing RA.

The success of the RBN could lead to development of Roads Transport Authority and ultimately National Transport Board as envisaged by the 10th development plan and could pave a way towards initiation of Private-Public Partnership in road development, maintenance, and operation in one of the forms such as Lease, Management contracts, BOT, BOOT, BOO, Divestitures. The participatory procedure of the RBN and efficient management ensures safeguards against corruption. For this RBN accounts shall be audited by external auditors, reports and key activities shall be made transparent through annual publication in national newspapers.

Describe the Road Board Act 2059. Give your comments and suggestion.

परिचय

सडक मर्मत निम्न कारणले महत्वपूर्ण छ ।

- सडक सम्पति सुरक्षा र महँगो पुनर्स्थापना तथा पुनर्निर्माण बाट जोगिन
- कुल यातायात खर्च न्यून गर्न
- सडकलाई व्यवस्थित राखिराख्न
- सडक प्रयोगकर्ता लाई सुरक्षा र सहजता दिलाउन
- आर्थिक गतिविधिलाई promote गर्न

कुल ८ परिच्छेद र ४४ वटा दफा रहेको सडक बोर्ड ऐन, २०५८ को प्रस्तावनामा उल्लेख भए बमोजिम ऐनको उद्देश्य बै

- सडक मर्मत सम्भार गर्न/गराउन
- सडक मर्मत सम्भारमा लाग्ने खर्च न्यूनीकरण गर्न तथा
- सडक मर्मत सम्भार कार्यलाई पारदर्शी र प्रभावकारी बनाउन वान्छनीय भएको भनि उल्लेख

ऐनले गरेको महत्वपूर्ण व्यवस्थाहरू

- बोर्डको स्थापना र काम कर्तव्य र अधिकार परिच्छेद २
- दफा ३ (१) सडकको नियमित, पटके, आवधिक तथा आकस्मिक मर्मत सम्भार गर्न तथा सडकका सवारीबाट दस्तुर लगाई उठाउन सडक बोर्डको स्थापना
- दफा ४ मा बोर्ड अविच्छिन्न उत्तराधिकारवाला स्वशासित संस्था रहने व्यवस्था र आफ्नो छुटै चाप/व्यक्ति सरह सम्पति र नालिस उजुरी लाग्ने गर्न पाउने अधिकार

दफा ५ मा बोर्डको काम, कर्तव्य र अधिकार

- सडकको मर्मत सम्भार गराउने
- सडक उपभोग दस्तुर, ऐन बमोजिमका अन्य दस्तुर, जरिवाना असुल उपर गर्ने
- दस्तुर निर्धारण सम्बन्धमा इन्धन शुल्क, थप दस्तुर, जरिवाना आदि सम्बन्धमा नेपाल सरकारलाई सिफारिश/सुझाव दिने
- सम्भार सम्बन्धि एकिकृत बार्षिक कार्यक्रम बनाउने
- सडक सम्बन्धि निकायलाई मर्मत सम्भार निम्ति बजेट उपलब्ध गराउने
- उठाइएको दस्तुर जुन सडकबाट हो त्यही सडकमा तोकिएको प्रतिशतमा खर्च गर्ने
- बोर्डको बार्षिक बजेट तथा कार्यक्रम सदर गर्ने
- तोकिएको अन्य कार्य गर्ने

- मर्मत खर्चमा न्यूनीकरण तथा कार्य दक्षता बढाउन कार्य योजना बनाई लागू गर्ने
- मर्मत सम्भारका निम्नि नेपाल सरकारको कुनै निकाय वा सन्ता संग रकम व्यहोर्ने

विशेषाधिकार : आफुले रकम दिएको निकायले निकासा दिएको रकम खर्चको सम्बन्धी आवश्यक विवरण माग गर्न सक्नेछ ।

दफा ६ नेपाल सरकाले राजपत्रमा सूचना प्रकाशन गरी तोकिएको दस्तुर बोर्डले उठाउने

- सडक उपयोग, इन्धन, सवारी दर्ता, विदेशमा दर्ता भई नेपाल प्रवेश गर्ने सवारीको दस्तुर

दफा ७ मा बोर्डले कुनै व्यक्ति वा संस्था मार्फत उठाउने सक्ने

दफा ८ मा कार्यसमितिको गठनको व्यवस्था भौतिक पूर्वाधार तथा यातायात मन्त्रालयका सचिवको अध्यक्षतामा १३ सदस्यीय समितिको

परिच्छेद ४ सडकको मर्मत सम्भार सम्बन्धमा

- दफा १४ सडक सम्बन्धि निकायले मर्मत सम्बन्धि निकायले मर्मत सम्बन्धि बार्षिक कार्यक्रम बोर्ड समक्ष पेश गर्नुपर्ने
- दफा १५ बोर्डको एकिकृत बार्षिक कार्यक्रम बनाई मन्त्रालयमा पठाउने
- दफा १६ एकिकृत बार्षिक कार्यक्रममा परेका सडकको रकम उपलब्ध गराउने
- बोर्डले सडकलाई बर्गिकरण गरी सोहि बमोजिमको गुणस्तर तोक्ने
- दफा १७ बमोजिम गुणस्तर कायम भएको नभएको सुपरिवेक्षण गर्ने र नभएको भए लेखि पठाउने र सोको निकाशा रोक्का गर्ने सक्ने
- दफा १९ सडक सम्बन्धि निकायबाट जुनसुकै बखत विवरण माग गर्ने सक्ने
- दफा २० कार्य सम्पन्न प्रतिवेदन बोर्ड समक्ष पेश गर्नुपर्ने

सडक बोर्ड ऐन २०७८ क महत्वपूर्ण प्रावधानहरू (Role of RBN)

- बोर्डको आफ्नै छुट्टै कोष हुनेछ : सार्कको अनुदान, सडक दस्तुर (सडक उपयोग, इन्धन, सवारी दर्ता, विदेशमा दर्ता भई नेपाल प्रवेश गर्ने सवारीको दस्तुर) र अन्य सोतको आम्दानी कोषमा जम्मा हुने
- कोष रकमको प्रयोग तथा बँडफाड सम्बन्धमा
 - SRN/NH, जीला सडक र शहरी सडकमा हिस्सेदरिका आधारमा
 - तोकिएको सडकमा सडक सुरक्षा र Axle भार नियन्त्रण सम्बन्धमा अध्ययन, अनुसन्धान गर्ने,
 - आम्दानीको व्यवस्थापन
 - प्रशासनिक खर्च बढीमा ४ प्रतिशत सम्म गर्ने पाउने
 - वचत भए कुल आयको १५ % ननाघ्ने गरी स्तरबृद्धि र सड तिना निर्मनम लगानी गर्ने
- पारदर्शिता सम्बन्धमा
 - प्रचलित कानून बमोजिम लेखा रहने र महालेखा परिक्षकहरूबाट लेखा परिक्षण हुने
 - खरिद कार्य खुला प्रतिष्पर्धाबाट गर्नेआय र व्यय को पारदर्शिता सार्वजनिक हुने
 - बार्षिक प्रतिवेदन सरकार समक्ष पेश हुने र राष्ट्रिय प्रतिकामा सार्वजनिक हुने
 - सरकारले आवश्यक निर्देशन दिने
 - भौतिक पूर्वाधार तथा यातायात मन्त्रालय मार्फत सरकार संग सम्पर्क
 - सरकारको अनुमति लिई नियमहरू बनाउन सक्ने

Comments on positive aspect

- 3P model is practiced by RBN
- Reserve fund for emergency fund
- No investment in non-maintainable road

- Participatory procedure for project selection and various provision for control corruption
- Ensure the maintenance budget to some extent

Comments on negative aspect

- ऐन बमोजिमको स्रोत लिन नसकेको र अन्य स्रोतको खोजि जस्तै सडक सिमा भित्रको आम्दानी नगर्नु
- सरकारीस्तरबाट नै नियन्त्रित भएको तर ऐनले स्वतन्त्र निकायको कल्पना गरेको
- संगठन विस्तार र संरचनाको बिस्तृत खाँका नभएको
- समयमा कार्यकारीको पदपूर्ति नहुने समस्या
- रकम उपलब्ध देखि लेखा परिक्षण सम्म को झान्झटिलो प्रक्रिया
- आर्थिक बर्षको समय फरक परेकोले कार्यका व्यवहारिक समस्या सिर्जना हुने गरेको
- दस्तुर उठाउने पुरानो ढर्मा र प्रशासनिक खर्चमा नियन्त्रण प्रणालीको अभाव आदि
- बोर्डमा सरकारी हस्तक्षेप हुने र मन्त्रिको गृह जिल्लामा नियम भन्दा बाहिर गई बजेट दिने गरेको
- ऐन बमोजिम बोर्डले सिधै आफै वा आफ्नै खातामा दस्तुर/आम्दानी पाउनुपर्नेमा सो नभएको

मुधारः माथिको व्यवस्थामा सुधारात्मक कार्य गर्ने

Slope Management and Managing Road

Nepalese mountains are very fragile as they are the part of young Himalaya. The whole zone is geologically very fragile. Main central thrust [MCT] and main boundary thrust [MBT] passes through the Nepalese territory.

Within an average width of ~ 100 km, the topographical disparity is so enormous that it starts from ~ 150 m amsl at Jhapa district in the east and reaches well over 8000 m msl at the northern border with Tibet [China]. This has inherited a wide diversity of climate, physical environment, culture and religions, demography, and topography and geology. The rugged topography is dissected by numerous rivers and streams originating from perennial snow at the northern Himalaya and flowing towards the plain in the south. Gorges, slopes, and the river cuts are often very steep.

Similarly, there is a very wide economic disparity between the Terai and Hills, between the urban and rural areas, and between the east and west of the country. Population is also very sparsely dispersed and service centers providing services to this dispersed population is sparser.

In this condition, anyone can guess that it is very difficult to construct roads in Nepal. It is more difficult to maintain a mountain road in such areas because of numerous slope failures leading to road closures during heavy Monsoon rain that delivers colossal amount of water in a short time. It is further made difficult to deliver transport service to the people because of:

- Huge cost of construction;
- Questionable economic return and low traffic;
- Many environmental and social hazards and risks requiring huge cost for mitigation;
- Unfavorable topography and meteorology;
- Huge cost of maintenance and disaster management;
- Disturbance to natural slopes by manmade activities such as road construction.

Development of Roads

Despite the difficulty great many kilometers of roads have been added to national assets during the last five decades. As the road was rightly considered as the backbone of all other development activities a huge investment has been made in this sector. A lot of foreign support both grant and loan, has been utilized to achieve the current size of the network. The network status is given in table

Problem faced by the DOR at present is related with the difficulty to deliver transport service to people along significantly huge total network. Problem arises because of the need to maintain the road along the total network while its actual mandate is only the SRN. Budget allocation, which is meager in comparison of the need, is another great problem to be addressed to. The expectation of the people

in general and the entities in particular is ever rising. When such expectations are not met, though due to valid reasons, negative comments regarding DOR appears in the media, which does not help DOR to carry out its work effectively and efficiently in any way. Further reasons for the difficult slope management are as follows.

- Slope failures and road closures during heavy monsoon rain in a short time;
- Huge cost of maintenance and disaster management;
- Questionable economic return and low traffic;
- Environmental and social hazards and risks;
- Unfavorable topography and meteorology.

With this as background it can be said that the road construction and especially its maintenance poses a real challenge to Nepal. There are minor to huge slope failures which cause road closures and make the delivery of services redundant for few days to many months depending on the nature, magnitude and type of the slope failure. Many examples of such road closures can be taken from existing roads such as Prithvi Raj Marga, Arnico Raj Marga, Lamosang Jiri Rajmarga, Tribhuvan Raj Path, and many others.

Existing Practices of Slope Management in DOR

Usually, new construction project is not associated with problems of bigger magnitude as the slopes are studied already from the very outset of project feasibility study and all the consequential activities built into the project design and project implementation. The real problem is faced during the operation and maintenance of already completed roads, which are very often closed by number of slope related problems. This leads to the no transport service to public, though for a short period. But people who are already used to certain service level do not receive the service; it is but natural to have certain amount of dissatisfaction leading to all the hassles in the media.

Existing practice of slope management during various stages of project cycle in DOR is described below. Three major stages are considered as follows.

1. During Road Project Planning

- Geotechnical and geological study are conducted together with the project feasibility and detailed design;
- Geologically hazardous area is identified already during the feasibility study of a proposed road project;
- Such area avoided to the possible extent if they invite hazards, which can cause very serious problems later or which are prohibitively expensive to carry out any mitigation measures;
- Mitigation measures are designed where the hazards cannot be avoided but can be mitigated with reasonable investment.

2. During Road Project Implementation:

- Mitigation measures that are designed into the project in order to address to the slope protection and long term slope stabilization are also implemented concurrently together with other road construction activities.

3. During Road Project Operation and Maintenance:

This is by and large the stage of road project cycle where the DOR finds itself in a difficult scenario as far as the sustainable slope management is concerned. This is because of the following reasons.

- Although the Planned Maintenance Management System [PMMS] in the form of Strengthened Maintenance Division [SMD] has been established in the DOR, it still has to do a lot towards integrating slope management into its process;
- Present practice provides inadequate attention to planned roadside support maintenance or sustainable slope management;
- Many road closures due to multiple slope failures during the intensive monsoon rain are considered in an *ad hoc* basis;
- The activities are limited to responsive that is addressing to the problem only when it occurs;
- There usually is very little money under maintenance budget [BH 48-4-555] allocated for slope management problem;
- This budget is not adequate for the mobilization, demobilization, and operation of heavy equipment in

emergency plan, according to which number of predetermined heavy equipments are mobilized and stationed at specific critical sections of the SRN throughout the country during four months of monsoon season;

- Recently a Performance Based Maintenance Contract is being experimented, in which:
- Outputs are measured in terms of Performance;
- Problem of road closures due to minor slope failures are indirectly addressed to in the contract package itself;
- Road closures due to reasonably small slope failures are taken as non- performance of the contractor;
- Nonperformance is reflected in the contractor's mode of payment.

Apart from those three stages the activities undertaken by the DOR during disasters are basically:

- Responsive
- Curative
- Prescriptive
- Ad Hoc
- With Little Budget

A Roads Board has been constituted recently in order to initiate the implementation of *pay as you go* modality for the road maintenance. But it might take a few more years until it can be effective in order to generate the funds for on-road maintenance, let alone for the off-road maintenance. For the time being the budget has to be managed from various sources such as foreign support – both grants and loans, and the HMG source.

Due to all these, there are many examples of road disasters leading to road closures at such places as the notorious Krishna Bhir along PRP, Agor along TRP, Mulkark along Trishuli - Dhunchhe Road, and many others.

DOR Future Plans

Department of Roads has recently prepared a long term plan – a 20 Year Road Sector Plan according to which the Strategic Network Expansion is around 5000 km within next 20 years. Similarly within the current 10th five year plan there is a provision for SRN extension by about 1000 km. Only within the forthcoming three years the MTEF of the road sector in DOR has plan for addition of 400 km of SRN in its network.

The experience world wide and in particular in mountain roads in countries similar to ours has shown that the addition of length in network also invites additional slope failures. This poses as a great challenge for Nepalese road builder to keep the road service available to the public by keeping the open to traffic throughout the year.

Challenges and Priorities

Challenges in keeping roads open throughout the year are basically:

- Lot of works at many fronts at the same time
- Resource Constraints
- Difficult type of work, and difficult period/season for such work
- Lack of additional facilities to the operation level staff at field working extra time and in difficult situation etc.

At the same time the development priorities of the department are:

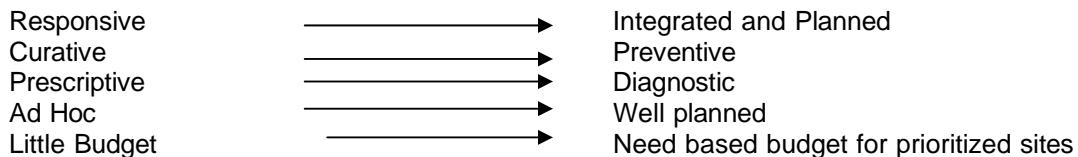
- Preservation of Road Assets
- Facilitate an effective and efficient flow of goods and passenger throughout the year
- Sustainable Road Slope Management

In order to accept the challenges and to work towards the achievement of development priorities, the call of the day is to transform this challenge into an opportunity – an opportunity for the Sustainable Slope Management. It has to grow from responsive to planned, from curative to preventive and from prescriptive to diagnostic endeavor. Various types, technologies, and modalities adopted elsewhere are being studied. As the Nepalese economy is small and cannot afford to do every thing that are demanded

by the situation; a system to prioritize the needs has to be worked out based on the cost and benefit, environmental and social benefits and negative impacts, size of the service delivered to the population and its size, and cost effectiveness. After the prioritization the cost required for them has to manage from appropriate resource mobilization.

DOR STRATEGY SHIFT in Sustainable Slope Management

A lot of work has been done in this direction and the current strategy shift is described below.



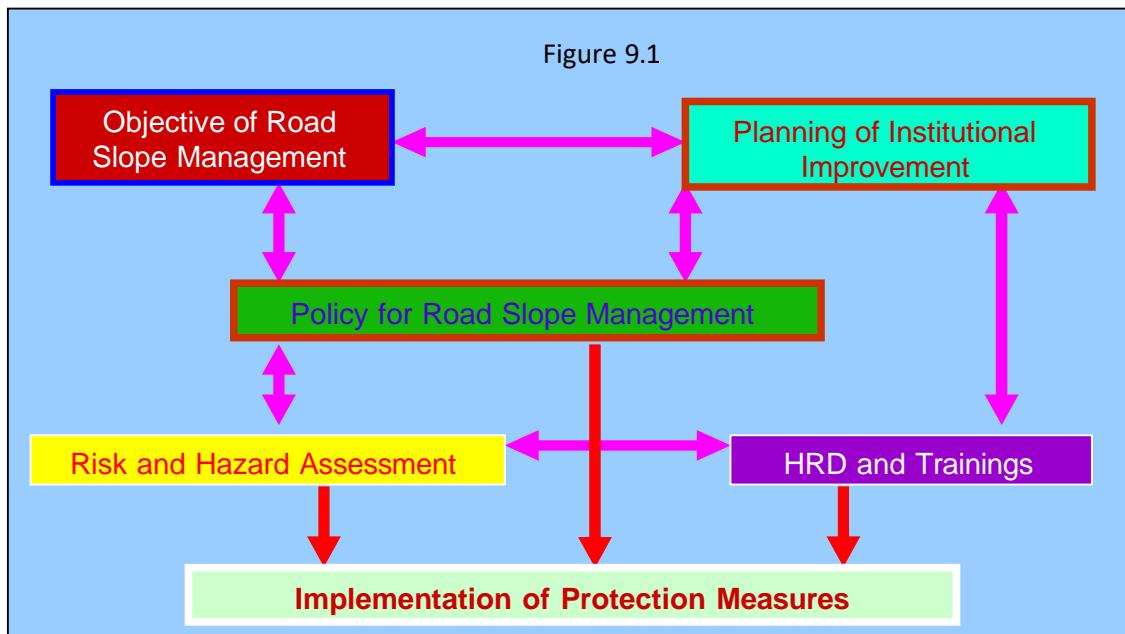
Actions Initiated

In this regard, the DOR has already initiated number of actions to work towards the integration of sustainable slope management in the road projects. Major issues that are being integrated in the road project development are as follows:

- Geological/Geotechnical issues – in order to establish a sound hazard and risk assessment of slopes, which are disturbed by road construction and maintenance;
- Environmental issues – in order to establish a sound environmental assessment procedure, to incorporate environmental management action plan [EMAP] in the road project design;
- Social issues – in order to ensure that the project intervention for road development brings about social changes acceptable by all the stakeholders at the local level too, to ensure that the livelihood of the project affected people are better or, at least, remains at the same level after the project, to ensure that the adequate compensation is given to people displaced from the project area according to resettlement and/or rehabilitation action plan [RAP];
- Maintenance issues – in order to ensure a planned maintenance management system not only of on-road, but also of the off-road activities that are directly related with slope management in a self-sustaining way;
- Sustainability issues – in order to ensure that the investment made in road project development and service it intends to provide to the people could be sustainable in the national economic, social, and cultural scenarios.

Recently much work has been done in this direction. A modality for sustainable slope management and disaster management of road slopes has been developed with JICA support. The departmental people had put a lot of their effort to make the model such that it can be implemented in departmental context. The model is described in figure 9.1 in forthcoming page.

Above mentioned model for road slope management addresses to the following issues.



- Objective of road slope maintenance
- Need of road slope maintenance
- Factors concerned with slope stability:
 - Topography
 - Geological structures
 - Type of rock and soil
 - Magnitude of weathering
 - Surface and ground water condition
 - Effectiveness of protection works
 - Age factor
 - Effects of heavy rain
- Data Collection Based on Inspection, Recording, and Reporting by Division Road Offices [DRO]
- Transformation of Data into information at DOR
- DATABASE regarding slopes at DOR
- Hazard and Risk Assessment
- Comprehensive Planning
- Need identification, prioritization, and budget programming by DOR HQ
- Slope Maintenance and Rehabilitation works implemented by DRO with technical support from the GEU at DOR HQ
- HRD: Various trainings, awareness, and motivation activities
- Institutionalization and integration of the planned slope protection work in regular DOR Planned Maintenance Management System such as SMD

Complete integration of the roadside support maintenance into the planned maintenance management system may it be SMD or the PB Contracts is being planned. Inventory of key roadside supports, bio-engineering sites, and major critical failures will be prepared in next few years.

A system is being worked out to institutionalize the regular inspection of roadside from the concerned Division Road Offices, to acquire the data and convert it into useful information at the HQ [DOR], and to use the information for the planning of slope management and roadside support maintenance in order to better effectively manage the roads and provide intended transport service to the people continuously. For this, again the institutionalization of the budget allocation for the prioritized activities will be established. An effective mechanism will be worked out to carry out

these activities. As these activities are a little different from the usual road surface maintenance activity, perhaps such mechanism and procedure might have to be separate to certain extent from the regular DOR tools.

Follow up mechanism will be strictly implemented and ensured by directives and orders from the DOR high level management. However, one specialized unit, preferably the existing GEU with similar Scope of Works and mandates will be endowed with the responsibility to look after these matters. Effective management of this job requires multiple trainings, sharing of experiences, learning from other actors in road development and sustainable slope management the world over.

In order for this to be efficient and effectively initiated, implemented, monitored in the DOR:

- We need to share experience with others around the world;
- We need to learn from others in terms of:
 1. New development in sustainable slope management practices;
 2. New cost-effective technology in identification, selection, prioritization, design, and implementation of slope protection and slope stabilization activities;
 3. Experience from mountain road building in the similar scenario in the region in Hindukush Mountain and from beyond it in Europe, America, and other developed countries that have mountainous terrain within them etc.

Way Forward

Above strategy shift is being materializes by institutionalizing the following activities, tasks, process, and procedures of paramount importance within the department:

- Slope management in road construction and maintenance
- Inventory of roadside support activities including Civil and Bio-engineering
- Inspections and Data collection at DRO level
- Transforming the data into useful information at the DOR
- DATABANK at DOR

The way forward involves the integration of sustainable slope management in the road project cycle – in particular that of planning, preparation, implementation, and follow-up. Together with the feasibility study the slope investigations will have to be carried out. Not only the slope protection but wider measures for the slope stabilization are being incorporated in project design. These measures are to be implemented simultaneously. A proper mechanism to effective supervision, monitoring, evaluation and most important of all – the learning from doing is being established.

By MG Malegu

Managing Roads 1: The Facts of Life

Looking after roads is something few of us ever think about: it's a bit like water treatment or electricity generation. But like water or electricity, if these things go wrong, we certainly do notice. A sufficient and well-maintained road network acts as an essential economic lubricant for the engine of growth, a vital prerequisite to achieving a competitive and functioning economy. We take them for granted, but there is a great deal involved in providing this infrastructure.

For a start, they are horrendously expensive! For example, the national road network in Nepal (i.e. excluding all local roads) is worth about Rupees 90 billion (US\$1.3 billion), which represents almost 20% of the country's GNP or about Rupees 3,500 for every man, woman and child in Nepal. They represent a substantial investment, which like every other investment (such as a car or a house) needs to be maintained if society is to enjoy the benefits from this investment. Typically, maintenance costs for roads should be about 3% of their construction costs each year (or Rupees 2.7 billion per year). Roads are therefore very big business, (which is one reason why it is only governments who can afford them).

And yet these massive costs are tiny compared to the costs of running vehicles on the road network. Substantial international research has demonstrated that typically, if a road network is properly maintained,

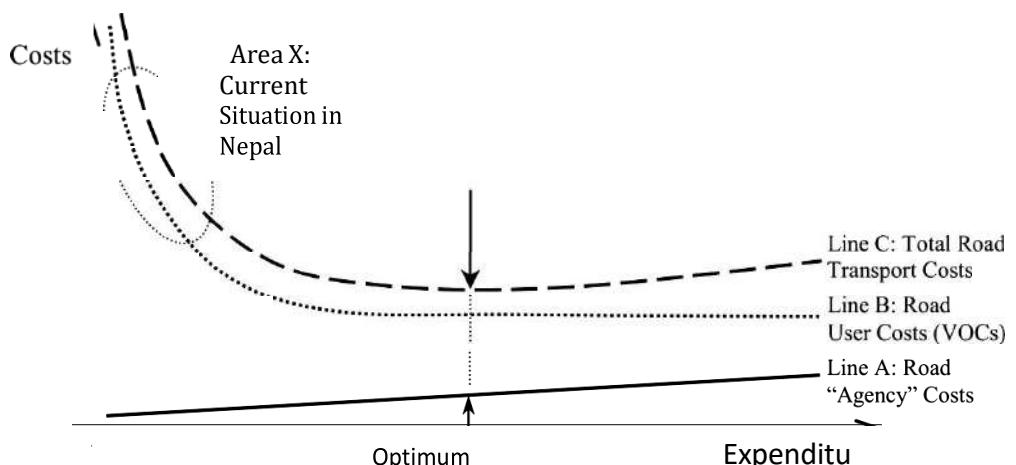
then the maintenance costs of the roads represent only about 10% of the vehicle operating costs (VOCs). About 90% of road transport costs are incurred by those using the roads. Consequently, when roads are in a poor condition, spending more to improve

their condition often results in much bigger savings to the country's economy, due to lower vehicle operating costs. Better roads mean we use less fuel, our vehicles need less frequent servicing and repairs and we spend less time travelling. Typically, for every extra dollar spent to improve roads (which promotes the local economy), the country saves about three times that amount (predominantly in imports priced in hard currencies), representing an excellent investment for the whole economy. Bad roads mean that precious national resources are wasted — gigantic amounts of money that literally go up in smoke!

Unfortunately, road maintenance expenditures incurred by the road management organisation, are highly visible (they are a big budget item), whilst the benefits enjoyed from this expenditure is far less visible, being reflected in many, many relatively small savings enjoyed by private motorists and freight companies. However, despite this, collectively these savings are many times greater than the road management and maintenance costs.

An important objective of good road management is therefore to minimise the total cost of road transport to the country as a whole. This can be shown in Figure 1.

Figure 1. The Contribution of Agency & VOC Costs to Total Road Transport Costs.



As the government (through its road organisations) spends more on the road network, (shown by the solid line A), the condition of the network should improve (assuming of course, that they are spending their revenues in the right places). A better road network will result in lower vehicle operating costs (represented by the dotted line B). The dashed line (C) shows the total cost of road transport to the economy as a whole. At the moment, the roads in Nepal are not as good as they could be, in part due to insufficient expenditure, and they lie in the region shown in Figure 1 (Area X). The gradient of the line C (total transport costs) at this point indicates the substantial savings that should be possible from greater expenditure on road maintenance.

Eventually, once the roads are in a very good condition, then the benefits to the community from spending ever more money on them reduces (the law of diminishing returns). The trick is to find that point where the total transport costs are the minimum, as represented by point D in Figure 1.

Ensuring that More Funding Results in Better Roads

Increasing the budget for road maintenance does not automatically result in better quality roads, if it is squandered on poorly conceived or enviable projects, or wasted on unproductive or extravagant activities. It is always important to ensure that the expenditure on road maintenance is utilised to achieve the greatest benefits possible (getting the "biggest bang for your buck"!). No one wishes to see their money wasted and

unless those spending it can assure those paying that their funds are being used as wisely as possible, then there will be an understandable resistance to paying. Given the importance that roads play, and the need to maintain them, this is in no-one's interests. The onus is therefore very squarely on those spending the funds to clearly demonstrate that they are being utilised as efficiently and as effectively as possible. This can only be achieved through open and transparent processes, where those paying can see how their funds are being used and why. Those paying have a right to know how their money is being used. In turn, this transparency can only be achieved through the use of sound, businesslike processes, where decisions can be clearly justified, based on benefits and costs that are clear, and problems and weaknesses identified easily and dealt with promptly. This is especially important for those services (such as the provision of road infrastructure) where those paying can not use alternative suppliers instead.

The implication of this is that any organisation spending money on roads (or for that matter, any other service), must ensure that they can achieve this businesslike transparency. And where these conditions do not exist, then problems arise, which inevitably result in less-than-optimal decision making, transparency and accountability, and increased inefficiencies.

What Does “Better” Roads Mean?

When any society is economically “poor”, it is particularly important that its very limited resources (i.e., wealth) is used as efficiently as possible, in order to minimize unnecessary waste. Wealthy countries can afford to waste their resources, but it is particularly sad to see that the most inefficient countries are those who can often least afford the level of waste that they suffer (and indeed, this perpetuates their poverty).

However, it is perfectly reasonable that not all decisions and actions are based solely on maximising economic benefits (although these should always be considered). Other issues are also likely to play an important role in determining what actions to take and what expenditures to incur. This is where policies are important, as they should reflect aspects other than economics that society considers to be important. For example, there may be a policy that states that for environmental and health reasons, all roads in urban areas are to be paved in order to reduce dust, regardless of the economic viability. Such a policy will influence what actions are taken, with these actions reflecting society's values. “Better” roads would therefore be defined in terms of what society thinks is “better”, as reflected in the policies that influence the construction and maintenance of the road network.

The establishment of such policies can have an important impact on the resulting shape and condition of the road network (as for other areas of the economy too), and hence the cost and level of service that road users and the general population receives. It is therefore important that such policies are well considered and made known, both to those who must implement them, as well as to those who are being asked to pay for them, and suffer the consequence of them. Once again, transparency is important, both in setting policies, and in their implementation.

In summary, the benefits from the provision of a good, well maintained road network in Nepal are many times greater than the costs of providing this service, huge as these costs are. About 90% of road transport costs are incurred by road users. Consequently, any additional expenditure that results in better roads provides returns that are approximately 3 times the cost of maintaining that road. This represents an excellent investment by the community. It is however, imperative that appropriate institutional and organizational arrangements are put in place to ensure that those paying for the roads have confidence that their money is being used wisely, to provide the services that they want. This requires clear policies and a businesslike and transparent approach to how their funds are used.

The next article in this series will discuss alternative ways for funding roads: who should pay for them, how should they could pay, and what problems can arise. Stay tuned!

Managing Roads 2: Who Should Pay for our Roads?

Understandably, this tends to be a contentious issue, given that everyone wants to benefit from using the roads, but no one wants to pay for them! But someone has to. The issue is who and how?

There are a number of issues to consider here: firstly, should they be paid for out of general taxation (through a budget allocation from the Ministry of Finance), or should they be paid for by those who use (and benefit from them); or should it be a mixture of the two? What road management activities should be included? Should the funding for the construction of roads be treated differently from their subsequent maintenance, and should National, strategically important roads be treated differently from local roads? And who should decide what should be the level of funding for roads, or the correct policies (see above) to implement.

These are complex but very important issues as they have an enormous impact on the ability of any road organisation to provide the services that road users want and need. As for every business in any sector, the technical or managing capacity of any road organisation is irrelevant if it does not receive adequate funding, or receives it too late to pay its contractors and suppliers.

Furthermore, the level of funding should be as predictable and as stable as possible for as long as possible, because the consequences of road works have an impact on the road network's needs for 10 — 30 years into the future (and much longer for bridges). Road managers must therefore think that far into the future, if the resources provided today are to minimize the future road transport costs to the community. For example, it may well be better to spend twice as much on a more expensive treatment this year, if it results in much lower costs over the next 10 years. These are complex issues, but sophisticated computer programs are now available to help experienced road managers strike the best long term balance between these conflicting concerns, in order to minimize overall road transport costs to the whole community.

So, if society is to obtain the biggest benefits from its road infrastructure at the lowest cost, then it must provide funding to maintain these expensive investments, that is as long-term, stable and as predictable as possible.

Traditionally, this funding has come from general taxation, allocated through the government's Ministry of Finance. However, there are significant problems with this approach, all of which exist (to some extent) in Nepal at present:

1. The level of funding is not predictable from one year to the next, usually because of the conflicting interests and demands on government revenue during the political cycle. This makes effective long-term planning on the network meaningless, resulting in lower efficiencies and higher waste.
2. The actual disbursement of funds to road organisations is late or reduced, resulting in severe operational problems, such as an inability to pay suppliers. A common consequence of this is that in future, suppliers inflate their prices to reflect these risks, resulting in higher prices.
3. The amount of money provided for road maintenance is determined based on a wide range of other (whole-of-government) factors, and is unrelated to the actual needs of the network. The result of this is generally chronic under-funding (after all, how many politicians ever get elected for maintaining roads, rather than other more politically glamorous activities?).

There are other problems with this approach. In particular, everyone in the community who pays taxes are paying for roads, even if they never (or seldom) use them, and the amount that they pay bears no relation to the amount that they use the roads. Furthermore, the only real way available to those taxpayers and road users to have their views and priorities reflected in the service that they receive, is through the very indirect mechanism of general elections, (when a myriad of other issues also effects the result). This is very indirect and imprecise with no effective accountability between and those providing the service and those paying for

it.

Because of the practical problems that this approach presents, an alternative has been developed and implemented in many countries, using charges (not taxes) on road users, the revenue from which is used to fund road management through a Road Fund, completely separated from other government funds and functions. This Fund is overseen by representatives of those paying (a Roads Board), who are to reflect the views of the road users in establishing appropriate policies on how their funds are to be used in providing the road infrastructure. This approach is based on the following fundamental principles, beliefs and values:

1. Those who use the service (i.e., obtain the benefits from using the roads) should pay for the services that they enjoy. This can be achieved through the imposition of a small charge on the pump price of fuel.
2. The more someone benefits (i.e., uses) the roads, the more that they should pay. Again, a small surcharge on the fuel price achieves this, as well as encouraging fuel efficiency.
3. The more it costs to provide the road service, the more users should pay to cover these higher costs. This is particularly important for trucks, whose weight can cause expensive damage to the roads. Differential vehicle registration charges can be used to reflect this principle.
4. Those who pay for the roads should have a say in how their funds are used: i.e. what they want for their money and how much they are prepared to pay for what level of service. This is the role of a representative Roads Board (who must therefore be accountable to road users, who they are supposed to be representing).

Implementing such an approach has a number of significant advantages for the community as a whole:

1. The level of funding is far more predictable and stable than previously, and adjusts automatically: as road use increases, its maintenance needs increases, but so too does the revenue from users.
2. The entire road system can be self-financing and independent from other government issues. This frees up the Ministry of Finance to focus better on other areas of the economy.
3. The delivery of road services can be carried out outside of the public sector, allowing proper commercial, businesslike operations to be adopted, without the traditional public sector constraints. This should result in greatly improved utilization of resources (e.g. money and people), higher morale and professionalism and far greater, more direct accountability to those paying for the services.

However, adopting such an approach can be politically challenging, because it requires the funding for roads to shift from general taxpayers to road users, who tend to be relatively wealthy and politically well-connected. This is especially the case in developing countries, where vehicle ownership is more the exception than it is in developed countries, and where the roads are often seen as a ‘social service’ “to be paid for by the government”. However, despite this opposition, the realities of managing roads remain, and the second approach offers significant advantages to that based on the arbitrary allocation of taxes for roads. Furthermore, it is especially important for road users to understand that although they may think that they are paying more, they should in fact be saving many times the amount that they are paying (typically, three times as much). They are therefore much better off adopting this second approach, and should be actively encouraging the government to adopt such measures rigorously. And once established, they should ensure that those representing their interests and spending their money are taking their responsibilities seriously.

In the next article, we shall consider what characteristics are necessary if we are to certify that the money spent on roads is used as efficiently as possible, on the most appropriate activities, to ensure that we get the “biggest bang for our bucks”!

Managing Roads 3: Efficiency & Effectiveness in Managing Our Roads

The previous articles have highlighted the importance that roads play in the economy of Nepal, their enormous costs but even larger benefits, and how they can be funded. This article highlights what are the common problems experienced in managing roads in Nepal, and from this, what can be done to ensure that the money spent on providing roads (whether it is enough or not), is used as efficiently and as effectively as possible. Efficiency refers to how well something is done, whereas effectiveness refers to whether it was the right thing to do.

The focus of this article is not on the technical or engineering issues of managing roads, but on the institutional arrangements: what are the relationships between different institutions and their organizational constraints that affect their ability to fulfil their tasks as well as possible? These institutional factors strongly influence the technical and engineering performance of these organisations (important as they are).

The institutional problems of managing roads in Nepal are common to many developing (and developed) countries and have a significant impact on the ability to deliver road infrastructure to an adequate standard and at a reasonable cost. Some of the most common are described below.

- Funding is unpredictable, erratic, incomplete or late. The funding arrangements for roads needs to provide a stable, predictable and long-term level of funding (even if it is inadequate), so that road managers can make and apply long-term plans, in order to reduce the overall road transport costs to the community over the whole life of the road. This was discussed in the earlier articles.
- Decision making is slow and bureaucratic. This is often caused by a lack of clear responsibility for the specific functions on which decisions are required, resulting in a lengthy process of numerous individuals and institutions needing to be involved before a decision can be made. Besides slowing decision making, this continual consultative process is often demoralizing to those involved. Making specific individuals clearly responsible for specific functions within specific institutions allows decisions to be made quickly and provides managers with a greater sense of control and responsibility. However, with this greater autonomy must come greater transparency and effective accountability, in order to reassure others that their decisions and actions are known and appropriate.
- Decisions are not clear or are inappropriate. There are a number of reasons why this happens:
 - The decision makers are many, thereby allowing them to deflect any criticism onto others, (i.e. ‘passing the buck’ without being able to hold anyone accountable, because no one is effectively responsible – see above). Such opaque mechanisms do not help to identify where problems exist and how to fix them. They just allow these problems to perpetuate.
 - There is no effective accountability, allowing decision makers to get away without having to account for their decisions or actions. This may be due to weak management oversight, poor reporting systems, or ultimately, to disinterested or uninformed road users and government oversight.
 - There are no clear criteria (or policies) against which to make decisions. This relates to the need for clear policies to be established (see previous article), against which decisions can be made. Clear policies help guide managers in their decision making and direct resources to those areas that are considered

most important (thereby improving effectiveness).

- The information on which decisions are made is inaccurate, inappropriate, incomplete or out of date. It is important that managers are able to use their management information systems to support their decisions. This in turn makes it easier for them to justify (account) for their decisions, as well as ensuring that the institution's resources are directed to the most appropriate need.
- Staff morale is low undermining the development of a professional culture to do a good job. There is an English expression that is appropriate here: "If you pay peanuts, you get monkeys"! If you remunerate people badly (uncompetitively), don't give them the resources to do their jobs properly, and expect them to work out of pig-sties of offices, then you are telling them (indirectly) that they are not important and you don't value them. You may be able to hire or retain good managers, but that will be the exception: it will be in spite of the system, not because of it. As soon as they see a better opportunity elsewhere, they will leave, with the best, most competent leaving first. Continual external interference, frequent (and unjustified) staff relocations, inflexible remuneration (to reward good performance) and a lack of effective penalties (to discourage poor performance) only exacerbate this problem. If however, you want the expensive road asset to be managed as well as possible, then you need professional, educated and experienced road managers. This means offering conditions of employment that are competitive with the private sector (and even with neighboring countries) as it is these markets with whom you are competing for the best talents.

But this in itself won't be enough to retain the skills that are needed. It is also important to make their responsibilities clear and allow them to get on with their work without continual outside interference. Then make them accountable for the decisions that they make.

Some say that the country can not afford to provide competitive conditions of employment. The country can not afford not to! As has been explained already, bad or inadequate roads are already costing the community about 3 times more than it thinks it is "saving", thanks to higher road user costs. And the vast majority of the expenditure on roads is incurred in the actual physical works: administrative costs (including staff costs) normally only account for about 10% of the total expenditures. So, the additional cost from paying road management staff properly is tiny compared to the overall costs, let alone the enormous benefits that good road management provides to the community. And effective accountability allows this improvement to be measured.

- Coupled with this is another common characteristic in too many public road institutions: overstaffing. This further undermines the development of a professional culture in these organisations. It is important to recognize that a road management institution is established to serve the needs of a particular sector of the public by providing roads efficiently and effectively. It is *not* an employment agency, nor a opportunity for the well connected to pretend to work at the public's expense! It would be far better for the country to either support these surplus staff in finding other employment opportunities, or stop pretending and place them in a "Ministry for the Unemployed" where their presence does not undermine the performance of the institutions' important functions.
- There is a high level of waste, corruption and other losses. This is related to the comments above (institutional factors often are interrelated, which is why they should all be addressed at once: for example, having a highly efficient road management (implementation) service is of little benefit if its funding is erratic or its objectives unclear). If managers are not guided by clear (and transparent) policies, then they are unlikely to be able to direct (or prioritize) the institution's available resources to the most important areas of need, and the benefits achieved will be less than would have been the case. If decision making is slow or bureaucratic, lacking in objectivity and

transparency, or based on inadequate information, then decisions are unlikely to be as good as they could be. And a poor allocation of responsibilities means that managers are not clear on what they should be doing.

Corruption is a symptom of woefully inadequate remuneration (if people are not paid an adequate living wage, how else can we expect them to survive?!); poor professional culture within the organisation (where such practices are silently condoned); and inadequate accountability (often caused by a lack of clear responsibility), allowing such practices to go on undetected.

Quality of construction can often be a sign of poor institutional arrangements. It is in a contractor's interests to use substandard (i.e. cheaper) materials, or to skimp on the quantity or workmanship, but these result in roads that deteriorate more quickly than should be the case, resulting in higher costs to the community. Ensuring that this does not occur and that the community's interests are protected, is an important role of the road institution, who (either directly, or through hiring consultants) must supervise and monitor the contractor's activities and deal with any unforeseen problems. Such rigorous supervision is less likely where an unprofessional culture exists (see above), where bribery is possible (due to inadequate management controls and oversight), where there are inadequate skills present (because the organisation is unable to attract and retain the skills that it requires) or where there is inadequate enforcement of contract conditions (due to a combination of factors above).

It is interesting to note that many (if not all) of these weaknesses (and their solutions) are equally applicable to other businesses and sectors of government. In devising solutions, it is important to understand what are these weaknesses and why they exist, in order to structure the institutions to minimize or overcome them. Fortunately, solutions *do* exist for road management, and these are discussed in the next article.

Managing Roads 4: Making Things Better

In this final article, some ideas are presented as to how the common weaknesses described in the previous articles can be overcome, in order that Nepal can manage its expensive road infrastructure as well as possible, and thereby enjoy the huge benefits that such good management can provide. Many of the ideas presented here have been applied in other countries. This is to be expected, as the underlying characteristics for managing roads are common to all countries. However, they have also met with varying degrees of success, which is also to be expected, as the political and cultural situation in each country is different. In addition, different countries have applied different combinations of ideas to varying levels, with different levels of success. In developing solutions for Nepal, it is important that they are realistic but also holistic, i.e. that (because of their interactive nature) the benefits from improvements in one area of reform are not undermined or diminished from weaknesses in other related areas.

Although institutional reforms focus on the “big picture”, it is also important to promote good individual performance, because however big is an institution, it remains a collection of individuals, whose collective efforts are essential if the entire institution is to function well. Fortunately, many of the underlying principles that apply to institutions can also be applied within them, in order to encourage good individual performances.

Many of the weaknesses identified in the previous article are common throughout the entire public sector in many countries (including in Nepal). And unfortunately, whilst the institutions managing roads are within the public sector, employing civil servants, they are required to comply with various requirements which severely restrict their ability to operate either effectively or efficiently. Although reform of the entire public sector is therefore probably desirable (resulting in significant improvements throughout all sectors of government involvement), this is a colossal and lengthy process, requiring substantial and strong political leadership. Fortunately, for the roads sub-sector, a less radical approach is possible, which should also result in substantial benefits in this specific area.

Firstly, consider the funding arrangements for roads. The second article discussed the advantages from establishing a road fund (overseen by a Roads Board), with the expressed purpose of funding the maintenance of roads. This approach has been adopted in Nepal, but with very limited success, due to fundamental flaws in how it has been established and run. If it is to operate properly, then it must be able to raise adequate funds from road users to pay for the services that they demand. At present, they are only able to raise approximately 40% of their estimated needs, with about two thirds of this coming from the government's coffers (via the

Ministry of Finance). The consequences of this are that the underlying benefits from a stable, predictable and timely provision of funds is not achieved, the Roads Board is unable to fulfil its responsibilities and hence, it can not be held properly accountable for its performance. This leads to weak decision making, and means that those providing the service (e.g. the Department of Roads) now has to submit two cumbersome budget requests each year (one to the Roads Board and one to the Ministry of Finance), instead of one, adding to bureaucracy, waste and inefficiency.

So, strengthen the Roads Board is a necessity, so that it can raise adequate funds directly from road users to provide the service that road users want. And importantly, make it properly accountable to road users. In turn, no funding should come from the government for road management activities. Even without raising the retail price for fuel, this is entirely affordable (the country is already paying for the roads it has got, one way or another), by redirecting the tax that is currently collected by the government, to an equivalent charge on fuel instead.

What about the actual implementation of road infrastructure services? Here again, substantial improvements should be possible by instigating arrangements that reflect the realities of road management and overcome the current problems discussed in the third article. This is centered around the use of an authority that is wholly funded from the road fund, rather than from government (thereby avoiding many of the current public sector constraints), and run on a commercial basis. This means that those it employs are paid competitively, but equally importantly, the organization's management are required to account properly and transparently for its performance. As a commercial entity (but wholly publicly owned), the organisation would be required to establish commercial style accounting and management information systems, and these would be required in order that it is properly monitored and audited by those who fund it (i.e. the Roads Board). This will be far more objective and meaningful than at present due to the presence of a Performance Agreement.

To encourage competition, efficiency and innovation, the private sector would be encouraged to participate in as many areas as possible, on a transparent and level basis. The road authority would therefore procure as many services from the private sector as possible. This should also clarify responsibility, objective accountability and flexibility. It would also mean that the road authority can remain a relatively small professional outfit, retaining flexibility to meet changing needs.

In some countries, the road funding and implementation are combined into a single organisation, and this is a possibility in Nepal. However, the Roads Board is responsible for representing the views and interests of road users (who are paying for this), who naturally enough, wish to pay as little as possible. The road authority is responsible for providing a road network that is as good as possible. It would therefore wish to receive as much income as possible. This balance between what users are prepared to pay, and the level of service that they want, is best struck transparently between separate organisations, neither of whom face this conflict of interest.

Roads are important to the whole of society. The government would therefore continue to reflect the wider interests of the community and protect their interests, through overall government policy and oversight of the sector. Its Ministry would monitor the performance of the Roads Board, the Road Authority and the overall development of the private sector, but in an "eyes on, hands off" basis. The Ministry (and especially the Ministry of Finance, who do not have the appropriate technical qualifications) would not get involved with any operational decisions, as this would detract from clear responsibility and hence effective accountability. Instead, its focus would be on the strategic "big picture".

However, the most important role needs to be played by the general public and road users in particular. These concepts might appear to be rather esoteric and remote to the everyday person in the street. But this is not the case at all! We all suffer the expensive consequences of inadequate and poor roads, and we have an essential role to play in improving the situation too. By their very nature (and enormous cost), governments will always have an important role to play in their construction, maintenance and oversight. Unfortunately, experience elsewhere shows that however well the institutional arrangements are structured, they can be undermined by politicians if they wish and are not controlled. In a sovereign country, it is right for governments to retain such powers, but the "government" only exists to serve our collective interests, and that it must be accountable to every person in the street as its paymaster. We have the right to demand better performance and accountability from our public institutions, to ensure that they serve our needs efficiently and effectively. But with that right comes the responsibility to understand better the implications of the decisions that we (and politicians on our behalf) make in running our society. Roads are just one (important) element of that process.

राष्ट्रिय सतर्कता केन्द्र र प्राविधिक परीक्षण

पृष्ठभूमी:

सार्वजनिक पूर्वाधारहरूको संरचनाहरूमा कामको गुणस्तर अभिवृद्धि (Promotional) गर्ने प्राविधिक परीक्षण (Technical Audit) गर्ने कार्य नेपालको सन्दर्भमा नयाँ अवधारणा भएता पनि गुणस्तर तथा परीक्षणको महत्व सम्बन्धमा सन् १९७० देखि नै सबैको सरोकारको बिषयवस्तु बन्दै आएको थियो। गुणस्तर तथा परीक्षणको महत्वबाटे यसै समय देखिनै सुझावहरू दिने प्रयास भएतापनि समग्रमा निर्माणकार्यको गुणस्तर, उपयुत सेवाहरू तथा लागत अनुसार अपेक्षीत उपलब्धी तथा प्राप्तिको बिषयतफ गम्भीर भएर कहिल्यै पनि ध्यान दिइएन। सार्वजनिक निर्माणकार्यको गुणस्तर तथा खर्च गरिएको रकमको आधारमा प्राप्त सेवाहरूको चर्चा (Issues) सम्बन्धमा प्रशासनिक सुधार आयोग र एसियाली विकास वैँकले सन् १९९० मा सम्बोधन (Address) गरे। यसैको फलस्वरूप भौतिक योजना तथा निर्माण मन्त्रालय (तत्कालीन निर्माण तथा यातायात मन्त्रालय) मा सन् १९९२ मा प्रमुख प्राविधिक परीक्षको कार्यालय स्थापना गरियो। प्राविधिक परीक्षणको क्षमता तथा प्रकृया (Capacity & Procedures) को विकास गर्ने सम्बन्धमा सन् २००० मा भौतिक योजना तथा निर्माण मन्त्रालयले यस कार्यलाई गति दिने प्रयास पुनरुत्थान गरेता पनि प्रमुख प्राविधिक परीक्षको भूमिका (Role) तथा कार्य (Function) छायामा नै पर्नेगयो। विसं २०७८ साल आश्विनमा भएको आर्थिक प्रशासन संवन्धी नियमावली २०७६ मा भएको पहिलो संशोधनमा नियम ६२ क थप गरी राष्ट्रिय योजना आयोगमा प्राविधिक परीक्षण महाशाखाको स्थापना गर्ने व्यवस्था मिलाइयो। प्राविधिक परीक्षण (Technical Audit) को सम्बन्धमा राष्ट्रिय योजना आयोगले सत्रिमय भूमिका निभाउन नसकेको पृष्ठभूमिमा विश्व वैँकको सहयोगमा भौतिक योजना तथा निर्माण मन्त्रालयमा संचालित Road Maintenance & Development Project (R.M.D.P) अन्तर्गत Development of Technical Audit Capacity Project (D.T.A.C) गरियो। यसले जुलाई ३१, २००३ मा सडकखानेपानी तथा सरसफाई र आवाससम्बन्धी Audit Manuals तयार गरी आफ्नो कार्य सम्पन्न गयो। यिनै पृष्ठभूमीमा तत्कालीन मन्त्रिपरिषद्को मिति २०६०।०४।२८ को निर्णयानुसार यस केन्द्रमा एक प्राविधिक परीक्षण महाशाखा गठन गरी प्रभावकारी प्राविधिक परीक्षण गर्ने जिम्बेवारी थप भयो। यद्यपी २०६० आश्विनमा आर्थिक प्रशासन संवन्धी नियमावली २०७६ को दोस्रो संशोधनमा समेत उपरोक्त प्राविधिक परीक्षण गठन नसकेको अवस्था विद्यमान छ।

कार्यक्षेत्र:

नेपाल सरकार तथा नेपाल सरकारको पूर्ण स्वामित्व भएका संगठित संस्थाको तफबाट संचालन गरिने कुनै पनि सार्वजनिक संरचनाको पूर्वाधार विकास गर्ने क्रममा सार्वजनिक निर्माण कार्यहरूको गुणस्तर कायम गर्न चुनौतीको विषय बन्न गएको छ। त्यस माथि पनि धेरै मात्रामा यत्रतत्र छरपष्टरूपमा योजनाहरू संचालन गर्दा तथा सानातिना Civil Works हरू धेरै मात्रामा हुँदा सार्वजनिक निर्माण कार्यको गुणस्तर कायम गर्न झनै कठिन र जटिल बन्न पुगि समस्या बढ्दो छ। समग्रमा भन्ने हो भने आयोजनाहरूको दिगोपन तथा लागत अनुसारको अपेक्षीत उपलब्धि प्रप्तिको लागि निर्माण कार्यमा गुणस्तर कायम गर्नु गम्भीर सार्वजनिक चिन्ता र चासोको विषय भएको छ। समस्याहरूमाथि समयमा नै उचित ध्यान नपुग्नाका कारण योजनामा Cost को भार बढ्न गई Variation गर्नु पर्ने, त्यस्तै गरेर सम्पन्न योजनामा चाँडै नै क्षति पुग्न गई संचालनमा प्रभावकारिता नहुनुका साथै मर्मत संभारको लागत समेत बढ्ने गरेको छ।

परिभाषा र उद्देश्य:

सार्वजनिक निर्माणकार्यमा कामको गुणस्तर कायम गरी आयोजनाको दिगोपन प्राप्त गर्न तथा लागतको प्रभावकारीता सम्बन्धमा गरिने मूल्यांकन (assessment) लाई प्राविधिक परीक्षण (Technical Audit) भन्न सकिन्छ । आशातित लक्ष्य तथा कार्यक्रम अनुसार योजनाले वास्तविक कार्य गर्नसकेको छ, छैन भन्ने सम्बन्धमा पुष्टि गर्न तथा आयोजनाले नेपाल सरकारको ऐन, नियम, सार्वजनिक निर्माण निर्देशिका र Contract document अनुसार कार्य गरेको छ, छैन त्यसको मूल्यांकन गर्न पनि प्राविधिक परीक्षण (Technical Audit) गरिन्छ ।

A technical audit may be defined as -

"A systematic, independent process for obtaining evidence and evaluating this objectively to determine the extent to which needs or expectations are fulfilled."

(Adopted from ISO)

आयोजनाको लागत, समय, गुणस्तर, लागतको प्रभावकारिता र प्राप्त उपलब्धिहरूको मूल्यांकन (Assessment) गर्नु नै प्राविधिक परीक्षणको उद्देश्य हो । अर्को शब्दमा भन्ने हो भने "The main purpose of audit is to examine how well the planned or designed criteria are met by the project within the allocated time frame and budget."

कुनै पनि आयोजनाको देहायका सबै वा कुनै एक वा कुनै चरणको कार्यभाइरहेकै अवस्थामा प्राविधिक परीक्षण गर्न सकिन्छ । प्राविधिक परीक्षण सार्वजनिक निर्माण कार्यको कामको प्रकृति र मात्रा (Nature & Volume) मा भर पर्दछ ।

Planning and Design: यस चरणमा प्रारूप तयारी, योजना तथा डिजाइन पर्दछन् भने मुख्यतया quality तथा adequacy सम्बन्धित हुन्छन् ।

Procurement: यस चरणमा सेवा वा वस्तु तथा निर्माण सामग्रीको खरिद तथा प्राप्ति पर्दछन् भने मुख्यतया Transparency, FAR तथा funding agency का requirements सम्बन्धित हुन्छन् ।

Implementation: यस चरणमा कार्यान्वयन वा निर्माण पर्दछ भने मुख्यतया quality, schedule र budget सम्बन्धित हुन्छन् ।

Post-implementation: यस चरणमा निर्माण पछिको सञ्चालन, मर्मत सम्भार तथा पुनः निर्माण पर्दछन् भने Project को principal aspects हरूको समेत मूल्यांकन गरिन्छ ।

यसमा देहायका कुराहरू गरिन्छन्:

- आयोजना उद्देश्य अनुरूप कार्यान्वयन भएको छ / छैन,
- आयोजनाको लक्ष्य निर्धारण गरिएको छ / छैन र निर्धारण गरिएको भए लक्ष्य अनुरूप काम भएको छ / छैन,
- आयोजनाको प्रारूप तयार गर्दा, संभाव्यता अध्ययन गर्दा, सेवा वस्तु वा निर्माण सामग्रीको खरिद तथा प्रयोग गर्दा, आयोजनाको कार्यान्वयन गर्दा सार्वजनिक निर्माण निर्देशिका वा प्रचलित कानून बमोजिम तोकिएको तरिका र गुणस्तर बमोजिम गरिएको छ / छैन,
- आयोजनाको लागि गरिएको बजेट व्यवस्था र निकाशा ठीक छ / छैन,

- आयोजनाको लागि निर्धारण गरिएको समय तालिका ठीक छ / छैन र सो अनुरूप कार्यप्रगति भएको छ / छैन,
- आयोजनाबाट अपेक्षीत उपलब्धी हासिल हुनसक्छरसक्दैन, निर्माण कार्य पूर्वअनुमान गरिएको लागत भित्र सम्पन्न भएको छ / छैन,
- आयोजनाको डिजाइन ठिक छ / छैन, आयोजनामा सेवा, वस्तु वा निर्माण सामग्रीको खरिद वा प्राप्ती प्रकृया पारदर्शी छ / छैन,
- सम्पन्न भएको आयोजना अपेक्षीत गुणस्तरको छ / छैन र त्यसले अपेक्षीत सेवा दिन सक्छ / सक्दैन,
- लागतको प्रभावकारीता छ / छैन,
- आयोजनाको दीगोपन छ / छैन,
- संपन्न आयोजनाबाट के पाठ सिकियो ?

फाइदा:

- पूर्वाधारको गुणस्तरमा अभिवृद्धि तथा सुधार ।
- सार्वजनिक निर्माण निर्देशिका (Public Work Directives) को सुनिश्चितता ।
- वस्तु तथा सेवाको पारदर्शी मितव्ययी खरीद प्रणाली ।
- लागतको हेरफेर (Variations) मा कमी र न्युनतम निर्माण सामग्रीको प्रयोग ।
- वाषिक मर्मत संभार खर्चमा कमी ।
- परियोजनाको आयू लम्ब्याएर परियोजना चक्रको लागतमा कमी ल्याउने ।

प्राविधिक परीक्षणबाट औल्याएका केही विषयहरू

- निर्माणर/मर्मत कार्यको ठेक्कापट्टा समझौतामा निर्माण व्यवसायी, परामर्शदाता, दुवानीकर्ताले कार्यतालिका पेश गर्नुपर्ने व्यवस्था गरिएको पाइन्छ; कार्यान्वयन पक्षले कार्यतालिकालाई ध्यान दिएको देखिएँदैन ।
- ठेक्कापट्टा व्यवस्थामा तगबष्टिथ ब्ककगचबलअभ एबिल पेश भएपछि समझौता गर्नुपर्ने व्यवस्था देखिएकोमा तगबष्टिथ ब्ककगचबलअभ एबिल बनाउँदै नबनाउने र बनाए पनि कार्यान्वयन नगर्ने अवस्था प्राविधिक परीक्षणबाट देखिएको छ ।
- कार्यतालिकालाई समय सापेक्ष ग्रुमबतभ गरिएको छैन भन्ने प्रतिवेदनहरू प्राप्त भएका छन् । निर्माण कार्यको निर्माण अवधि बढाउँदै जाने स्थितिले जनताले समयमा सेवा सुविधा पाउन विचित हुनुपर्ने अवस्था देखिएको छ ।
- भेरिएसनको विषयमा योजनाको ठेक्कापट्टा हुनुअघि विस्तृत अध्ययन नगरीकन कार्यान्वयनमा जाने र भेरिएसन गर्ने गरेको देखिएको छ ।

- निर्माण सामग्रीको गुणस्तर पनि गुनासाहरू आएका छन् । प्रयोगशालामा आवश्यक परीक्षण गराएर मात्र प्रयोग गर्नुपर्ने- दक्ष जनशक्ति व्यवस्था नभएको जस्ता गुनासाहरू पनि आएका छन् ।
- विकास निर्माणसँग सम्बन्धित निकायहरूमा आवश्यक प्रयोगशाला, जाँच्ने उपकरण तथा जनशक्तिको अभाव रहेको विषयहरू पनि प्राविधिक परीक्षणको प्रतिवेदनमा आएका छन् ।

निष्कर्ष

सार्वजनिक निर्माणकार्यमा गुणस्तर कायम गरी आयोजनाको दिगोपना प्राप्तीका लागि प्राविधिक परीक्षण गर्ने सम्बन्धमा केन्द्रको महत्वपूर्ण भूमिका भएता पनि यसको कार्यान्वयनमा सबैको उत्तिकै जिम्मेवारी र दायित्व छ । प्राविधिक परीक्षण (Technical Audit) साध्य होइन साधन मात्र हो । यसको सान्दर्भिकता, सार्थकता एवं औचित्यको पुष्टि त्यस वेला हुनेछ जुनबेला हामी कर्तव्यबोध बाट प्रेरित भएर गुणस्तरयुत निर्माणको लागि प्रतिबद्धता जाहेर गर्दै यसको सफल कार्यान्वयन गर्दै जानु पर्दछ ।

Highway Economics

“It is not wealth of nation that build roads, but the roads that build the wealth of Nation”John Kennedy (US, President)

The Highway or transportation economic is a branch of economic that deals with allocation of resources with in the transport sector for cost effective and efficient mode of transport system and has strong linkage with civil engineering.

Principle of Highway Financing /Guideline of Highway Financing

- Sustainable highway financing should be done through user pay principle.
- Equity, simplicity, public good, value and flexibility are the five users fee principle.
- If one is considered about efficiency and fairness, the user pay principle, charged at levels corresponding to the economic benefits received from public goods, or services and this should be guiding principle in charging for highway user free against economic benefit.
- Highway pricing in theory serves three distinct principles i.e., financial (means to collect funds to pay for provision of highway services), efficiency (to reduce traffic congestion and increase mobility of efficient mode), equity (to discourage over utilization of highway space)
- The basic guideline involved in designing a highway pricing include marginal cost pricing, ability to pay principle, net benefit principle, full pricing.

These guidelines are practice through a variety of pricing methods. The overall objective must be ensuring the use of highway space in an effective, efficient and equitable manner consists with the social economic and environment needs of present and future generation.

Revenue collection and Financing in Highway

Sources of revenue (Beneficiary pay principle shall be adopted)

- User fee: fare, toll, maintenance, parking fee, congestion fee etc.
- Vehicle and fuel tax: registration and renew, fuel tax, special infrastructure development tax like Budhigandaki.
- Driving license and renew
- Property tax
- Development tax
- Value captured

Financing

- Regular government budget from internal revenue
- Internal loan
- Bilateral/multilateral grant.
- Loan from bank and other public fund like Sanchyakosh/Nagarik lagani kosh
- International loan such as ADB/WB/JICA

- Domestic bond
- PPP model etc.

Recommendation/Strategy for financing

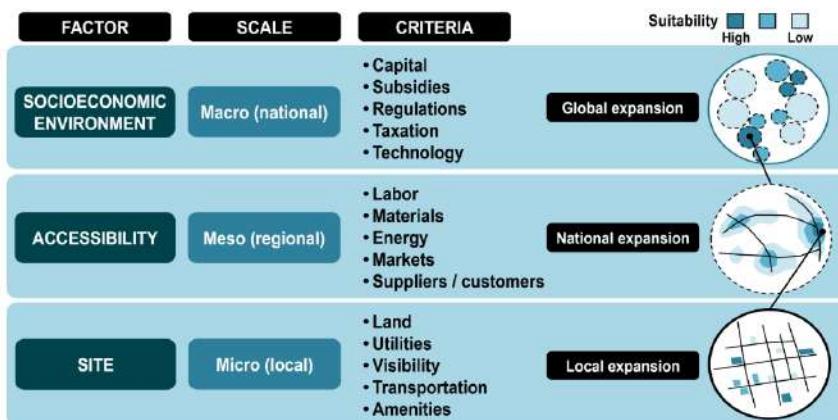
- Recognize transportation as an investment rather than as a cost.
- Think strategically in making transportation investment. All local roads, by pass, freeways, rail roads and ports are not equal investment in some will yield much greater benefit to the economy than investment in others. Example, Core Road Network in Nepal is only near about 25% (3500 KM) of SRN/NH.
- Think beyond jurisdictional boundaries. Freight does not stop at borders. It does little good for one country to have wonderful transport system, if the next has bottleneck.
- Think multimodally.
- Make some tough decisions with appropriate data analysis for long term future.

Economic importance of the Transportation

The economic importance of the transportation industry can thus be assessed from a macroeconomic and microeconomic perspective:

- At the **macroeconomic level** (the importance of transportation for a whole economy), transportation and related mobility are linked to a level of output, **employment**, and income within a national economy. In many developed economies, transportation accounts for between 6% and 12% of the GDP. Further, logistics costs can account for between 6% and 25% of the GDP. The value of all transportation assets, including infrastructures and vehicles, can easily account for half the GDP of an advanced economy.
- At the **microeconomic level** (the importance of transportation for specific parts of the economy), transportation is linked to producer, consumer, and distribution costs. The importance of specific transport activities and infrastructure can thus be assessed for each sector of the economy. Usually, higher income levels are associated with a greater share of transportation in consumption expenses. On average, transportation accounts for between 10% and 15% of household expenditures. In comparison, it accounts for around 4% of the costs of each unit of output in manufacturing, but this figure varies greatly according to sub-sectors.

Basic Location Factors



Economic Returns of Transport Investments

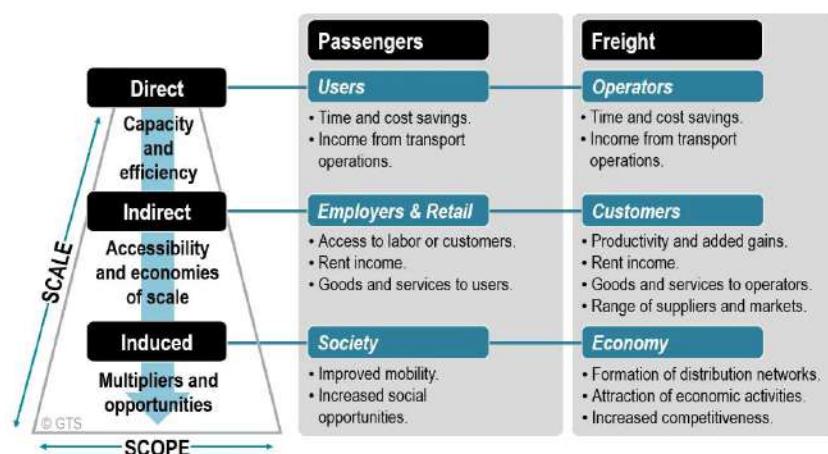
Positive impact

The added value and employment effects of transport services usually extend beyond those generated by that activity; **indirect effects** are salient. For instance, transportation companies purchase a part of their inputs (fuel, supplies, maintenance) from local suppliers. The production of these inputs generates additional value-added and employment in the local economy. In turn, the suppliers purchase goods and services from other local firms. There are further rounds of local re-spending, which generate additional value-added and employment. Similarly, households that receive income from employment in transport activities spend some of their income on local goods and services. These purchases result in additional local jobs and added value. Some of the household income from these additional jobs is spent on local goods and services, thereby creating further jobs and income for local households. As a result of these successive rounds of re-spending in the framework of local purchases, the overall impact on the economy exceeds the initial round of output, income, and employment generated by passenger and freight transport activities. Thus, from a general standpoint, the economic impacts of transportation can be **direct, indirect, and induced**:

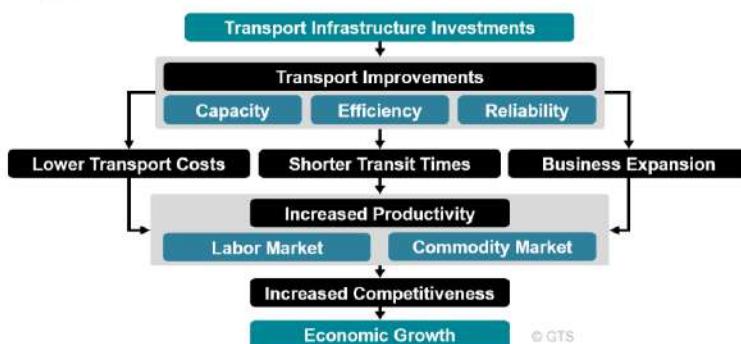
- **Direct impacts.** The outcome of improved capacity and efficiency where transport provides employment, added value, larger markets, as well as time and costs improvements. The overall demand of an economy is increasing.
- **Indirect impacts.** The outcome of improved accessibility and economies of scale. Indirect value-added and jobs are the result of local purchases by companies directly dependent upon transport activity. Transport activities are responsible for a wide range of indirect value-added and employment effects, through the linkages of transport with other economic sectors (e.g. office supply firms, equipment and parts suppliers, maintenance and repair services, insurance companies, consulting, and other business services).
- **Induced impacts.** The outcome of the economic multiplier effects where the price of commodities, goods, or services drops and their variety increases. For instance, the steel industry requires the cost-efficient import of iron ore and coal for the blast furnaces and export activities for finished products such as steel booms and coils. Manufacturers, retail outlets, and distribution centers handling imported containerized cargo rely on efficient transport and seaport operations.

Transportation links together the factors of production in a complex web of relationships between producers and consumers. The outcome is commonly a more efficient division of production by the exploitation of comparative geographical advantages, as well as the means to develop economies of scale and scope. The productivity of space, capital, and labor is thus enhanced with the efficiency of distribution and personal mobility. Economic growth is increasingly linked with transport developments, namely infrastructures, but also with managerial expertise, which is crucial for logistics. Thus, although transportation is an infrastructure intensive activity, hard assets must be supported by an array of soft assets, namely labor, management, and information systems. Decisions must be made about how to use and operate transportation systems to optimize benefits and minimize costs and inconvenience.

Socioeconomic Benefits of Transportation



Transport Impacts on Economic Opportunities



Negative impact

A common expectation is that transport investments will generate economic returns, which in the long run, should justify the initial capital commitment. Like most infrastructure projects, transportation infrastructure can generate a 5 to 20% annual return on the capital invested, with such figures often used to promote and justify investments. However, transport investments tend to have **declining marginal returns** (**diminishing returns**). While initial infrastructure investments tend to have a high return since they provide an entirely new range of mobility options, the more the system is developed, the more likely additional investment would lower returns. At some point, the marginal returns can be close to zero or even negative. A common fallacy assumes that additional transport investments will have a similar multiplying effect than the initial investments had, which can lead to capital misallocation. The most common reasons for the declining marginal returns of transport investments are:

- **High accumulation of existing infrastructure.** Where there is a high level of accessibility and where transportation networks that are already extensive, further investments usually result in marginal improvements. This means that the economic impacts of transport investments tend to be significant when infrastructures were previously lacking and tend to be marginal when an extensive network is already present. Additional investments can thus have a limited impact outside convenience.
- **Economic changes.** As economies develop, their function tends to shift from the primary (resource extraction) and secondary (manufacturing) sectors towards advanced manufacturing, distribution, and services. These sectors rely on different transport systems and capabilities. While an economy depending on manufacturing will rely on road, rail, and port infrastructures, a service economy is more oriented towards the efficiency of logistics and urban transportation. In all cases, transport infrastructure is important, but their relative importance in supporting the economy may shift.
- **Clustering.** Due to clustering and agglomeration, several locations develop advantages that cannot be readily reversed through improvements in accessibility. Transportation can be a factor of concentration and dispersion depending on the context and the level of development. Less accessible regions thus do not necessarily benefit from transport investments if they are embedded in a system of unequal relations.

Therefore, each transport development project must be considered independently and contextually. Since transport infrastructures are capital intensive fixed assets, they are particularly vulnerable to **misallocations and malinvestments**. The standard assumption is that transportation investments tend to be more **wealth-producing** as opposed to **wealth consuming** investments such as services. Still, several transportation investments can be wealth consuming if they merely provide conveniences, such as parking and **sidewalks**, or service a market size well below any possible economic return, with, for instance, projects labeled “bridges to nowhere”. In such a context, transport investment projects can be **counterproductive** by draining the resources of an economy instead of creating wealth and additional opportunities.

Since many transport infrastructures are provided through public funds, they can be subject to pressure by special interest groups, which can result in poor economic returns, even if those projects are often sold to the public as strong catalysts for growth. Further, large transportation projects, such as public transit, can have inadequate cost control mechanisms, implying systematic budget overruns. Infrastructure projects in the United States are particularly prone to these engineered fallacies. Efficient and sustainable transport markets and systems play a key role in regional development, although the causality between transport and wealth generation is not always clear. To better document and monitor the economic returns of transport investments, a **series of indicators** can be used, such as transportation prices and productivity. Investment in transport infrastructures is thus seen as a tool of regional development, particularly in developing countries.

5. Mobility in Lifestyle: If different regions of the country are well connected with suitable transportation facility, then people from one part of the country can go to other parts of the country quite easily and effectively. It will transfer mobility in the lifestyle of common people.

6. Agricultural and Industrial Development: Through transportation facility different agricultural and industrial inputs can be carried up to agricultural and industrial estates for production. Such a situation helps to promote agricultural and industrial development.

7. Sustainable Economic Development: Appropriate transportation facility helps to create an equitable distribution of national output, promotes tourism, agricultural and industrial development. All these components through transportation facilities help to create and maintain sustainable economic development

Role or Importance of transportation in the economic development of Nepal

Transportation is the process of carrying people and goods from a place to another. Transportation is one of the major prerequisites of economic development. Several goods need to be transferred from a place to another for the

fulfillment of daily needs or industrial needs. Similarly, import and export of commodities, capital, and manpower are possible only due to transportation facilities.

For the transfer of factors of production from a place to another, there is the need for transportation. Furthermore, the finished goods need to be transferred to the market (local, national and international) for their sale/ trade which is possible due to transportation. Thus, transportation is the infrastructure of development that promotes efficient mobility of the factors and output.

1. Equitable Distribution of National Output: Nepal is a mountainous country and due to its geographical disadvantage, the production of one region is not properly distributed to other parts of the country. However, a suitable transport facility helps to distribute National Product in the best possible manner.

2. Market Expansion: The domestic market in the Nepalese economy is confined to some limited places due to the lack of appropriate transportation facilities. However, if different potential places of Nepal are properly connected then the product of one region can easily be sold in other regions. It helps to promote market expansion.

3. Tourism Development: Nepal is known for its natural beauty all over the world. If all the tourist places are linked with transportation facility, then tourism development will be promoted in Nepal.

4. Increase in Domestic and Foreign Trade: The commercial product from one part of the country can easily be exported to various domestic markets as well as foreign markets through the availability of a dependable transportation facility.

Nepal Engineering Council and Related Subject matter.

It can be said that Nepal entered a modern phase in engineering after the political change in the sixties. Engineering activities began to contribute to the development of the country and the engineering profession started to gain respect in the society. The engineering community began to grow in number and was involved in all spheres of national development and engineers were allowed to compete in administrative service also for the post of secretary. Furthermore, the introduction of democracy in 1990 encouraged the growth of engineering colleges in Nepal about the enrolment of students into these engineering colleges was rising very fast. Hence it was expected that nearly 3000 engineers would be graduating from local engineering colleges every year with nearly an equal amount graduating from colleges abroad. So, a need was felt for an organization to manage the engineering profession. Therefore, to make the engineering profession more effective, Nepal Engineering Council was formed under the Nepal Engineering Council Act, 2055 promulgated by His Majesty the King on B.S. 2055/11/27 (11th March, 1999 A.D.). As per the Act, NEC has been vested with the statutory authority for the planning, coordinated development and monitoring of engineering profession and education in the country. NEC Act 2055 gives an outline on the formation of the Council, its tenure and the roles and responsibilities of the Chairman, Vice Chairman and the Registrar.

Nepal Engineering Council Rules, 2057 has also been prepared and approved by His Majesty's Government as per the provision of Clause 37 of the Act. It defines the registration of engineers into three categories as well as the formats for application:

- a) General Registered Engineer
- b) Professional Engineer
- c) non - Nepali Registered Engineer

NEC Rules 2057 also lays down the professional code of conduct for engineers registered with the Council. The first Executive Council was formed on Magh 2056 under the chairmanship of Er. Ram Babu Sharma and completed its tenure on Magh 2060.

OBJECTIVES:

The objective of Nepal Engineering Council is to make the engineering profession effective by mobilizing it in a more systematic and scientific and also to register the engineers as per their qualifications. Its duties and responsibilities are:

- 1) To prepare policies, plans and programs for the smooth functioning of the engineering profession and to execute them
- 2) To set norms and standards for engineering education in Nepal
- 3) To grant permission and approval to carry out engineering education to those engineering colleges and institutions that meet the required norms and standards and to honor their degrees and certificates
- 4) To monitor and inspect the quality of engineering education provided by the engineering colleges and institutions
- 5) To fix the qualification necessary in order to practice engineering profession and to register their name in the Council
- 6) To remove their name from the registration of the engineering council if found to violate the code of ethics.

VISION:

The vision of NEC is to make the engineering profession effective by mobilizing it in a more systematic and scientific and also to register the engineers as per their qualifications.

Discuss briefly the various issues raised in the NEC Act 2055 related to the engineering profession. How does it help in the eradication of the corruption in the engineering project and professional.

परिचय

नेपाल इन्जिनियरिङ परिषद ऐन २०५५ को प्रस्तावनामा नै नेपालमा इन्जिनियरिङ व्यवसायलाई प्रभावकारी बनाई व्यवस्थित तथा बैज्ञानिक ढंगले परिचालन गर्ने र योग्यता अनुसार नाम दर्ता गर्ने उल्लेख गरिएको ।

यो संस्था स्वशासित संस्थाको रूपमा गठन हुने/व्यक्ति सरह छुटौ छाप तथा चल अचल सम्पति प्राप्त सम्पति प्राप्त गर्ने, उपयोग गर्ने सकिने व्यबस्था रहेको छ ।

दफा ९ मा काम, कर्तव्य र अधिकार अन्तर्गतको व्यवस्था

- इन्जिनियरिङ व्यवसाय सुचारुका निम्ति नीति योजना र कार्यक्रम तयार गरी त्यसको कार्यान्वयन गर्ने जिम्मा
- इन्जिनियरिङ शिक्षण संस्थाको प्रमाणपत्र तथा उपाधिलाई मान्यता
- इन्जिनियरिङ व्यवसायको गर्ने योग्यता निर्धारण, परिक्षाको पाठ्यक्रम बनाउने र परिक्षा लिने र सो मा पास भएकोलाई नियमबमोजिम नाम दर्ता गर्ने
- दर्तावाला इन्जिनियरले तोकिएको आंचारसंहिता उल्लंघन वा पालना नगरेमा नाम दर्ता बाट हटाउने

दफा ११ मा दर्ता सम्बन्धि व्यवस्था : नाम दर्ता नगराई इन्जिनियरिङ व्यवसाय गर्न नहुने

दफा १७ नाम दर्ता गर्ने, दफा १६ प्रमाणपत्र दिने, दफा १७ नाम दर्ता नगर्ने भए सो को कारण सहित जानकारी , दफा १८ दर्ता किताब बाट हटाउने, प्रमाणपत्र रद्द गर्ने र पुनः नाम दर्ता गर्ने

दफा २१ मा कुनै शैक्षिक संस्थाको इन्जिनियरिङ विषयको योग्यताको प्रमाणपत्र मान्यता दिने व्यवस्था

दफा ३० मा कसुर तथा दण्ड सजाय सम्बन्धि व्यवस्था : दफा ११ बमोजिम नाम दर्ता नगरी व्यवसाय गरेमा कसुर ठहरिने र यस्तोमा ३ हजार जरिवाना, ३ महिना कैद वा दुवै सजाय हुने र यी अवस्था बाहेक यसै ऐन वा नियमको बर्खिअल्ल्प हुने कार्य गरेमा २ हजार जरिवाना हुने

साथै साधारण इन्जिनियर, गैर नेपाली इन्जिनियर र Professional इन्जिनियरको योग्यता र दर्ता सम्बन्धि व्यवस्था गरेको र साधारण इन्जिनियरको लागि ऐनमा भएको २०७९ मा संसोधन बमोजिम परिषदले दिने परिक्षामा पास भए पश्चात मात्र प्रमाण पत्र प्राप्त हुने

NEC ACT ले माथिको उल्लेख भए अनुसार इन्जिनियरिङ व्यवसायलाई व्यवस्थित गर्ने उद्देश्य सहित इन्जिनियरिङ पेशाका क्षेत्रमा नियमन गर्न स्वायत संस्थाको रूपमा परिषद को स्थापना भएको र परिषदमा दर्ता भई सके पछि व्यवसायिक आचारसंहिता अनिवार्य पालना र सोहि परिधिमा रही व्यवसाय गर्ने र सो नगरे कारवाहीको भागी हुनेपर्ने व्यवस्थाले पेशागत मार्यदा कायम रहने कल्पना समेत गरेको छ ।

इन्जिनियरिङ व्यवसाय र परियोजनामा हुने श्वष्टाचार उन्मुलनमा गरेको योगदान

- ऐनको दफा १७ देखि २० सम्म नाम दर्ता देखि प्रमाणपत्रको खारेजी सम्मको विस्तृत व्यवस्था गरेको र एक पटक खारेजी भैसकेपछि पुन नाम दर्ता गर्न निवेदन/कारवाहीको भागी सहित व्यवसाय बाट बन्चित हुनुपर्ने
- दफा ११ मा शैक्षिक कार्यक्रमको पाठ्यक्रम, संस्थाको परिक्षा, पूर्वाधारको अवस्था हेरी मात्र मान्यता दिने हुदा नक्कली र अयोग्य व्यक्ति र संस्था दुबैलाई नियन्त्रणको प्रयास
- व्यवसायिक आचारसंहिता अनिवार्य पालनाको वकालत गर्दाव्यक्तिलाई आफ्नो पेशा प्रति मर्यादित बनाउने कोशिस गरेको

- साधारण इन्जिनियर, गैर नेपाली इन्जिनियर र Professional इन्जिनियरको योग्यता र दर्ता सम्बन्धि व्यवस्था र प्रक्रिया पुरा गर्न समयलाग्ने र समाजकै प्रतिष्ठित पद भएकोले उच्च नैतिकता प्रदर्शन गर्ने प्रेरित बनाउने

Possible actions if the registered engineer's do not comply with the professional code of conduct

- सरोकारवालाले सो सम्बन्धमा NEC समक्ष उजुरी दिन सक्ने
 - परिषदले जाँचबुझ समिति गठन गरी उजुरी सम्बन्धमा जाँचबुझ गर्न लगाउने
 - जाँचबुझ समितिले व्ययाँ गराउन र निज उपर लागेको आरोप बिरुद्ध सबुत प्रमाणहरू पेश गर्न लागाउने
 - सफैको मौका दिने
 - जाँचबुझ प्रारम्भ भएको मिति देखि दर्तावाला इन्जिनियरलाई परिषदले निलम्बित गर्न सक्ने
 - कार्यलयले पनि निजलाई काम बाट निलम्बन गर्न सक्ने
- निजको सफाई सन्तोषजनक नभएमा जाँचबुझ समितिले निजको नाम दर्ता किताबबाट हटाउन परिषदलाई प्रस्ताब गर्ने र परिषदले सो को अध्ययन गरी उपयुक्त ठहराएमा निजको नाम परिषद्को दुई तिहाई सदस्यको बहुमतले दर्ता किताव बाट हटाउने र सो को जानकारी सम्बन्धित व्यक्ति र संस्था समेत लाई दिने ।

परिषदमा गर्नुपर्ने सुधारका बिषयबस्तुहरू

- परिषदलाई सबै प्रदेशबाट महिला, आदिबासी र जनजातीको साथै सबैको प्रतिनिधित्व हुनुहुनुपर्ने
- सबै बिश्वबिधालयहरूको पाठ्यक्रममा एकरूपता हुनुपर्ने
- इन्जिनियरलाई अनिवार्य internship कम्तिमा ६ महिना को हुनुपर्ने
- विदेशी र स्वदेशी इन्जिनियर बिचको भेदभाव हटाउनुपर्ने
- दलगत झान्डामा निर्वाचित NEA का सदस्यहरूलाई परिषदमा मनोनित गर्ने विधिको अन्त्य हुनुपर्ने
- अध्यक्ष खुला प्रतिष्पर्धा बाट नियुक्त हुनुपर्ने
- डिग्री र प्रमाणपत्र सहित NECमा दर्ता भएको इन्जिनियर बाहेक कसै लाई बढुवाको नाममा इन्जिनियर पदमा वा इन्जिनियर बनाउने व्यवस्था बन्द गरिनुपर्ने
- प्रादेशिक सम्पर्क/शाखा कार्यालय यथासीघ्र खोल्नुपर्ने
- आचारसंहिता परिपालना भएको /नभएको सम्बन्धमा अनुगमनलाई प्रभावकारी बनाउनुपर्ने
- दण्ड र सजायलाई समयसापेक्ष बनाउनुपर्ने
- शिक्षण संस्थाहरूमा शिक्षक र शौकिक पूर्वाधार सहितको प्रयोगशालालाई समयसापेक्ष बनाउनुपर्ने
- नेपाल सरकारलाई Engineering Design/Drawing/Report Approval लाई इन्जिनियरबाट हुनुपर्ने गरी बाध्य बनाउनुपर्ने

व्यावसायिक आचार संहिता

परिषदका दर्तावाला इन्जिनियरले नेपाल इन्जिनियरिङ परिषद् ऐन, २०५५ र नेपाल इन्जिनियरिङ परिषद् नियमावली, २०५७ मा उल्लेखित व्यवस्थाको अधीनमा रही पालना गर्नु पर्ने आचार संहिता निम्नानुसार रहेका छन् :

- क. **अनुशासन तथा इमान्दारिता** : अनुशासित रूपमा इमान्दारिताका साथ पेशागत मर्यादा तथा हितको विपरित नहुने गरी इन्जिनियरिङ सेवा / व्यवसाय संचालन गर्नु पर्नेछ ।
- ख. **शिष्टता तथा गोपनीयता** : इन्जिनियरिङ व्यवसायसंग सम्बन्धित ग्राहकसंग व्यवसायको कममा शिष्ट व्यवहार गर्नु पर्नेछ, र ग्राहकसंग सम्बन्धित व्यावसायिक जानकारीहरु ग्राहकको स्वीकृति बेगर अन्य कसैलाई प्रकट गर्नु हुँदैन । तर प्रचलित कानून बमोजिम त्यस्ता जानकारी सम्बन्धित निकाय समक्ष प्रकट गर्न बन्देज लागेको मानिने छैन ।
- ग. **भेदभाव गर्न नहुने** : व्यावसायिक ज्ञान र सीपको प्रयोग गर्दा धर्म, वर्ण, लिङ्ग र जाति वा अन्य कुनै पनि कुराको आधारमा ग्राहकहरु बीचमा कुनै पनि भेदभाव गर्नु हुँदैन ।
- घ. **सम्बन्धित व्यावसायिक काम मात्र गर्नु पर्ने** : आफूले अध्ययन गरेको विषय वा हासिल गरेको ज्ञान सीपसंग सम्बन्धित क्षेत्रभित्रको व्यावसायिक काम मात्र गर्न वा तत्सम्बन्धित सुझाव वा सिफारिस गर्नु पर्नेछ । आफूलो व्यवसाय क्षेत्रभित्र नपर्ने विषयसंग सम्बन्धित कामहरुका सम्बन्धमा सोसांग सम्बन्धित विशेषज्ञ कहाँ सिफारिस गर्नु पर्नेछ ।
- ड. **इन्जिनियरिङ व्यवसायमा आँच आउने काम गर्न नहुने** : आफूले पूर्याएको सेवा बापत पाउने पारिश्रमिक भत्ता तथा सुविधा बाहेक अन्य कुनै किसिमको अनुचित आर्थिक लाभ प्राप्त गर्न वा इन्जिनियरिङ व्यवसायमा आँच आउने किसिमको कुनै अनुचित क्रियाकलाप गर्नु हुँदैन ।
- च. **व्यक्तिगत उत्तरदायित्व** : इन्जिनियरिङ व्यवसायको सन्दर्भमा आफूले गर्ने प्रत्येक काम व्यक्तिगत रूपमा उत्तरदायी हुने गरी गर्नु पर्नेछ ।
- छ. **नाम, पद र दर्ता नं. खुलाउनु पर्ने** : आफूले गर्ने इन्जिनियरिङ व्यावसायिक कारोबारसंग सम्बन्धित लिखित, नक्सा, डिजाइन, स्पेसिफिकेशन, इष्टमेट आदि कागजात तथा विवरणहरुमा आफनो हस्ताक्षर गर्दा आफ्नो नाम, पद र नेपाल इन्जिनियरिङ परिषदमा दर्ता भएको दर्ता नं. स्पष्ट रूपमा बुझिने गरी उल्लेख गर्नु पर्नेछ ।
- ज. **अनावश्यक प्रभाव पार्ने किसिमबाट प्रचार प्रसार तथा विज्ञापन गर्न नहुने** : आफूले गर्ने व्यावसायिक क्रियाकलापहरुका सम्बन्धमा ग्राहक (क्लाईन्ट) हरुलाई अनावश्यक रूपले प्रभावित गर्ने किसिमबाट प्रचार प्रसार तथा विज्ञापन गर्नु हुँदैन ।

Registration for Title of Professional Engineer, PEng (Nepal)

Guidelines for Application

1. INTRODUCTION

1.1. THE TITLE OF PROFESSIONAL ENGINEER

The Nepal Engineering Council (NEC) is an extended arm of the Government of Nepal and is the regulatory body for the engineering profession, and engineering education, in Nepal, as per the Nepal Engineering Council Act 1999. Under this act the NEC may award the title of Professional Engineer to engineers who have achieved prescribed standards in their academic qualifications and professional experience. The award of the title of Professional Engineer enables an engineer to use the title PEng (Nepal), indicating that the engineer practices to high ethical standards and is applying their engineering knowledge to provide solutions to complex problems. A similar title is awarded in the USA and Canada, in Japan the title of Registered Engineer (RE) is awarded, in Australia and New Zealand the title awarded is Chartered Professional Engineer (CPEng), in the UK and Ireland the title Chartered Engineer (CEng) is awarded.

1.2. THE BENEFIT OF BECOMING A PROFESSIONAL ENGINEER

Securing the title of Professional Engineer provides a badge of credibility to an engineer and is a clear demonstration of their professional ability. Engineers should take pride in their skills and abilities and the title of Professional Engineer can be seen as a formalization of this. The title of Professional Engineer also holds a status that is not just relevant to the Nepali context but also relevant in the wider engineering profession. Engineers who are awarded the title will be entitled to include the letters PEng (Nepal) in their title. The relationship between 'General Registration' and 'Professional Engineer Registration' is outlined in the diagram below:

General registration

- Apply upon completing Bachelor's Degree in any engineering discipline

- Mandatory in order to practice as an engineer in Nepal
 - Mandatory for using title Er.
 - Mandatory in order to be able to apply for the title of Professional Engineer
- Professional Engineer registration

- Recognizes high level of professional skill and experience
- Once awarded, the letters PEng (Nepal) may be included in title

The Government of Nepal (GoN) and other organizations, through legal provision, may introduce requirements for particular engineering roles and responsibilities to be carried out only by engineers who hold the Professional Engineer (PEng (Nepal)) title. Prior to the introduction of this, employers can immediately begin to award certain engineering roles and responsibilities only to engineers who hold the Professional Engineer (PEng (Nepal)) title.

1.3. ETHICS AND CODE OF CONDUCT OF A PROFESSIONAL ENGINEER

All engineers working in Nepal must adhere to the NEC Code of Conduct as per Rule 18 of the NEC Regulation 2057 (2001). The title of Professional Engineer brings further responsibility in terms of professional conduct and adhering to the code of conduct. The title of Professional Engineer can be removed in cases of misconduct as stated in the NEC Act & Regulations and the By-laws of the NEC related to the PEng (Nepal) title.

The Code of Conduct of the Nepal Engineering Council (NEC) can be found on the NEC website:

1.4. APPLICATION FEES

The application submission must be accompanied by the relevant fees, which currently total NRs 11,500:

- NRs 1,500, non-refundable administration fee, plus
- NRs 10,000 registration fee, which will be refunded if application is not accepted.

These fee rates will be reviewed at regular intervals and updated as required. A detailed description of the registration fee is described in clause 5 of NEC rules & regulations 2057.

The application deadlines will be published through public notice every year.

1.5. RENEWAL OF PROFESSIONAL ENGINEER TITLE

The period of validity of the Professional Engineer title awarded by the NEC is five years. Application for renewal of the PEng (Nepal) title must be submitted a minimum of two months prior to the completion of the five-year period. The intention of the renewal process is to ensure that engineers holding the PEng (Nepal) title are working continuously as engineers, and are maintaining their Continuing Professional Development (CPD) record. Engineers will be required to submit an up to date Curriculum Vitae (CV) and CPD record in order to renew their PEng (Nepal) title.

2. APPLICATION AND REVIEW PROCESS

This section of the guidelines provides a step-by-step overview of the process involved in submitting an application, and the review of submitted applications. There are minimum criteria that applicants must meet which are specific to particular application routes, as explained in Section 2.1 below, but in general all applicants must meet the following:

- Be registered under the General Category of the Nepal Engineering Council.
- Hold a Master's Degree in engineering from a university recognized by the NEC
- Have attained a suitable level of professional experience

The review process is primarily focused on the professional experience acquired by the applicant and looks to determine if sufficient professional experience has been acquired to achieve the skills and competencies required of a Professional Engineer (PEng, Nepal). The NEC will evaluate applications based on the achievement rating described in section 3.2.

2.1. APPLICATION ROUTES

There are three possible routes for applicants to apply for the title of Professional Engineer (PEng,Nepal) under the Nepal Engineering Council (NEC); A — Senior Experience Route, B — Registered Applicant Route, and C — Graduate route (Standard route). All routes (A, B & C) will be opened as per the Council decision.

The requirements for applicants under each of the three routes are outlined in the diagram below:

<ul style="list-style-type: none"> • Route A • Master's degree in Engineering • Minimum 20 Years of Professional experience Since graduation • Registered under NEC general category a minimum of 20 years prior to application <p>Application Process</p> <ul style="list-style-type: none"> • Submit Application Sec 2.2 Application Form • NEC Certificate of General Registration • Curriculum Vitae • Reference letter from employer • Attributes (Atts) record <ul style="list-style-type: none"> • Interview - Section 2.4 • Committee Review - Section 2.5 • Notification - Section 2.6 	<ul style="list-style-type: none"> • Route B • Hold a Professional title with a recognized institution which provides competency-based registration of engineers and belongs to the IPEA of the International Engineering Alliance <p>1. Submit Application Sect 2.2 Application Form NEC Certificate of General Registration or foreign nationals registered with NEC. Curriculum Vitae Registration Certificate for existing Professional title</p> <p>2. Committee Review - Section 2.5</p> <p>3. Notification - Section 2.6</p>	<ul style="list-style-type: none"> • Route C • Master's degree in Engineering • Minimum 7 Years of Professional experience Since graduation • Registered under NEC general category a minimum of 7 years prior to application • 2 years of management experience <p>1. Submit Application - Section 2.2 Application Form NEC Certificate of General Registration Curriculum Vitae Attributes Record and Project Report CPD Record</p> <p>1. Essay Preparation – Sec 2.3</p> <p>2. Interview - Section 2.4</p> <p>3. Committee Review Section 2.5</p> <p>4. Notification - Section 2.6</p>
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2.2. SUBMITTING AN APPLICATION

- Application Form

Applies to all Application Routes.

The application form can be found in Annex 2. The PEng (Nepal) title is paper based application.

The application form has seven sections:

- *A — Applicant Details:* Basic information regarding the applicant, e.g., name, contact details, etc.
- *B — Application Route:* Indicate under which route the applicant is applying, i.e. Route A, B, or C,
- *C — Background and Expertise:* Indicate under which discipline academic experience was gained and in which field of expertise professional experience was gained
- *D — NEC Membership:* Provide details of NEC General Registration

E - Documents Submitted with Application: Provide details of documents submitted with application form

F - Declaration: Applicant must declare that all information and statements included in the application form, and in the accompanying documents, are true

G — Supporter's Details: Only relevant for Application Route C. Applications through route C must be supported by two engineers who hold the PEng (Nepal) title or who hold professional membership from the IPEA member engineering bodies. The supporters are expected to review the applicant's application prior to submission and to provide support as required to make sure that the applicant's application effectively represents why the applicant is a suitable candidate for the PEng (Nepal) title

- NEC Certificate of General Registration

Applies to all Application Routes.

All engineers must be registered under the general category of the Nepal Engineering Council (NEC) upon completing their Bachelor in Engineering Degree from recognized University in order to be able to work as an engineer in Nepal. At the time of applying for General Registration, a transcript and notarized copy of the Bachelor in Engineering Degree from a recognized University must be submitted. Applicants for the PEng (Nepal) title must hold General Registration with the NEC in order to be eligible to apply. The certificate of General Registration must be submitted with the application form. Applicants under Route A must have registered under the general category a minimum of 20 years. prior to applying for the PEng (Nepal) title.

- Curriculum Vitae

Applies to all Application Routes.

A complete, and up to date, Curriculum Vitae must be provided by all applicants. Curriculum Vitae must be submitted as per the format which can be found in Annex 3.

• **Reference Letter**

Applies to Application Route A only.

Applicants applying through Route A, the Senior Experience Route, must provide a reference letter from their employer with their application. If the applicant is self-employed, they should provide a reference letter from a client (senior member of staff), or senior colleague.

- **Registration Certificate for Existing Professional Title**

Applies to Application Route B only.

Applicants applying through Route B, the Registered Applicants Route, must provide a copy of their registration certificate for their existing professional title, and also provide evidence of an active registration with the awarding institution. Please note, that the awarding institution must be a recognised institution which provides competency based registration of engineers and belongs to the International Professional Engineers Agreement of the International Engineering Alliance (IEA).

The national applicant under route B must register with general category upon completing their Bachelor in Engineering Degree from a recognised University or the foreign national should register as a foreign national registered category of the Nepal Engineering Council Act 2055 B.S. and Regulations 2057 B.S.

- **Attributes Record and Project Report**

Applies to Application Routes A..

Attributes (Atts) set of competencies and skills which engineers must acquire and develop, through a task-oriented approach, throughout their professional experience; refer to Section 3.1 for further details. Applicants must demonstrate in their application that they have achieved all attributes, refer to Section 3.2 for further details, using the Attributes Record which can be found in Annex 4. A minimum of five achievements of rating E in the attributes must be demonstrated during the review process.

Applies to Application Routes C.

Attributes (Atts) set of competencies and skills which engineers must acquire and develop, through a task-oriented approach, throughout their professional experience; refer to Section 3.1 for further details. Applicants must demonstrate in their application that they have achieved all attributes, refer to Section 3.2 for further details, using the Attributes Record which can be found in Annex 4. A minimum of eight achievements of rating E in the attributes must be demonstrated during the review process.

Under this application route C, Graduate route (Standard Route), applicants must demonstrate and present that they have had regular sign off by a supervisor on their progress towards achieving their Attributes.

The Attributes Record must also be accompanied by a Project Report, where the applicant is expected to demonstrate their experience with regard to a particular project on which they have worked. This should demonstrate how they have achieved each of the Attributes in a practical sense. There is no prescribed format for the project report but it should be a maximum of 5,000 words.

- **Continuing Professional Development Record (CPD)**

Applies to Application Route C only.

Applicants must have completed a minimum of weighted 60 hours of Continuing Professional Development (CPD) per year to be eligible to apply for the title of Professional Engineer (PEng (Nepal)). Applications must be accompanied by a completed CPD record, the format for which can be found in Annex 5 & 6, which logs each CPD activity and the hours completed. Refer to Section 4 for further information regarding Continuing Professional Development.

2.3. ESSAYS

Applies to Application Routes C only.

As part of the application process the applicant will be required to prepare essays, according to exam system specified by NEC. The topics and questions to be addressed in the essay preparation will be defined by the NEC and will be revised before every application deadline.

The essays are included as part of the application in order to provide an opportunity for the applicant to articulate their professional opinion on important topics relevant to the professional practice of engineering, as well as to demonstrate their communication skills. It is important that the essays are based on the applicant's own opinions, arguments, conclusions and analysis, and do not include large amounts of quoted text or arguments from other sources. It is not necessary for the assessor to agree with the applicant's stance on a particular topic, they must simply see that the stance has been argued in a logical manner.

The essay test will be given to the applicant and upon the successful result of the essay, the application of the applicants will be processed for review.

There are several stages which needs to be successful for the applicant including screening stage where the applicant will be shortlisted based on their academic credentials & other required submission, Essays stage and review stages. If the candidate is Unsuccessful in any one of these aforementioned stages, then the candidate may apply for next time. The essay test sessions will be held in Kathmandu, in a location determined by the NEC.

2.4. INTERVIEW

Applies to Application Routes A and C.

If called for interview, the applicant will be notified at least one month in advance of the date and location of the interview. Applicants invited to interview will be interviewed by a panel of three interviewers, at least one interviewer will be from the relevant engineering discipline.

2.5. COMMITTEE REVIEW

Applies to Application of All Routes A, B and C.

Applications received through Application Routes A, B and C will be processed through a committee review. The review committees will be formed by the Nepal Engineering Council.

2.6. NOTIFICATION

If the application for professional registration title has been successful, the applicant will be notified no more than one month after their interview / committee review.

If the application has been unsuccessful, the applicant will be provided with feedback regarding the reasoning behind not awarding the professional title, and they will be encouraged to reapply at an appropriate time.

५.७ निरन्तर व्यवसायिक विकास भन्नाले देहाय अनुसारका कार्यहरू मध्ये कुनै एक गरेको हुनुपर्ने छ ।

- (क) सम्बन्धित क्षेत्रमा कार्य सम्पादन गरी निरन्तर रूपमा काम गरिरहेको ।
- (ख) सम्बन्धित क्षेत्रसँग प्रत्यक्ष सरोकार राख्ने विषयवस्तुसँग सम्बन्धित गोष्ठीहरूको संचालन वा यस्ता गोष्ठी, सेमिनारहरूमा सक्रिय सहभागिता भएको ।
- (ग) सम्बन्धित क्षेत्रसँग सम्बन्धित विषयहरूमा अध्ययन, अध्यापन अनुसन्धान तथा विकास (Research & Development) र सोसँग सम्बन्धित प्राविधिक लेख, रचना प्रकाशन गरेको ।
- (घ) विश्व व्यापार संगठन (World Trade Organization) को प्रावधान लगायत विभिन्न अन्तर्राष्ट्रीय सहमति, सम्झौताहरूमा व्यवसायिक इन्जिनियरहरू को योग्यता, दक्षता सम्बन्धित अन्तर्राष्ट्रीय आवश्यकताहरूको बारेमा ज्ञान र प्राप्तिका प्रयत्नहरू गरेको ।
- (ङ) योजना व्यवस्थापन प्रविधि (Project Management Technique) बारे ज्ञान भएको ।
- (च) योजनाको आर्थिक विश्लेषण (Financial Analysis) बारे ज्ञान भएको ।
- (छ) इन्जीनीयरिङ व्यवसाय र कार्यसम्पादन संग प्रत्यक्ष सरोकार राख्ने ऐन/कानून, नियम, विनियम, निर्देशिका, कोड, विशिष्ट विवरण (Specification) बारे ज्ञान भएको ।

Road Safety Principle, NRSC,NRSAP and Related subject matter

Road Safety Principles

- Striving for the highest road safety standards throughout the country: By encouraging all road users to take primary responsibility for their own safety and the safety of others as roads, and by focusing on improving the safety of more vulnerable road users.
- An integrated approach to road safety: Through cooperation with other areas such as energy, environment, educations, innovations and technology and justice.
- Subsidiarity, proportionality and shared responsibility, commitment and concrete actions to all levels and their authorities.

National Road Safety Council (NRSC)

Road safety work is a complex process involving different sectors such as DoR, Traffic Police, Department of Health, DoTM etc. There is thus a need for a functional and effective institutional framework for the development and implementation of policies and programme to prevent road traffic accident and injuries.

Though different institutional framework is possible, there is a need to identify a lead agency in government to guide the national road safety effort. The lead agency should have authority and responsibility to make decisions, control resources and coordinate efforts by all sectors of government including those of health, transport, education and the police. This agency should have adequate finance to use for road safety and should be publicly accountable for its actions.

Different models can be effective in road safety and each country needs to create a lead agency appropriate to its own circumstances. Specific efforts should be taken by the agency to engage all significant groups concerned with road safety. The national road safety agency should be an independent statutory organization attached to or functioning in parallel with the ministry dealing with road transport and it should be independent of the road building agency.

The road safety agency should have a chairman of the rank of ministers or principal secretary to the government of the country. Awareness, communication and collaboration are key to establishing and sustaining national road safety efforts. National efforts will be boosted if one or more well known political leaders can actively champion the cause of the road safety.

The specific tasks of a national lead agency are to

- Manage, coordinate and commission all activity regarding road safety in the country.
- Advise all arms of the government on all matters regarding road safety in the country.
- Formulate policy, set goals and elaborate strategies for road safety including the targeting of particular areas and the setting of priorities.
- Coordinate between different agencies of the governmental, research and academic institutions and non-governmental organizations.
- Compile and analyze national statistics and ensure the comprehensive data exist for road safety planning.
- Set road safety research priorities and fund projects in those priority areas.
- Assemble and disseminate information and good practice including sharing research findings, good practice models and experience with various agencies involved in road transport and safety planning.
- Establish and fund research and teaching institutions and centers specifically for work on road safety or transport and related issues.
- Establish safety standards for roads, road infrastructure and vehicle.
- Monitor and evaluate the effectiveness of the road safety strategies at the central and local levels.
- Encourage and enable local governments to set up relevant institutional structures.
- Organize regular national conference on road safety.
- Procedure sufficient finance for road safety work.
- Coordinate the planning and implementation of road safety work, taking into considering the interests of society, user's groups, trade and industry and individuals as well as environmental aspects.

Conceptional Structure of NRSC

The establishment of a central agency that can effectively co-ordinate all the stake holders involved in road safety is the basic requirement for improving road safety in any country. NRSC have been establishment at Nepal chaired by secretary of ministry of labor and transport (in past) and secretes of MOPIT now. The council has been dormant since its establishment. NRSC is the best options for Nepal so the existing NRSC will be revitalized with higher authority to delegations and implement its various activities.

To give it a legal standing, this council will be backed with the necessary act. Two phases to the revitalized NRSC.

- **Preliminary stage:** NRSC chaired by Minister of MOPIT and executive committee backed by technical body to assist in daily activities. During preliminary stage NRSC will have limited authority to implement intervention.

- **Fully empowered stage:** NRSC executive committee to still be chaired by Minister of the MOPIT with the minister's secretary acting as the member secretary for the executive committee. This will take place when the NRSC act with the above institutional structure is enacted. NRSC should have own independent secretariat to execute the activities.

To ensure funds for road safety intervention, seek endorsement from the ministry of finance and National Planning Commissions to recognize the principal of the for the investment decision. Seek those agencies endorsement also to utilize the road board fund or to set a policy to mandatorily set a fixed portion i.e., 10% of the total cost of road construction to mobilize budget for road safety. The activities relations to road safety policy will also look into aligning them with the ISO, traffic safety management standard ISO 390001.

Review of National Road safety Action Plan 2013-2020, Decade of Action 2021-2030 and Vision 2050 and beyond.

- NRSAP was the national initiative which was prepared by MOPIT in order to demonstrate government's commitment to improve road safety in the country in accordance with the UN call to its member countries similar to the UN decade of action 2011-2020 document, NRSAP 2013 -2020 was also structured around five main pillars of road safety.
- While plan identifies all key issues and recommends actions, timeline and implementing agencies, but most responsible agencies did not own it and did not show interest in delivering action in it assigned to them.
- NRSAP 2013-2020 was prepared without a strategic guidance, road safety policy and road safety act.
- It was not very effective in improving road safety in absence of institutional, legal, funding and technical framework to support its implementation. Nevertheless, a number of actions identified by plan were implemented.
- Although those actions did not bring desired outcome and did not help reduce fatalities and serious injuries in the short term but, their implementation has laid important **foundation stone** for the next round of NRSAP 2021-2030.

Challenges of NRSAP

- Ineffective/unscientific crash data to lack of robust institutional structure responsible to implement the action. i.e., No agency has published road crash data.
- Low priority (road safety work is additional job) of GoN's offices such as DoR, DoTM, Nepal Police.
- Lack of manpower and expert/trainers regarding road safety issues.
- Inadequate or misuse of funding i.e., safety budget used for road upgrade or widening.
- Lack of legal standing
- Lack of coordination among the stakeholder to manage the road safety i.e., duplication of activities from parallel committee.
- Omission of required section in acts/standards/manual etc.

Decade of Action 2021-2030 and Vision 2050 and Beyond

- The United Nations General Assembly, on August 2020, has passed a resolution on improving Global Road Safety, with the aim of reducing road traffic deaths and injuries by at least 50% by 2030.
- The resolutions call upon involvement and active participation of members states to achieve safety targets including SDGs target under Goal 3.6. The period of 2021-2030 has been termed as Second Decade of Action.

- Member states have directed to take measures through 40 actions points in which some of them are
 - ✓ Strengthening road safety laws and law enforcement
 - ✓ M and E of road safety laws and law enforcement
 - ✓ Implementation of UN road safety policies, rules and regulations
 - ✓ Integration of road safety in planning
 - ✓ Conduct awareness campaigns on road safety
 - ✓ Strengthen pre hospital care for road crash victims
 - ✓ Share best practices regionally and internationally
 - ✓ Provide rehabilitation and care for road crash victims
 - ✓ Involvement of member states and stakeholder for increases investment in road safety.
- Third Global Ministerial conference on Road Safety was held at Stockholm, Sweden in Feb 2020. This reiterated the need for continuation of efforts made from all participating member countries to reduce traffic death and injuries. It envisages to chart future strategic direction for global road safety up to 2030 and beyond. It defines ways to accelerate action on proven strategies to save innocent lives from crashes.
- Nepal is signatory of Stockholm declaration and has shown its commitment in the global goal of reducing the road crash fatalities 50% by 2050. (Nepal's Vision 2050)
- GoN has started plans to revise and update the road safety action plan for next decade 2021-2030.
- The Government believes that, while crashes would continue to occur, deaths and serious injuries on roads are largely preventable. While it is too early to talk about zero deaths on roads in Nepal.
- It is reasonable to move forward with the ambitious visionary goal of aiming zero deaths and disabilities on roads in the long term. This leads to the vision statement “Toward Zero” realistic with the interim short to medium term target of 50% reductions in fatal and serious injury crashes by the end of 2050.
- This vision is consistent with the safe in the country. The vision will be branded and marketed as **“Vision 2050 and Beyond”** by the government with broader support from the community, as this vision is the path towards zero deaths and serious injuries from road crashes in the country.

The National Transport Policy 2075 was drafted in 2018, however it is yet to be formally adopted by GoN. The policy captured broader areas extending from planning, design, construction, maintenance urban transportation and parking management. The NTP 2075 draft including policies that have relevance to road safety are as follows.

- Developing road side services centers along highway
- Controlling direct access to highways
- Maintaining compatibility of the road cross section with the design speed involved.
- Adoption of ITS technologies for traffic management
- Introduction of safe vehicle guidelines
- Introduce the gradual driving licensing systems
- Improving transport safety through road safety audits, blackspots analysis and establishing trauma center for improved post-crash response and
- Development of universally accessible road infrastructure etc.

The NTP provide excellent frameworks for road safety management/improvement in Nepal. It recognizes ensuring road safety as one of the main goals of the nation's transport system. This

has been re iterated and emphasized in the draft updated policy currently under debate. The new draft policy also suggests that “an entity responsible for overall management of transport safety be established involving all relevant stakeholders and that “A research unit under national transport safety council be established for research, development, training and testing for the transport safety and standard”. Road safety will be high on agenda of all road transport delivery agencies when the new policy would be adopted by the government.

Road safety Management Framework (Nepal Road Safety Management System)

1. Governance and Planning System

- Institutional, legal, funding and technical framework
- Crash investigation system
- Nepal Road crash database system
- Road safety information and management system
- R and D

2. Pre-crash Management System

- Safer roads
 - ✓ NRS urban and rural
 - ✓ Road safety assessment program
 - ✓ Black spot improvement program
 - ✓ Road deficiencies remedial program
 - ✓ Work zone hazard and safety
- Safer Speed
 - ✓ Speed management system
 - ✓ Speed limit setting program
 - ✓ Speed limit review program
 - ✓ Speed control and enforcement program
- Safer Vehicle
 - ✓ Nepal vehicle standard program
 - ✓ Vehicle registration and renewal program
 - ✓ Vehicle road worthiness program
- Safer User
 - ✓ National Road rules, VTMA and VTMR
 - ✓ Driver training and licensing
 - ✓ Community education awareness program
 - ✓ Surveillance control and enforcement program

3. Post-crash Management System

- Crash information program
- First Aid service
- Emergency service
- Crash site management program
- Towing and safety etc.

सडक दुर्घटना कम गर्न सवारी तथा यातायात व्यवस्थापन ऐन, २०४९ ले गरेका व्यवस्था मध्ये सवारी गति निर्धारण, सवारीका बजन तथा सवारीमा राखिने मानिस र माल सामानको बारेमा भएको प्राबधानहरू उल्लेख गर्नुहोस् ।

सवारी तथा यातायात व्यवस्थापन ऐन, २०४९ को प्रस्तावनामै सवारी दुर्घटनाको रोकथाम गर्न, पिडित पक्षलाई क्षतिपुर्ति दिलाउन, बिमा व्यवस्था गर्न र सरल तथा सुलभ ढंगबाट यातायात सुबिधा उपलब्ध गराउन यातायात सेवालाई सुदृढ, सक्षम र प्रभावकारी बनाउन बान्धनीय भएकोले भन्ने उल्लेख भएबाट सवारी दुर्घटना कम गर्नु प्रमुख उद्देश्य राखिएको मान्न सकिन्छ ।

सवारीको गति निर्धारण

परिच्छेद ७ आवागमन नियन्त्रण

११५ (१) विभागले कुनै सार्वजनिक स्थानका सम्बन्धमा सवारी चलाउने गति निर्धारण गर्न आवश्यक देखेमा सो स्थानको सवारीको गति निर्धारण गरी सो भन्दा बढी बेगमा सवारी चलाउन निषेध गर्न सक्नेछ ।

- ✓ गति निर्धारण गरी बढी बेगमा सवारी चलाउन निषेधित सार्वजनिक स्थानमा गति सम्बन्धि सूचना वा संकेत टास्न लगाउने
- ✓ दमकल, एम्बुलेन्स तथा बिरामी लैजाने कामको सिलसिलामा लागू नहुने तर बटुवा तथा अन्य सवारी सचेत गर्न विशेष धब्नी तथा बति

दफा ११५ मा यात्री वाहक सार्वजनिक सवारीको स्तर, गति तथा अन्य आवश्यक व्यबस्था तोकिए बमोजिम हुने भन्ने व्यवस्था अनुरूप नियम्वालिमा सवारीको गति निर्धारण गरिएको ।

- ✓ कार, जीप, भ्यान, पिकअप ८० कि.मि. प्रतिघण्टा
- ✓ टेम्पो, स्कुटर, पावर टिलर तथा ट्राक्टर बढीमा ४० कि.मि. प्रतिघण्टा
- ✓ मोटरसाइकल ५० कि.मि. प्रतिघण्टा
- ✓ बस, ट्रक, मिनी ट्रक तराईमा ७० कि.मि. प्रतिघण्टा र पहाडमा ५० कि.मि. प्रतिघण्टा तर बाकलो वस्ती भएको ठाउँमा ४० कि.मि. प्रतिघण्टा

दफा ११६ सवारीको बजन

- ✓ विभागले सार्वजनिक सथानको सम्बन्धमा सवारीको बजन हद निर्धारण गर्न सक्ने
- ✓ ट्राफिक संकेत, पार्किङ, चालकको अनुशासन/अनुमति प्राप्त व्यक्तिले मात्र सवारी चलाउन पाउने व्यवस्था रहेको

दफा ११७ सार्वजनिक सवारीमा राख्न पाउने मानिसको संख्या र माल सामानको बजन विभागले निर्धारण गरी सूचना प्रकाशित गर्न सक्ने ।

नियमावलीको नियममा

नियम १५ मा

- ✓ बस २६ देखि ५६ सिट , मिनिबस १७ देखि २५ सिट
- ✓ जीप, झ्यान, पिकअप र माइक्रो चालक सहित १४ जना
- ✓ टेम्पो मिटर भए चालक सहित ४ जना र नभए १३ जना
- ✓ मोटरसाइकल/स्कुटर २ जना

नियम १६ मालबाहक

- ✓ ट्रक, ट्यांकर चालक सहित ३ सिट, प्रति एक्सल १०.२ टन भारबहन
- ✓ मिनिट्रक ५ टन चालक सहित
- ✓ पावरटिलर/पिकअप चालक र १ टन

नियम १७ अन्य सवारीको बर्गिकरण तथा क्षमता

- ✓ डोज़र, लोडरको हकमा निर्माण कम्पनीको क्याटलक् , specification को अधिनमा रही नेपाल सरकारले राजपत्रमा सूचना प्रकाशित गरि तोकिएक बमोजिम हुने ।

सवारी यातायात तथा व्यवस्था ऐन २०४९ ले किन सडकमा हुने बढ्दो दुर्घटना रोक्न सफल भएन? कमजोरी कहाँ छ? र कसरी सुधार गर्नुपर्छ? आफ्नो राय प्रस्तुत गर्नुहोस् ।

सवारी तथा यातायात व्यवस्थापन ऐन, २०४९ को मुख्य उद्देश्यनै सवारी दुर्घटनाको रोकथाम गर्न, पिडित पक्षलाई क्षतिपुर्ति दिलाउन, बिमा व्यवस्था गर्न र सरल तथा सुलभ ढंगबाट यातायात सुविधा उपलब्ध गराउन यातायात सेवालाई सुदृढ, सक्षम र प्रभावकारी बनाउन रहेको भए पनि औसत दैनिक करीव ८ जना मृत्यु तथा करोडौंको भौतिक सम्पति सहित सामाजिकस्तरमा व्यापक क्षति हुनेगरेको छ ।

सडक दुर्घटना रोक्ने सम्बन्धमा भएका कानुनी तथा नीतिगत व्यवस्थाहरु

- सवारी तथा यातायात व्यवस्था ऐन २०४९ तथा नियमावली २०५४
- सार्वजनिक सडक ऐन, २०३१
- स्थानीय स्वायत शासन ऐन २०५७
- सडक बोर्ड ऐन, २०५८
- राष्ट्रिय यातयात नीति २०५८
- नेपाल सडक मापदण्ड
- Traffic Safety Manual, Guidelines, Notes
- Road Design Standard
- यातायात संग सम्बन्धित संस्थागत संरचनाहरु मन्त्रालय/विभाग/महाशाखा/शाखा आदि

यी सबै व्यवस्था भएपनि सडक पूर्वाधार निर्माण र सवारी संचालन तथा व्यवस्थापनको मुख्य जिम्मेवारी कुनै निकायको देखिदैन ।

सडक दुर्घटना रोकने सम्बन्धमा VTMA २०४९ मा भएका कानुनी प्राबधानहरु

सवारीको गति निर्धारण

परिच्छेद ७ आवागमन नियन्त्रण

११५ (१) विभागले कुनै सार्वजनिक स्थानका सम्बन्धमा सवारी चलाउने गति निर्धारण गर्न आवश्यक देखेमा सो स्थानको सवारीको गति निर्धारण गरी सो भन्दा बढी बेगमा सवारी चलाउन निषेध गर्न सक्नेछ ।

- ✓ गति निर्धारण गरी बढी बेगमा सवारी चलाउन निषेधित सार्वजनिक स्थानमा गति सम्बन्धि सूचना वा संकेत टास्न लगाउने
- ✓ दमकल, एम्बुलेन्स तथा बिरामी लैजाने कामको सिलसिलामा लागू नहुने तर बटुवा तथा अन्य सवारी सचेत गर्न विशेष धब्नी तथा बति

दफा ११५ मा यात्री वाहक सार्वजनिक सवारीको स्तर, गति तथा अन्य आवश्यक व्यबस्था तोकिए बमोजिम हुने भन्ने व्यवस्था अनुरूप नियम्वालिमा सवारीको गति निर्धरण गरिएको ।

- ✓ कार, जीप, भ्यान, पिकअप ८० कि.मि. प्रतिघण्टा
- ✓ टेम्पो, स्कुटर, पावर टिलर तथा ट्राक्टर बढीमा ४० कि.मि. प्रतिघण्टा
- ✓ मोटरसाइकल ५० कि.मि. प्रतिघण्टा
- ✓ बस, ट्रक, मिनी ट्रक तराईमा ७० कि.मि. प्रतिघण्टा र पहाडमा ५० कि.मि. प्रतिघण्टा तर बाक्लो वस्ती भएको ठाउँमा ४० कि.मि. प्रतिघण्टा

दफा ११६ सवारीको बजन

- ✓ विभागले सार्वजनिक सथानको सम्बन्धमा सवारीको बजन हद निर्धारण गर्न सक्ने
- ✓ ट्राफिक संकेत, पार्किङ, चालकको अनुशासन/अनुमति प्राप्त व्यक्तिले मात्र सवारी चलाउन पाउने व्यवस्था रहेको

दफा ११७ सार्वजनिक सवारीमा राख्न पाउने मानिसको संख्या र माल सामानको बजन विभागले निर्धारण गरी सूचना प्रकाशित गर्न सक्ने ।

ऐनले किन दुर्घटना रोकन सकेन?

ऐनको कमजोरीले दुर्घटना बढेको भन्दा पनि सोको पूर्ण कार्यान्वयन र त्यसका लागि समयसापेक्ष रूपमा आवश्यकपर्ने संस्थागत क्षमता, संरचना, जनशक्ति र स्रोत साधनको अभाव हो भन्न सकिन्छ । अन्य कानून झौँ समयसापेक्ष सुधारको गुन्जाइस सधै रहनु स्वाभाविक हो तर

उक्त ऐनको व्यवस्थाको प्राबंधानको अभाव भन्दा पनि कानूनको परिपालनाको अभावले सडक दुर्घटना अत्यधिक हुने गरेको छ । यसका बावजुद ऐनमा भएको कतिपय व्यवस्थाहरूमा सुधार गर्नुपर्ने देखिन्छ ।

- सवारी व्यवस्थामा ट्राफिक प्रहरीको काम, कर्तव्य र अधिकारको बिषयमा
- दुर्घटनामा विमा नागेको अवस्थामा क्षतिपुर्ति ब्यबसायीले तिर्ने र उम्किने बिषयमा
- यातायात निरिक्षक विभागको कर्मचारी रहने वा अन्य निकाय रहने र सो को परिचालन सम्बन्धि बिषयबस्तु
- सवारीको संख्या र ठाँउ अनुसारको प्रकार सम्बन्धमा

दुर्घटना न्यूनीकरणका लागि चाल्नुपर्ने थप कदम or Measures to internalize road safety

प्रभावकारी यातायात व्यवस्थापन तथा सवारी दुर्घटना न्युनिकरणको लागि सलग्न मुख्य निकायहरू MOPIT, DOTM, Nepal Police/Traffic Police, DOR भएपनि यी मध्ये कुनै निकायको मुख्य जिम्मेवारी सडक सुरक्षा नरहेको हुँदा राष्ट्रिय सडक सुरक्षा बोर्ड वा NRSC स्थापना गरी हालै संसोधन गरिएको NRSAP २०२०-२०३० मै केन्द्रित रहेर त्यसका पाँच पिलरहरू Road safety management, safer road and mobility, safe Vehicle, safer road user, post-crash management मा आधारित रही निम्न Measure हरु लागु गर्नुपर्ने देखिन्छ ।

यसका साथै नेपाल सरकारले तत्काल RS act पारित गरी लागू गर्ने र प्रभावकारी NRSC बनाउने, अन्तर्राष्ट्रिय निकायबाट सडक निर्माणमा बजेट दिंदा नै सडक सुरक्षाको प्रवन्धहरूबाट नेपाल सरकार स्पष्ट हुनुपर्ने, यातायात व्यवसायीहरू पनि सुरक्षित सवारी, राम्रो सडक संस्कृतिको बिकासमा सहयोग गरी सामाजिक उत्तरदायित्व बहन गर्ने र सर्वसाधारणले सडक सुरक्षालाई जीवनको अनिवार्य अंगको रूपमा पालन गर्ने ।

Slope Stabilization Strategies, Methods and Classification

Stabilization Strategies to Reduce Slope Failure

The objective behind slope stabilization is to reduce the risk of slope failure to enhance public safety. Some standard stabilization techniques used in practice to improve public safety are mentioned below:

1. Flattening of overburden slope
2. Cutting of unstable rock blocks
3. Scaling of loose materials/blocks
4. Providing drain pipes and drain holes
5. Use of dowel bars
6. Installing rock anchor to avoid moving along discontinuity joints
7. Use of rock bolts to enhance the jointed rock mass
8. Constructing concrete or masonry walls with weep-holes
9. Constructing rock trap ditches at the toe of the slopes

10. Providing rock catch fences/walls along the slope to make the surrounding locations safe for public usage
11. Providing hanging chains or webs to slow down toppling of blocks
12. Providing free-hanging mesh net to direct loose rock pieces to fall only near the slope toe
13. Constructing berms/benches as a rockfall collector
14. Providing mesh secured by bolts and gunited to protect friable formation
15. Constructing rockfall barriers (gabions and concrete block, reinforced soil barriers, etc.) at the toe of slopes
16. Building and constructing rock sheds and tunnels
17. Providing caution signals in rockfall locations

Conditions required for the selection of a stabilization technique

The conditions for selection of the stabilization technique are:

1. Geotechnical requirement (geology, rock/soil properties, groundwater, and stability analysis)
2. Construction requirement (types of construction equipment, access to the construction site, construction expenses, etc.)
3. Ecological requirement (garbage disposal, aesthetics, etc)

The choice depends upon the level of stabilization required, its design life, and the costs involved. The preliminary expenses will also influence the selection of the stabilization technique, which will ensure its efficiency for a longer period

Slope Stabilization Methods and Classification

The most commonly used slope stabilization techniques are categorized as follows:

1. Geometric techniques: The application of geometric techniques brings about a change in the geometry of slope.
2. Hydrological techniques: The adoption of hydrological techniques lowers the water content of soil/rock material by reducing the groundwater table.
3. Chemical and mechanical techniques: Chemical and mechanical stabilization techniques increase the shear strength of the critical plane of soil/rock mass by external means. In addition, the shear strength of the slope can also be increased by minimizing the external forces triggering the slope failure.

Geometrical Techniques

Slope stabilization using geometrical techniques can be achieved by:

1. Flattening the slope
2. Eliminating part of the soil/rock
3. Eliminating load from the top of the slope and therefore reducing the shear stresses on critical planes
4. Constructing pressure berms at the toe of the slope and thereby providing extra safety against toppling failure
5. Replacement of slipped material by free-draining materials and therefore reducing the build-up of pore water pressure
6. By re-compaction of slip debris to provide more resistance against loading

Hydrological Techniques

1. Installing surface and subsurface drain pipes and therefore reducing pore water pressure
2. Use of inverted filters

3. Use of thermal techniques, such as ground freezing and heating methods

Chemical and Mechanical Techniques

1. Using grouting to increase the shear resistance of slope
2. Constructing restraining structures, such as concrete gravity or cantilever walls
3. Construction of gabion structures, baby crib walls, and embankment piles in order to provide resistance against toppling
4. Constructing lime and cement columns
5. Installing ground anchors, rock bolts, root piles, etc. to provide effective tension to rock blocks
6. By planting shrubs and grasses to reduce soil erosion

Construction Techniques of Slope Stabilization

Slope stabilization techniques are categorized into three groups:

1. Reinforcement support: It includes rock bolts, dowels, tied-back walls, shotcrete, buttresses, etc.

Rock Reinforcement Support

Rock reinforcement support involves the application of external elements to strengthen the rock to avoid failure.

➤ Rock bolts and Anchors

The most beneficial supports are rock bolts and anchors as they protect blocks of rock from sliding away from the discontinuity planes.

The installation mechanism of rock bolts and anchors governs their effective compression capacity. The most effective way to install rock bolt is by fixing them perpendicular to the joints so that the joint discontinuities are easily trapped.

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In the case of fractured rock slope, rock bolts and anchors are used in combination with concrete walls to cover the locations of fractured rock.

➤ Steel Rods

Steel rods, also known as dowels bars, are installed and grouted into the rock mass to act as reinforcement.

The difference between rock bolts and steel rods lies in their installation methods as rock bolts are stressed during the installation, whereas steel rods are not.

➤ Shotcrete

Fine aggregates and mortar are the main constituents of shotcrete. Generally, shotcrete is applied pneumatically and placed in a layer of 50 to 100 mm.

The application of a layer of shotcrete to the rock face can protect the zones or beds of closely-fractured rock. Besides, shotcrete also prevents small blocks of rock from falling. Thus the process of progressive failure of producing large, unstable overhangs on the face reduces. Although its primary function is surface protection, shotcrete also provides some support against sliding of the overall slope.

Shotcrete improves the tensile and shear strength of slopes, thereby reducing the chances of slope failure.

➤ Grouting

Grouting is a technique of injecting a fluid grout into the rock mass to replace the air or water present in its fissures and cracks. The grout consists of a mixture of cement and water. However, sand, clay, rock flour, fly ash, and other similar materials can be used as a replacement to cement.

As a result, the cost of stabilization work reduces, especially where fissures and cracks are large in volume.

If a cavity is present in the slope face, a concrete buttress can be built to avoid rock falls and support the overhang.

2. Unstable Rock removal: It involves methods like re-sloping, cutting, etc.
3. Protection: This comprises the construction of ditches, mesh, catch fences, warning fences, rock sheds, tunnels, etc.

OPTIONS FOR ROAD SLOPE PROTECTION

3.1 Introduction

Countermeasures for the slope failure on road slopes are classified into three categories and nine groups depending upon its purpose and application (refer Table 2.2). A suitable combination of these measures should be applied after assessment of slope failure and its mechanism, importance of the assets to be protected, and the cost-effectiveness.

1) Earthwork

Reducing shear or destabilising force by removing the unstable materials from the upper part of the unstable slope and increasing shear strength or stabilising force along the rupture surface by adding weight at the toe of unstable slope.

2) Bioengineering

Protection from erosion, shallow seated instabilities and weathering of the slope surface by application of vegetative and small-scale engineering works.

3) Water Management

Reducing pore-water pressures in the slope by surface and subsurface drainage.

4) Slope Work

Protection from small collapse, erosion and weathering by application of frame work, shotcrete or pitching work.

5) Anchor Works

Supporting the unstable slope by application of rock bolts, soil nails, and ground anchors.

6) Wall and Resisting Structures

Supporting the slope by construction of retaining walls and similar structures.

7) Gully Protection Work

Protection or reduction of the damages from slope failures by wirenet and catch wall. Series of suitable Check (Sabo) dams are applied to check the Debris Flow.

8) Pile Work

Pile works with steel H section piles, steel pipe piles, and reinforced concrete piles are desirable to carry out to support or withstand the moving soil mass if the bed rock is strong. The effect of piles on landslide movement will be less in cases where the motion of landslide is vigorous (exceeding 1 mm per day).

9) Alternative Works

Avoiding the unstable area by relocating a route or by the construction of bridge,tunnel and similar structures.

3.2 Earthworks

Earthwork consisting of cutting and removal of soil mass from upper part of unstable slope and filling or loading at toe (lower portion) is one of the basic and primary control measure.

3.2.1 Cutting

1) Purpose

Cutting work and removal of unstable soil or rock mass at the upper part or head of an unstable or potentially unstable slope is carried out to reduce the load and the shear force. Removal of whole soil mass or part of it is performed in the upper half portion of landslide.

2) Design Considerations

The slope gradient and length of cut slope should be determined on the basis of the geological, hydro geological conditions, and soil parameters. The cut slope gradient should be between 1:0.3 (V:H) and 1:1.5 depending on subsurface conditions and other characteristics. Berms of 1 to 4 m width should be constructed at interval of 5 to 10 m in the vertical direction (height). Attention shall be paid to the geological condition of the slope prior to cutting of the slope. The gradient of the cut slope should be based on the results of the investigation and as approved by the engineer. In designing a cut slope, the following geological conditions should be considered with the utmost care.

a) Colluvial Deposit Slope

Colluviums such as talus and debris flow deposits, being poorly consolidated, usually form a slope with a critical angle of stability. When excavated, the cut slope formed will become unstable. Therefore a wide berm near the boundary between the bedrock and the upper colluvial deposit should be designed.

b) Erosive Sandy Soil

Sandy soils, such as decomposed granite, pit sand or terrace gravel are easily eroded by surface water, which may result shallow collapse.

c) Erodable Soft Rocks

Cut slopes in soft rocks such as mudstone and tuff with low degree of solidification becomes unstable after the completion of cutting because of the weak internal shear strength of the rock and stress release.

d) Fissured Rock Slope

The stability of fissured rock slopes is governed by the degree of fissure development and their distribution.

As a rule, cutting and removal of soil mass should be performed from upper to lower portion to maintain the slope stability. Cutting work should be carried out during dry

season. The final cut slopes should be treated with adequate drainages, slope protection works and/or bioengineering works to increase stability against effects of rainfall and infiltration of water.

Protection of the cut slope and its foot should be considered in order to prevent erosion and instabilities. Slopes must be protected by means of walls and resisting structures if it is unavoidable to implement steeper slope gradient than the standard gradient. Proper cutting work is effective to safeguard the probable cut slope failures. The recommended standard slope gradient for cut slopes for different soil characteristics are shown in Table 3.1

Table 3.1 Recommended Standard Slope Gradient for Cut Slopes

Soil classification		Cutting Height(m)	Slope Gradient(V:H)
Hard rock	Soft rock		1:0.3 ~ 1:0.8
			1:0.5 ~ 1:1.2
Sand	Not dense (loose), poorly graded	Dense, or	1:1.5 ~
	well graded	Less than 5 m	5~10 m 1:0.8 ~ 1:1.0
		Less than 5 m	5~10 m 1:1.0 ~ 1:1.2
Sandy soil	Not dense (loose)	Less than 10 m	10~15 m 1:1.2
		Less than 10 m	10~15 m 1:1.5
	Dense, well graded	Less than 10 m	1:0.8 ~ 1:1.0
Sandy soil mixed with gravel or rock mass	Not dense (loose), or poorly graded	Less than 5 m	1:1.0 ~ 1:1.2
			1:1.0 ~ 1:1.2
			1:1.2 ~ 1:1.5
Cohesive soil			1:0.8 ~ 1:1.2
			1:1.0 ~ 1:1.2
Cohesive soil mixed with rock masses or cobble stones	5~10 m		1:1.2 ~ 1:1.5

Note 1: Recommended standard gradient is only indicative and detailed assessment and design of cutslopes should be carried out by an engineer. Silt is to be classified as cohesive soil.

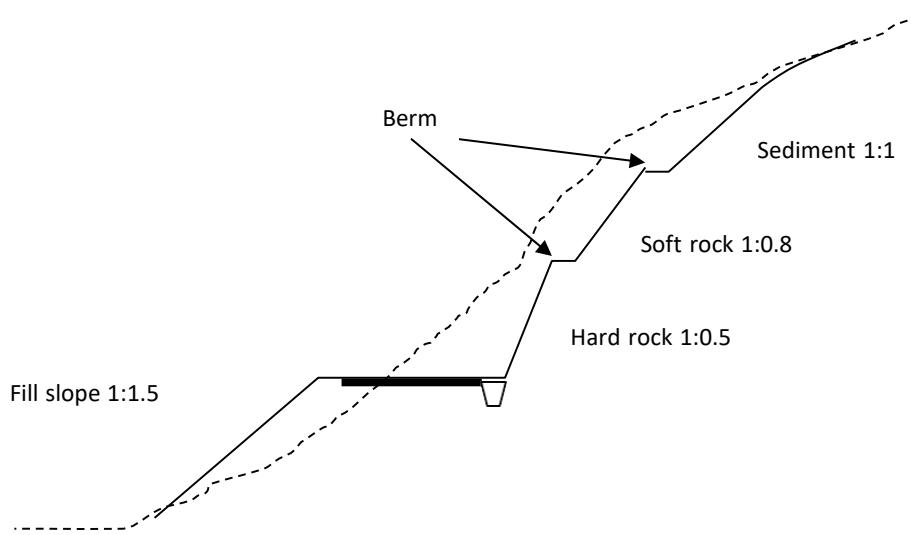


Figure 3.1: Ground Conditions and Shape of Cut Slope

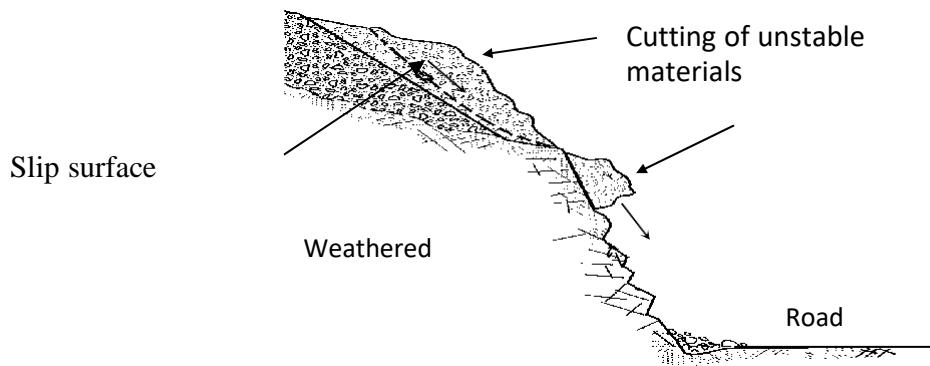


Figure 3.2: Treatment for Cut Slope Failure of Rock Mass

3.2.2 Filling

1) Purpose

Filling work is carried out at the toe of existing or potentially unstable slopes to balance the driving force of loading from top. It is not just a disposal of cutting material from the upper part but should be of proper gradation, compaction and gradient.

2) Design Consideration

The main considerations for design of embankment concerns stability analysis of the existing ground and properties of fill materials. The ground for embankment loading should be able to support the weight of embankment and associated structures without

causing any instability. Prior check on natural ground conditions with respect to stability and settlement is recommended before construction of embankment.

In selecting fill materials, their strength and deformation characteristics should be considered. The suitability of fill materials is mainly judged from the classification test and its strength such as CBR test for subgrade and unconfined compressive strength test. The fill slope gradient is also function of characteristics of fill materials. Standard fillslope gradient is shown in the Table 3.2. For high embankment consisting of different layers of fill materials respective standard gradient should be applied for the fill slope of each layer. In high fill construction it is recommended to provide berms of about 1 to 2 m width every 5 to 7 m of height interval with proper drainage considerations in the berms.

As the conditions of ground water also plays stability of embankment slopes the surface and subsurface water management is essential for designing the large embankment slopes. The filling slopes should be treated with sufficient drainages, surface protection works and/or bioengineering works to increase stability against effects of rainfall and infiltration of water.

Table 3.2 Recommended Standard Gradient for Fill Slope

Fill Materials	Fill Height(m)	Slope Gradient(V:H)
Well graded sand, gravels and sand or silt mixed with gravel	Less than 5 m	1:1.5 ~ 1:1.8
	5 ~ 15 m	1:1.8 ~ 1:2.0
	Less than 10 m	1:1.8 ~ 1:2.0
Sand with Poorly grading Rock masses (including muck)	10 ~ 20 m	1:1.8 ~ 1:2.0
	20 ~ 30 m	1:1.5 ~ 1:1.8
	30 ~ 50 m	1:1.8 ~ 1:2.0
Sandy soils, hard clayey soil and hard clay	Less than 5 m	1:1.5 ~ 1:1.8
	5 ~ 15 m	1:1.8 ~ 1:2.0
	15 ~ 30 m	1:1.8 ~ 1:2.0

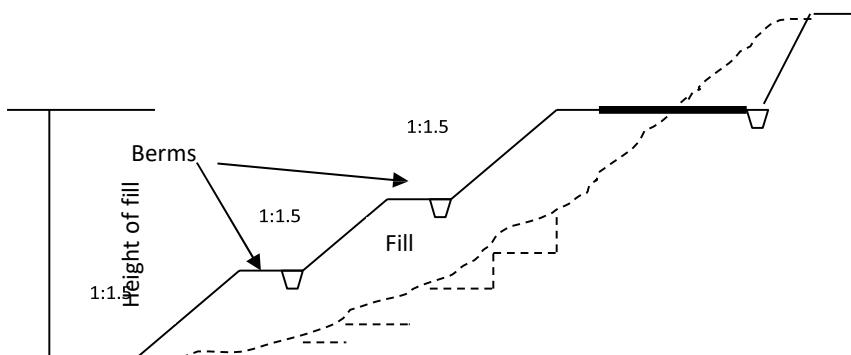


Figure 3.3: Typical Fill Slope with Berms

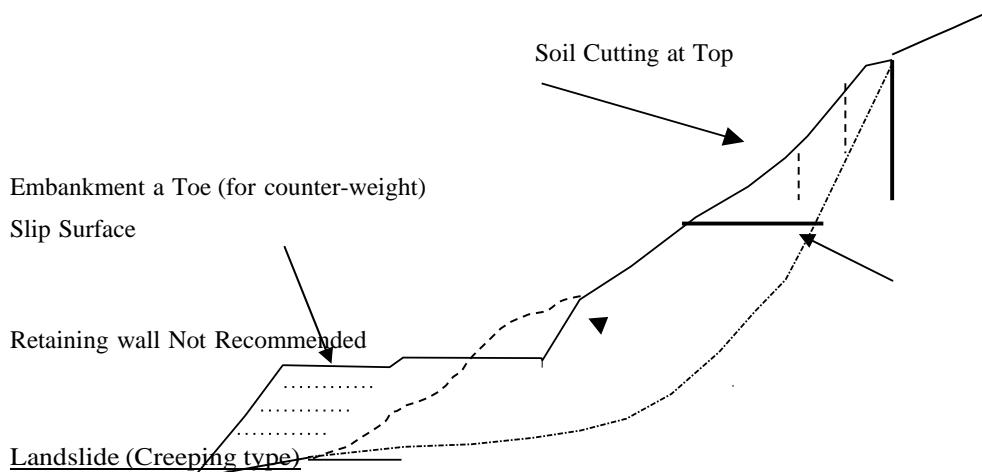
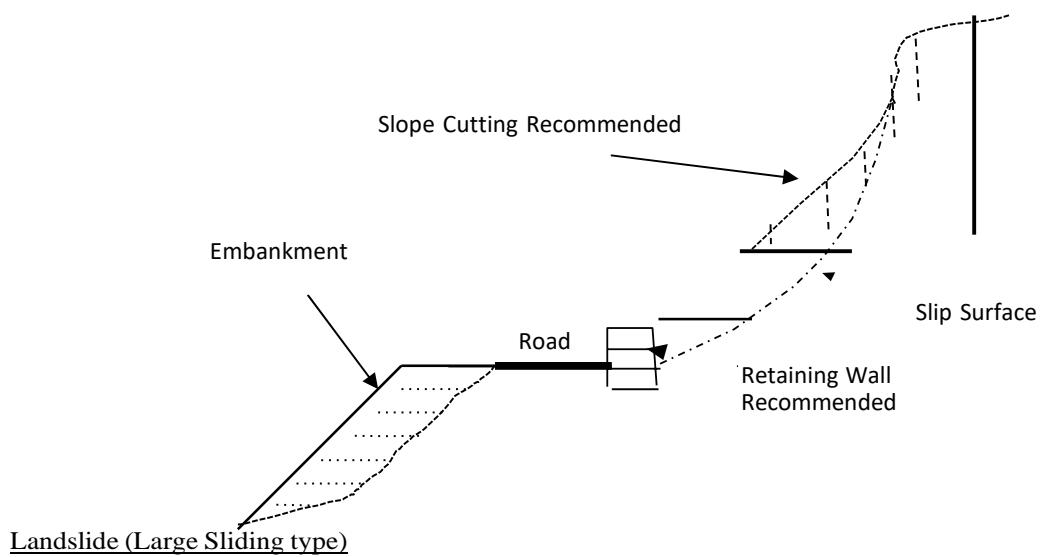


Figure 3.4 Typical Cutting and Filling Works in Landslide

3.3 Bio-engineering

Vegetation cover, as a part of bio-engineering works, protects the slope from erosion in bare slopes and reduces the possibility of shallow seated instabilities. This method is one of the most suitable countermeasures and is normally cost effective.

1) Purpose

The main engineering functions of vegetation on the slopes are;

- a) Catch: eroding materials moving down the slope,
- b) Armour: the slope against surface erosion from both runoff and rain splash,

- c) Reinforce: the soil by providing network of roots that increases the soil's resistance to shear,
- d) Anchor: the surface material by extending roots through potential failure plane into firmer strata below,
- e) Support: soil mass by buttressing and arching,
- f) Drain: excess water from the slope.

2) Design Consideration

Generally, unstable bare slopes are unsuitable for vegetation due to frequent surface failures. There is little possibility of achieving success in developing vegetative cover on unstable slopes without supporting measures. Therefore, vegetation on the slope should be carried out when the slope is stabilized by itself or through implementation of countermeasures.

For selection of vegetative countermeasures, species, and detail design considerations for implementation and maintenance of bio-engineering works reference should be made to "Roadside Bio-engineering Site Hand Book" and "Reference Manual", and other relevant publications of DOR.



Figure 3.5: Example of Turfing in Cut Slope(Banepa- Sindhuli- Bardibas Road)

3.4 Water Management

Water management in both the cut and fill slopes is important to protect the slopes from erosion and shallow depth instabilities due to surface water and consequent increase in pore water pressure. In general, water management in slopes consists of surface and subsurface drainages that are capable to take away the water to the natural drainage system safely and as quick as possible. Studies regarding the rainfall, topography, catchment area, ground surface conditions, soil parameters, ground water conditions and existing natural and artificial drainage system should be carried out and assessed to determine the required drainage discharge. Combination of both the surface and subsurface drains could be effectively used to manage the surface and ground water conditions. Water management, being a quick and effective stabilizing measure on landslides and unstable areas, shall be considered as primary control measure. In case of distinctly visible cracks in slope, water infiltration in the ground is to be prevented by sealing cracks using clay or cement, and or polyethylene sheet. A typical example of water management in landslide stabilization is shown in Figure 3.9, which consists of surface and subsurface drainage system together with necessary structures.

3.4.1 Surface Drainage

Surface run off water from springs and rainfall should be prevented from infiltrating the slopes and/or landslide area to avoid increase in pore water pressure. In case of landslides, which are closely related to short-term rainfall, surface drainage works should be immediately executed without loosing time for the results from detail stability analysis. Surface drainage system comprises of catch drain, berm drain, toe drain, drainage channels, and cascades. U-shaped gutter, reinforced concrete, corrugated half pipe drain could be used to construct the drainage ditch. It should be checked that the surface water is properly collected in the ditch and once collected it should not infiltrate the slopes again. To improve the drainage function the drains are to be placed at lowest points of the slopes with proper lining and gradient.

1) Purpose

The main purpose of surface drainage system is collection of surface water due to rainfall and/or spring, and its safe discharge to the nearest natural drainage. Collection is done through catch drain and or numbers of collectors or tributary drains, and the collected water is quickly discharged through drainage channel or main drains.

2) Design Consideration

The design for the sizes of catch drain and the collector drains in the slope is based on the amount of surface runoff it has to cater. The amount of surface water could be estimated based on the intensity of rainfall, catchment area and characteristics of surface conditions. The drainage channel works, main drain and cascades (gabions/ masonry) are designed to remove the collected water out of the landslide zone as quickly as possible. The design of surface drainage system works are often combined with subsurface drains of up to 3 m depth depending upon the necessity of drainage below the ground.

Considering the importance of drainage structures, potential damages to the road

pavement, retaining structures, and slope failures from concentrated runoff; it should be designed according to hydrological and hydraulic considerations. Hydrology such as frequency, intensity, and duration of rainfall, runoff peaks and their frequencies, ground water table and its fluctuation are the most important concerns to the road engineers. Run off could be estimated using the standard methods such as Rational Formula, US Soil Conservation Service Curve Number Method, and California Culvert Practice for Estimating Discharge. Flow in the drainage facilities such as side drain, catch drain, chutes, cascades and culverts that flowing partly full are designed according to principle of flow in open channel. The drainage channels are designed as uniform flow channels considering the flow to be uniform in the constant cross section, roughness and gradient. Most widely used equation for the uniform flow is Manning's Equation with standard coefficient for different materials. Based on the estimation of design discharge from the vicinity and velocity of water in the drainage channel the discharge capacity of channel can be established. Based on the different bed materials in the drainage channel the safe velocity of water is shown in the Table below.

Table 3.3: Safe Velocities in Different Materials

Bed Materials	Loose Clay or Fine Sand Coarse	Safe Velocity (m/sec)
Sand		Up to 0.50
Fine Gravel, Sandy or Stiff Clay	Coarse Gravel	0.50 to 1.00
Rocky Soil	Boulders, Rock	1.00 to 1.50
Source: MRE		1.50 to 2.50
		2.50 to 5.00

Collector or tributary drains are designed to collect surface water flow by installing corrugated half pipes or lined U-ditches along the slopes, which are then connected to a drainage channel or main drains. To prevent the infiltration of collected surface water the bed of drain is to be lined and/or protected with polyethylene sheet. For cleaning and maintenance purpose suitable size of collection chambers should be designed and installed at the junction of collector or tributary drains and drainage channel, and also at points where the gradient and/or direction of drain changes remarkably. In case of drain active area of a landslide, drainage ditches should have the required strength and also be easy for maintenance. The drainage channel or main drain along the steep slope should be considered for design of appropriate keying or anchoring structure in frequent intervals in order to prevent sliding of drain. Interval of such keying structure basically depends upon the horizontal force created due to dead load of drain and the gradient of slope.

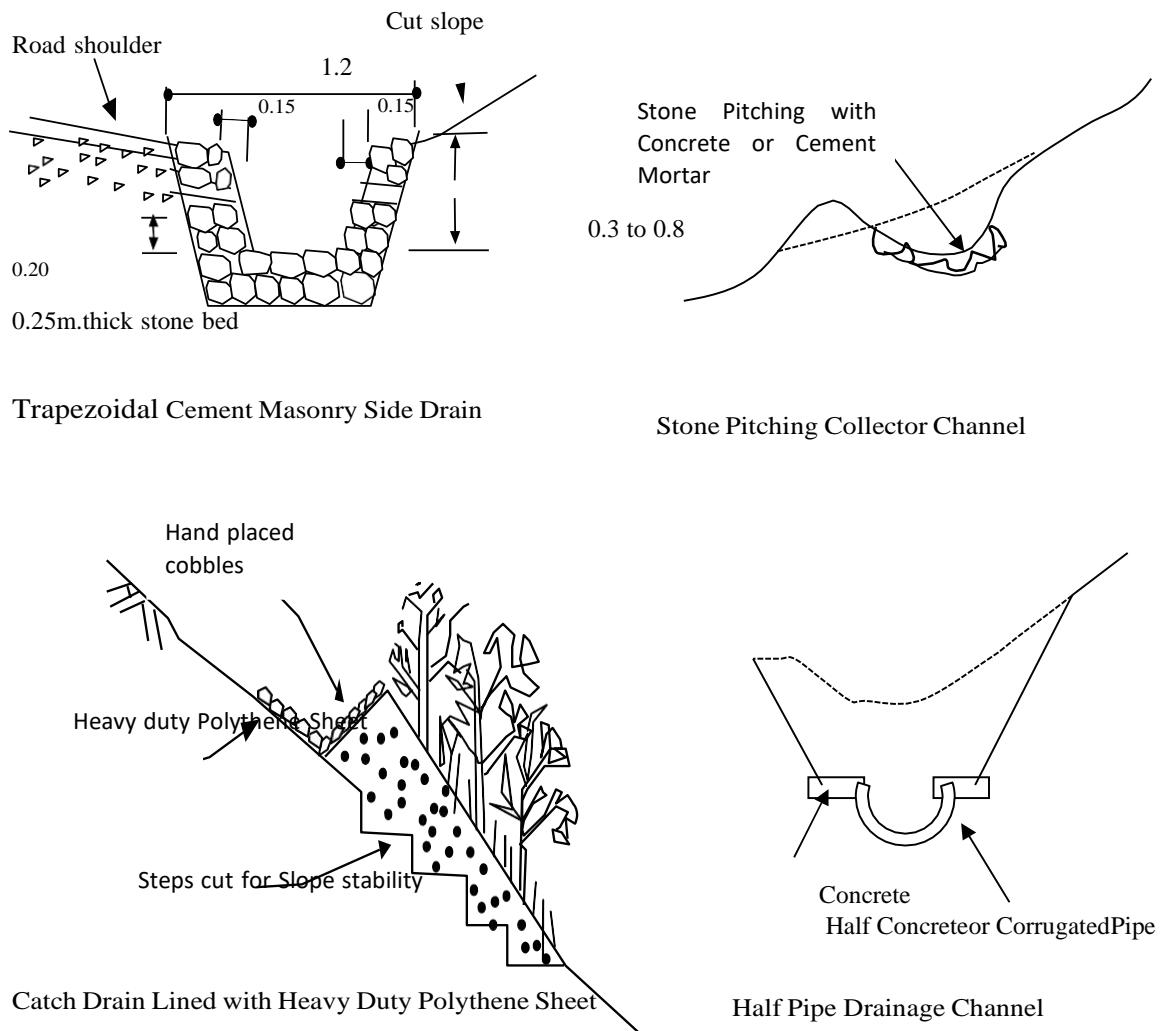


Figure 3.6: Typical Surface Drains

3.4.2 Horizontal Drilled Drain

Groundwater conditions in a slope affect the stability of slope. Ground water table usually rises in the rainy season causing saturation of soil mass and may result in the landslides. Groundwater table can be at shallow or in depth. Shallow groundwater table (0 to 5 meters below the ground surface) is mainly due to short-term rainfall, which frequently causes a localised shallow failure or toe failure in a large-scale unstable slope. Shallow groundwater is usually drained using the subsurface drains construction which is discussed in separate chapter.

When lowering of groundwater table is required from a depth higher than 5 m, construction of subsurface drains are almost impossible and risky due to excavation problem. In such case the deep groundwater table should be drained out by installation of horizontal drilled drain, drainage wells or drainage tunnels or their combination. Lowering of groundwater table through horizontal drilled drain and drainage wells are one of the most effective methods of stabilizing landslides where the fluctuation of groundwater table is major cause for activating landslides.

1) Purpose

Horizontal drilled drain is used to lower both the shallow (to certain length) and deep groundwater table in a slope to help stabilization of the landslide. The reduction in ground water table in turn helps to;

- decrease the pore water pressure within soil mass,
- increase the shear strength along the slip surface,
- reduce the seepage force and erosion due to seepage,
- reduce the unit weight of soil mass by preventing it from soaking.

2) Design Consideration

Before designing the horizontal drilled drains, it is necessary to carryout geological and geophysical investigations to find out whether the landslide or instability is caused by high seepage problems. It is also necessary to explore the depth and extent of groundwater table, its fluctuation and effect on movement of landslide. Permeable layers of soil mass, springs and aquifers are also to be checked for the necessity of horizontal drilled drain.

Based on the assessment and requirement of the slope conditions the horizontal drilled drains are designed with 20 to 50 meters in length. The diameter of bore holes vary from 50 to 100 millimeters depending upon availability of drilling equipment and are drilled at a gradient of 5 to 10 degrees. After drilling the drain hole suitable size of semi perforated HDP pipe (usually 50 mm dia.) is installed in the whole length of drainage hole. The perforation in the pipe is made on the upper half with 3 mm dia. holes at the rate of 10 to 15 mm distance and in zig-zag pattern. Wrapping of the pipe with geotextile with suitable fixtures, and support at the outlet end is required to make sure the pipe is not clogged and displaced quickly. At the drain outlet suitable support with cement masonry, concrete or gabion structure, and construction of open channel drain to discharge the collected groundwater to the nearest drainage system is required.

The numbers of horizontal drilled drain in the slope mainly depend on the wet area of slope that has to be drained. Usually the drains are made in fan shape and of shorter length. For drains with greater length there will be high risk of non-functioning due to possibility of distortion due to movement.

For the ground water to flow in the horizontal drilled drain pipes the slope should not be of impervious materials or have lot of fines or clay. Typical sketches of horizontal drain are shown in the figure below.

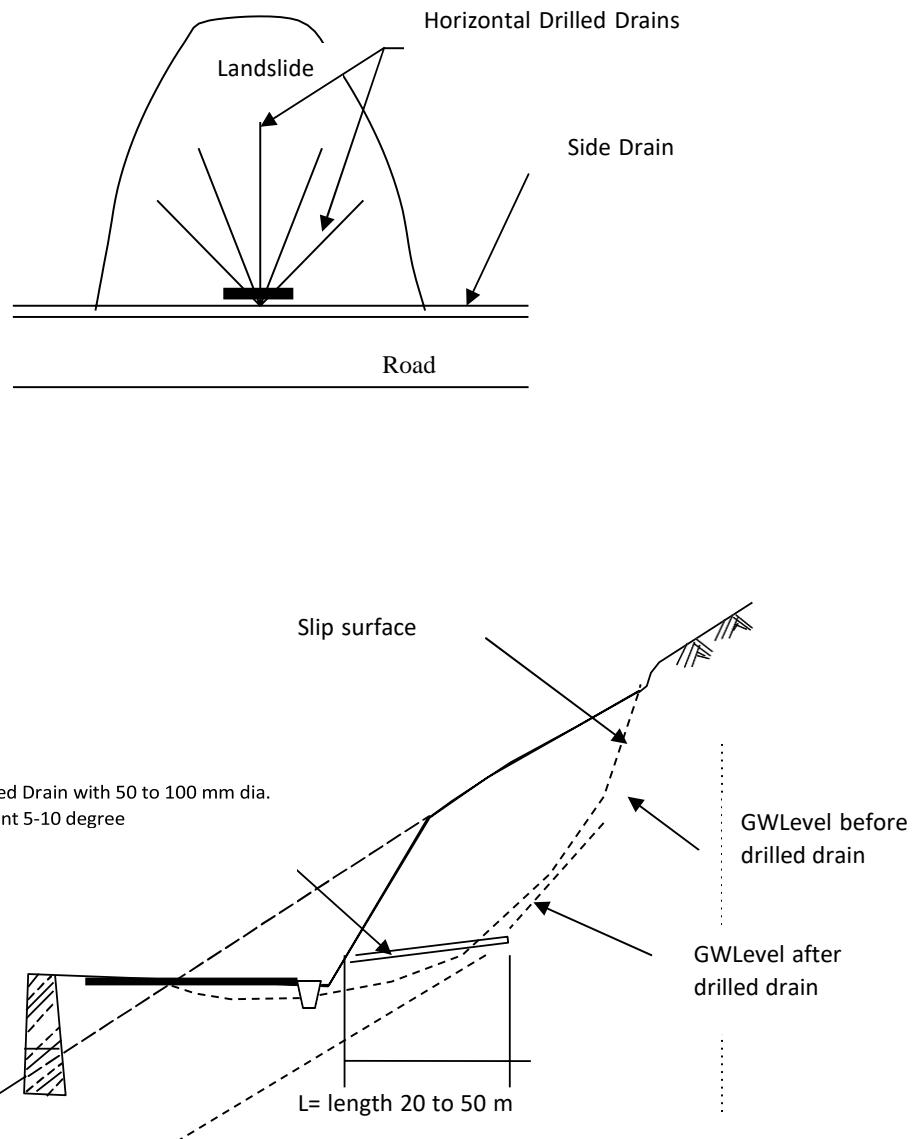


Figure 3.7: Typical Plan and Section of Horizontal Drilled Drain



Figure 3.8: Horizontal Drilled Drain

3.4.3 Sub-surface Drains

Sub-surface Drains (SSD) are effectively used to drain out the shallow groundwater within 0 to 5 m below the ground surface. SSD collects the seepage water from surface runoff and avoids the increase in the groundwater table.

1) Purpose

The main purpose of the SSD construction is to collect and drain out groundwater of shallow depth of up to 3 m depth. By removing such groundwater it is possible to stabilize the shallow failures and also to reduce the ground water table, hence reducing the risk of landslide due to pore water pressure.

2) Design Consideration

For the design of SSD it is necessary to carryout geological and geophysical investigation to find out whether the landslide or instability is caused by high seepage problems. SSDs are designed in the slope if the water seepage and sub-surface water are one of the main causes of instabilities. The SSDs are placed quite similar to surface drains consisting of collector/ tributary drains and main drains. In many cases the surface and sub surface drains are combined for effective drainage purpose.

The size and depth of collector and main drains basically depends upon the area of slope to be covered by the SSD, rainfall intensity, and infiltration characteristics of the ground. Suitable sizes of perforated pipes with filter materials and/or together with gabions/ dry stone packing and geotextile materials are used to design the SSD. HDPE pipes are recommended at bottom of SSD where amount of collected water is large. At bends, junctions of collector and main drain, and where the length of SSD are long it is recommended to make intermittent catch basin or manhole for clearing purpose. Care

should be taken for prevention of infiltration of the collected water as it will be more dangerous to the slope stability. In many cases a polyethylene sheet are also used at the bottom of the SSD to stop the infiltration.

When constructed along the slopes, the SSD may require construction of anchors or support structures at frequent intervals to prevent the drain from sliding. Design of such anchor or support structure depends upon the slope angle, and size and construction of SSD.

Figure 3.9 shows the network of subsurface drains consisting of tributary and main drains together with various drainage and retaining structure that used to stabilize one of the active and large scale landslide in Arniko Highway. Typical design of tributary and main drains are shown using gravel, dry stone packing and gabions.

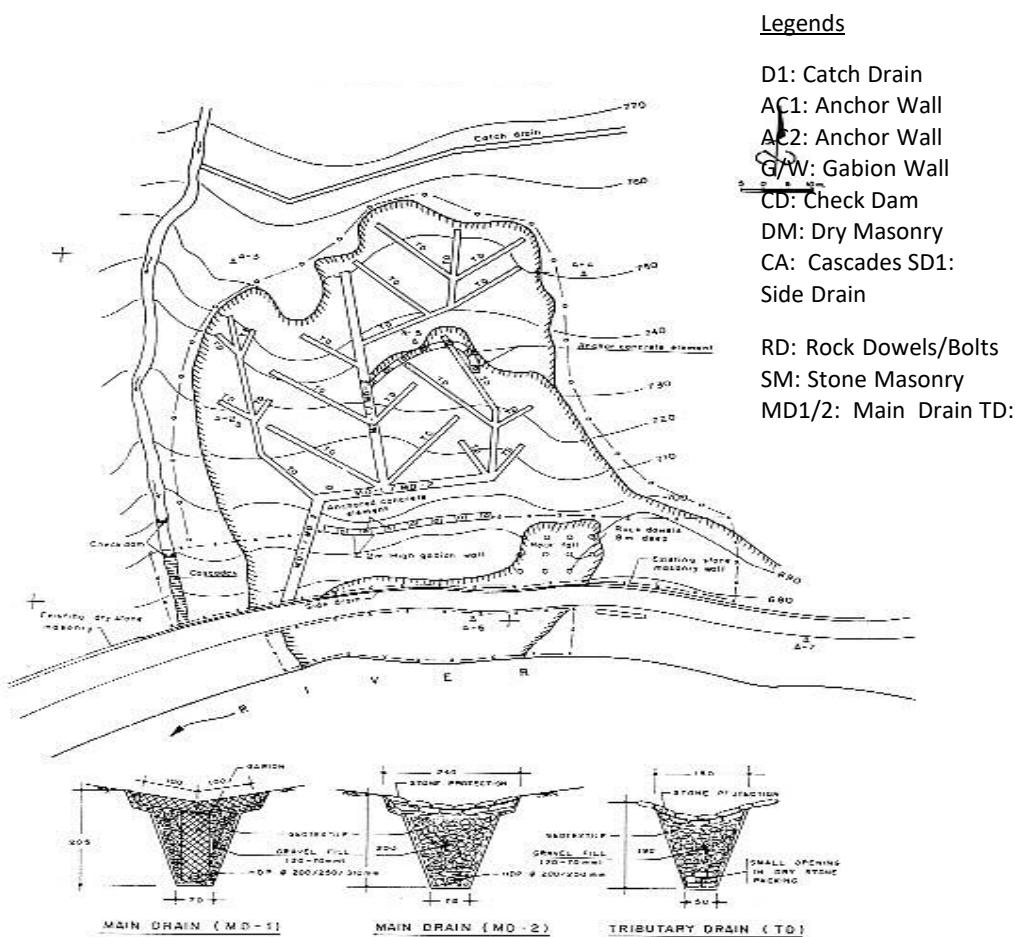


Figure 3.9: Landslide Stabilization by Sub-surface Drains

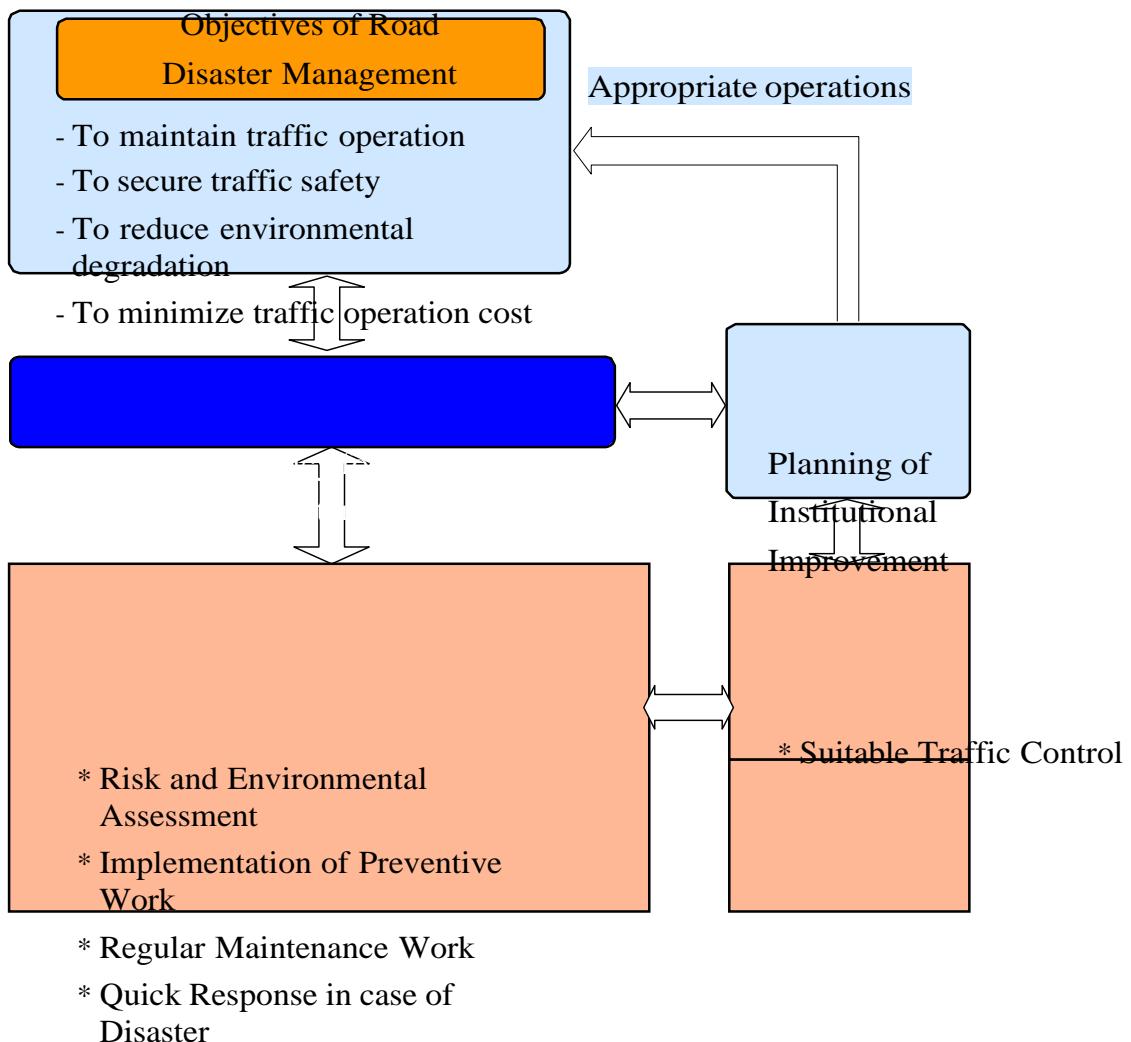
ROAD SLOPE DISASTER MANAGEMENT

1.1 CONCEPT OF ROAD SLOPE DISASTER MANAGEMENT

1.1.1 Objective

The total road network in Nepal is around 16,000 km at present. Out of the total road network about 5,000 km length is strategic road network, which forms important infrastructure for social and economical activities in Nepal. These roads are prone to frequent traffic blockade due to slope disasters induced by harsh natural conditions such as steep topography, fragile geology, heavy rainfall, river floods and earthquakes. The road slope disaster management can play vital role in delivering efficient and effective transport services to road users. Objectives of the road slope disaster management are as follows:

- 1) to maintain the traffic operation
- 2) to secure the traffic safety
- 3) to reduce the environmental degradation
- 4) to minimize the traffic operation cost



**Human Resource
Development
Program**

**On the
Job Training**

Figure 1.1: Concept of Road Slope Disaster Management

To achieve the objectives, following tasks are required.

- 1) Understand the conditions of Strategic Roads on disaster probability and environmental impacts (Risk and Environmental Assessment)
- 2) Formulate Reasonable Standard Policy and Plan for Slope Disaster Prevention
- 3) Implement Preventive Works
- 4) Continue Regular Maintenance Works to keep the slope and other road structures in good condition
- 5) Response quickly in case of Disaster
- 6) Manage Traffic Operation in case of Disaster
- 7) Develop Human Resources
- 8) Strengthen the Road Maintenance Organisation

1.1.2 System for Road Slope Disaster Management

Proposed system for Road Slope Disaster Management in Nepal is shown below.

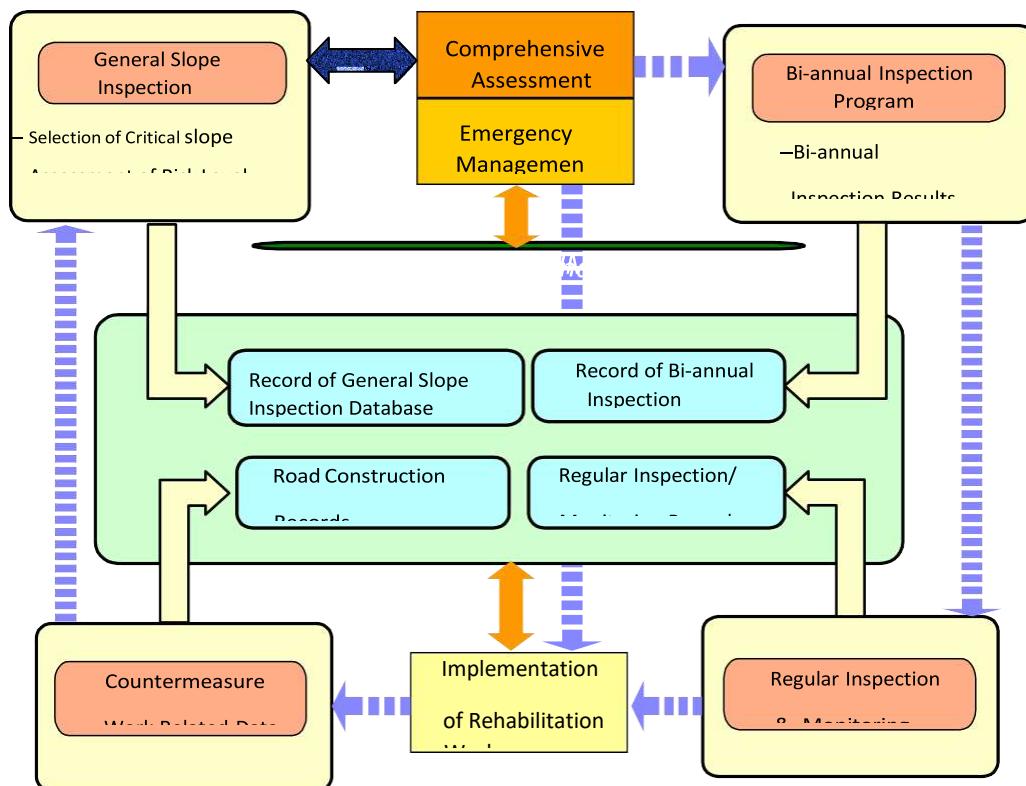


Figure 1.2 Proposed System of Road Slope Disaster Management

Basic components for Road Slope Disaster Management are listed in the Table below.

Table 1.1: Basic Components of Road Disaster Management

Basic Component	Description
General Slope Inspection:	Prepared by DRO and MB
Carried out jointly by Geo-Environment Unit (GEU), DOR and Division Road Office (DRO) (for first time)	
Comprehensive Risk Assessment: Evaluated by Maintenance Branch(MB) & Design and Planning Branch/GEU in DOR	
Emergency (or Crisis) Management: Coordinated by DOR Head Office, Regional Directorate and executed by DRO with support from Heavy Equipment Division (HED)	
Regular Inspection and Monitoring Data kept in DRO	
Bi-annual Inspection Carried out by DRO and Data Forwarded to MB	
Implementation of Rehabilitation Work Data of Implemented Countermeasure Works Forwarded to MB	
Data Base of Road Disaster Management	

- Selection of Critical Slope Section
- Assessment of the Slope Failure Hazard
- Assessment of Consequence of the Slope Failure
- Assessment of Risk Level of the Slope Failure
- Annual Implementation Planning of Countermeasure Works (with Priority)
- Formulation of Short, Medium, and Long-Term Plan
- Prioritisation of Critical Slopes
- Planning Improvement of Organisation for Disaster Management
- Emergency Response Plan
- Crisis Management Organisation
- Reporting/ Communication System
- Co-ordination/ Cooperation with Other Related Agency
- Logistics for Emergency Road Opening Work
- Training for Emergency Management
- Traffic Management
- Information to Road Users
- Regular Inspection to Check Road Condition
- Monitoring for Critical Slope
- Execution of Routine Maintenance
- Update the Slope Record
- Re-evaluate the Risk Level
- Plan Countermeasure Works
- Site Investigation and Design
- of Countermeasure Works
- Implementation of Countermeasure Works
- Records of implemented Countermeasure
- Record of General Inspection
- Record of Bi-annual Inspection
- Record of Regular Inspection
- Record of Road Construction / Rehabilitation
- Record of Historical Disasters

1.2 General Slope Inspection

General Slope Inspection consists of following three stages, which are discussed below.

1.2.1 Selection of Critical Slope Section

The DRO selects critical slope sections on the basis of followings;

- a) High frequency of disaster (every year)
- b) Active deformations on the slopes/ roads
- c) High probability of slope disaster (geological setting of the slope)

Selected critical slopes shall be recorded in the inspection sheet indicating the location in available topographical map (1:25,000).

1.2.2 General Inspection of Critical Slopes

General Inspection of selected critical slopes shall be carried out and details are filled in the following record sheets and a copy of which shall be forwarded to the Maintenance Branch, DOR.

- a) General Information of the Road Section with Location on topographical map (1:25,000); Form A
- b) General Sketch of the Road Section; Form B
- c) Photograph; Form C
- d) Slope Feature, Form D
- e) Slope Hazard Assessment; Form E
- f) Consequence/ Risk Level Assessment; Form F

The above mentioned standard forms are given in the Appendix.

1.2.3 Implementation Planning

The Maintenance Branch finalizes the implementation plan on the basis of information provided by DRO through the General Inspection.

Table 1.2: Framework of Implementation Plan

Time Frame	Time Period	Slope Criteria	Note
a) Emergency Plan	To be implemented urgently (from budget for Emergency works)	Within 6 to 10 years	Evaluated as Risk Level I on highly important road sections
b) Short- term Plan			Rated as Risk Level I on
c) Medium-term Plan			important road
d) Long-term Plan	Within 1 to 2 years		Master Plan
	Within 3 to 5 years		for Strategic Road Network

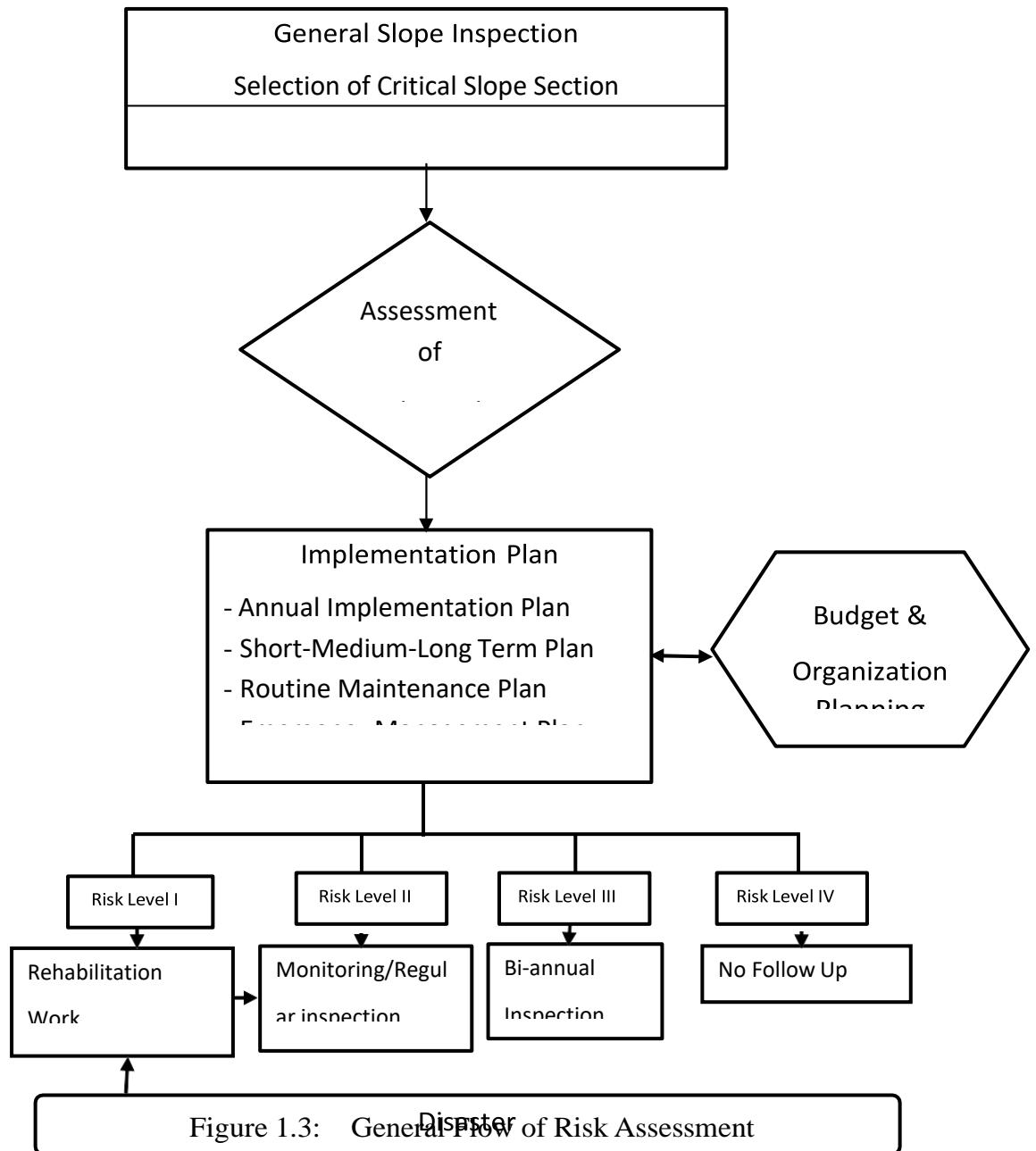
To be treated as
urgent repair
work

Budget &
improvement of
organisation
should be planned

1.3 RISK ASSESSMENT

1.3.1 General Flow of Risk Assessment

Figure 1.3 shows the workflow for road slope disaster management, which consists of three stages as mentioned in the section 1.2



1.3.2 Slope Hazard Assessment

The assessment of Landslides, Debris Flow and Embankment Failure is carried out considering the hazard level and topographic conditions. Hazard levels are defined as A, B and C to reflect its level from highest to lowest.

(1) Landslide

Hazard Level	Conditions
High (A)	<ul style="list-style-type: none"> - A large number of clear deformations such as scarps, bulges, side cracks, and - Visible movements of cracks, subsidence, upheaval, and toe erosion.
Medium (B)	<ul style="list-style-type: none"> - Obvious landslidetopography such as bulge, stepped land, but - No visible movement is found
Low (C)	<ul style="list-style-type: none"> - Suspicious landslide topography , but no evidence of deformation at present

(2) Debris Flow

Hazard Level	Conditions
High (A)	Frequent Occurrence: Within every two years
Medium (B)	Periodical Occurrences: Over five years
Low (C)	Traces of collapses are in the source area, but Debris flow occurrence is rare

(3) Embankment Failure

Hazard Level	Conditions
High (A)	<ul style="list-style-type: none"> - Frequent occurrence of slope failures disturbing traffic operation - Visible deformations such as tension crack and settlement
Medium (B)	<ul style="list-style-type: none"> - Periodical occurrence but traffic operation is normal - Visible deformations such as tension crack or settlement
Low (C)	<ul style="list-style-type: none"> - No repair work is required in structures, drainages, and vegetation - No deformations in the slope

1.3.3 Assessment of Consequence of Slope Failure

Consequence of the Road Slope Failure is assessed on the basis of criteria mentioned in the table below. Consequence effects are also categorized in three different levels as High, Medium and Low depending upon the consequence of slope failures on mainly four criteria. In case of different consequences levels in different criteria the highest shall govern for assessing the risk level. Criteria for assessment of consequence of slope failures are not limited but may vary for different road sections depending upon their importance.

Table 1.3: Assessment of Consequences

	Consequence S	High a	Medium mb	Low c
Criteria		A ≥ 800	$150 \leq A < 800$	$A < 150$
1) AADT (A)		Very	Important	Less
2) Public Asset	Importan tH 10	$3 < H \leq 10$	Importan tH 10	Importan tH 10

1.3.4 Assessment of Risk Level

Slope Hazard of the road sections and its consequence shall be evaluated by means of qualitative and semi-quantitative criteria. Risk Levels are classified into four levels; Level-I, Level-II, Level-III and Level-IV as shown in the Table 1.4 . The risk level assessment is proposed to be evaluated on the basis of the combination of the slope hazard level and its consequences as shown in the Table 1.5.

Table 1.4: Assessment of Risk Level

Risk Assessment		Consequence of the Slope Failure		
		a	b	c
Slope Hazard Level	A	I	II	II
	B	I	III	III
	C	II		IV

Table 1.5: Risk Level and Suggested Actions

Risk Level	Combination	Action
I	Aa, Ab, Ba	Implementation of Countermeasures (1st Priority)
II	Ac, Bb, Ca	Monitoring (monitoring by measurement of landmass movement and/or regular inspection)
III	Bc, Cb	Bi-annual Inspection (before and after)

Proposed combination of Slope Hazard and its Consequence to determine the Risk Level is flexible and could be changed depending upon available resources and strategy.

1.4 Road Slope Inspection

Road Slope Inspection is defined as the normal inspection carried out by DROs focussing on slope stability. Following three types of slope inspection are proposed;

- (1) Regular Slope Inspection,
- (2) Bi-annual Slope Inspection, and
- (3) Emergency Slope Inspection.

Slope inspection shall include the filling in new or updating of Road Slope Inspection Sheets as well as recording of the following Slope Inspection Record Forms.

- a) Inspection Record; Form R-A
- b) Disaster Record; Form R-B
- c) Countermeasure Record; Form R-C
- d) Inspection Summary; Form R-D
- e) Disaster Summary; Form R-E
- f) Countermeasure Summary; Form R-F
- g) Road Closure Record; Form R-E

The above mentioned standard recording forms are given in the Appendix.

1.4.1 Regular Slope Inspection

The frequency of Regular Slope Inspection is recommended minimum once a month, in general. It may be adjusted in accordance with slope conditions, traffic volume, important structures and social conditions. This Inspection is carried out in order to assess the slope stability and to initiate suitable action for prevention of slope failure disasters. The scope of Regular Slope Inspection is as follows;

- 1) To check the road conditions for smooth traffic operation (risk of possible traffic obstruction particularly by stones/rock fragments or debris from hill slope)
- 2) To check the condition of road structures, pavements, shoulders, drainage, walls, and vegetation works.
- 3) To check condition on the road or in the adjacent area which are likely to affect the road traffic or slope stability.
- 4) To take necessary emergency action, in case any urgent event is identified
- 5) When any damage or unusual state is found with road structure during inspection, it should be carefully observed and recorded for reporting and further follow-up.

1.4.2 Bi-annual Slope Inspection

The scope of Bi-annual Slope Inspection shall include:

- 1) The interval of Bi-annual Slope Inspection is recommended two times in a year (before and after monsoon season).
- 2) The purpose of Bi-annual Slope Inspection is to check the slope conditions in detail (before monsoon) and to assess the damage and deterioration of each road structures (after monsoon).
- 3) When the Inspector finds indication of hazard in a slope, it shall be recorded and reported to DRO and Maintenance Branch in DOR and concerned agencies.
- 4) Bi-annual Slope Inspection shall focus mainly;
 - a) The slopes identified as of Risk Level I, II and III during the General Inspection

- b) Inspection shall be made basically by visual observation of the slope, as well as other road features including vegetation, slope surface works, drainage (on-slope), wall and fence at toe, and
 - c) Pavement, drainage (roadside), shoulders, culvert, which are located adjacent to the slope as well as riverside structures.
- 5) During the inspection, careful attention should be paid to the Deformation/ Settlement/ Erosion / Scouring/ Rock Fall/ Debris/ Cracks/ Pavement and Road Structures.
- 6) Generally, inspection shall be made on foot covering the slope area.
- 7) The Standard Slope Inspection Forms shall be filled and recorded as a part of slope database.
- 8) Engineers and technicians of the respective DRO shall carry out the inspection and prepare the slope data records.

1.4.3 Emergency Slope Inspection

Emergency Slope Inspection shall be carried out after the event of Disaster or very high intensity rainfall in the vicinity. The objective of this inspection is to make proper planning and decision for disaster prevention as well as restoration of traffic operation. Inspection shall be made basically on the following locations.

- a) Sections which are prone to recurrent disaster
- b) Selected slopes evaluated as Risk Level I and II. Advance planning for Disaster Management is advised for highly risky road sections.

Information on the slopes that collected during Emergency Slope Inspection shall be immediately reported to the DRO and Maintenance Branch in DOR. Necessary emergency action should be taken without delay depending upon the extent of Slope Failure/ Disaster.

1.4.4 Points to be Considered for Slope Inspection

The following points should be considered while preparing for slope inspection and reporting in order to carry out effective management of a slope disaster.

- 1) Engineers and Technicians involved in the slope inspection should thoroughly check the general slope inspection and its updated reports. During the inspection they should also carry the copy of past records.
- 2) Location and Status of critical slopes with Risk Level I & II should be given higher priority.
- 3) Any indication of slope failure that observed during inspection are to be immediately reported to concerned agencies.
- 4) Standard slope inspection forms with the following information should be prepared for reporting;
 - a) Location Map

- b) Sketches of the Site (plan & sections)
- c) Photographs
- d) Concept of Proposed Repair or Rehabilitation Works

Points to be considered for General, Regular, Bi-annual and Emergency slope inspection are also presented in Table 1.6.

Table 1.6: Points for Observation and Recording

Position	Structure	Points for Observation and Recording
On-Road	Pavement	Depression, longitudinal or transversal cracks or anydefects? (New or progressing?)
	Shoulder	Fallen rocks or debris on the road from hill slope? Depression, opened cracks or any defects? (New or progressing?)
Road Side	Drain & Culvert	Depression, opened cracks or any defects? (New or progressing?)
	Wall	Drainage obstruction due to blockade or broken by fallen rocks, debris and/or any defects?
On- Slope	Slope	Fallen material in pocket, breakage, deformation, cracks, tilting, depression, inadequate interlocking, or any defects?
		Rock fall or slope failure: (new or progressing?) Depression, swelling, opened cracks, or any defects?(new or progressing?)
River Side	Slope Works	Marked erosion of Gully type (new or progressing?) Spring water or running water on slope or in drains:(anychange in discharge and turbidity?)
	River Protection	Fallen tree or tilting trees on the slope (new or progressing?)
		Breaking, deformation, cracks, tilting, depression, or any defects? (new or progressing?)
		River scouring (new or progressing?) Protection works (in sound conditions?)

Training programs shall be arranged in advance for the inspection procedure and recording the slope data.

1.5 Recording System of Slope Inspection and Maintenance

1.5.1 Importance of Records

Recording and reporting on the slope inspection and maintenance work is an essential procedure in the slope disaster management. The importance of which are;

- 1) The information collected during Slope Inspection and Maintenance is useful in identifying on-coming slope failure in the near future. In such a situation, suitable action could be taken as soon as possible in order to prevent occurrence of slope disaster that may cause damage to the road traffic and facilities
- 2) Records and information on the condition of slopes and applied countermeasures are useful to successor staff in DROs for continuity of maintenance activities.
- 3) Historical records of disaster occurrences and countermeasure implementation provide useful information to prepare further effective and efficient slope management plan.

1.5.2 Slope Related Database

For planning of Slope Disaster Management the slope related database such as records on slope inspection, disaster occurrences, and countermeasure implementation to be collected and updated by the DROs as well as Maintenance Branch, DOR as shown in Table 1.7

Table 1.7: Slope Related Database

Description of Database		Responsible Organization
Slope Inspection Record	General Slope Inspection	DRO and Maintenance Branch, DOR
	Regular Inspection Record	Once a month in general; Relevant Standard Forms can be used. (DRO)
		Two times in a year; before & after Monsoon (DRO)
	Bi-annual Inspection Record	At the time of emergency
Monitoring Record	Emergency Slope Inspection Record	Relevant Standard Forms shall be used (DRO)
	Rainfall data	Annual Rainfall data,
Relevant Slope Management Records	Instrument measurement data of mass movement	Rainfall data related with big scale disasters, (DRO) Any kind of monitoring records for slope (DRO)
	Topographical Maps Soil Investigation Report Countermeasure Works	(DRO)

1.5.3 Format for Slope Recording Sheet

The Standard formats of recording and summary sheet for slope inspection and maintenance are listed in Table 1.8 and attached in the Appendix.

Table 1.8: Standard Formats

Description of Standard Formats		Note
Recording Sheet	Slope Inspection Record	Distinct findings that likely to lead slope instability shall be recorded.
	Slope Disaster Record	Slope failures affecting road/ traffic operation shall be recorded.
Summary Sheet	Slope Countermeasure Record	All types of countermeasures that applied in slopes shall be recorded.
	Slope Inspection	Lists of all inspected slopes shall be recorded.
Summary		List of Slope disasters shall be recorded.
Slope Disaster Summary		List of all slope countermeasures shall be recorded.
Slope Countermeasure Summary		

1.6 Road Maintenance

Road maintenance is a continuous process to keep the road in safe and in good conditions. Following three “R” are most important practices to observe

- a) Record correctly on the Regular Inspection
- b) Report quickly to DRO and Maintenance Branch in DOR when found any abnormality
- c) Respond immediately to the matters to be treated

The following activities are important for road maintenance purpose. The details on maintenance of On-Road, Road Side Support and Bridges according to their types such as Routine, Recurrent and Preventive maintenance are described in the DOR Manual “Road Maintenance Manual for Engineers and Overseers, 2055” which covers mainly;

1. Materials on the Roads

If fallen material from hillside slope such as soil, boulder and trees are found, they shall be removed to suitable disposal place.

2. Maintenance of Drainage System

It is required that the drainage systems on roadside as well as off-road drains shall be kept functioning. If the drainage system is found damaged or clogged, it shall be repaired or cleaned at earliest possible time.

3. Retaining Walls

Masonry and concrete retaining walls have weep holes for water drain. In some cases, plants grow in the weep holes and block the drainage function of the wall. These weep holes shall be cleaned from time to time.

4. Gabion Wall

As life of wire is considered to be 15-20years in general, it is necessary to check the condition of the wire. In case of failure of gabion wall suitable repair measures and or structures shall be considered.

5. Gully Erosion

To prevent the gully erosion, following measures can be applied depending upon the site condition.

- Construction of catch-drain
- Construction of channel drain at embankment
- Turfing
- Stone riprap
- Channel drain at outer boundary of shoulder

6. Bio- Engineering

Maintenance of Bio –engineering works includes;

- Thinning trees and shrubs
- Pruning plants
- Repair vegetative structures such as Palisades, Facine, Brush Layering and Turf
- Vegetation enrichment
- Removal of following trees;
 - Unwanted shrubs and trees,
 - Dead trees or those trees, which may fall down themselves,
 - Tree obstructing the traffic or driver's line of sight,
 - Trees surcharging the steep slope,
 - Trees that needed to be removed for widening of road.

If season is appropriate and land is fertile, grass seeding can be done to protect the slope surface erosion. Turfing and plantation of suitable species of grass, shrubs, trees, bamboo and other vegetation can be used to control the surface erosion as well as protection of slopes. Growth of Grass, Tree and Bamboos used in bioengineering may also result in obstruction for road traffic and driver's line of sight leading to traffic accidents. Therefore, it is necessary to prune the trees and mow the grasses in regular basis as maintenance work.

Selection of suitable species of plants, grasses, grass seeds, and plantation season with details of maintenance activities are described in “Road Side Bio- Engineering Reference Manual , “Road Side Bio-Engineering Site Hand Book and other relevant documents published by Geo-Environment Unit, DOR.

7. River Bank Protection

It is important to check the effectiveness of structures in river control and bank protection works. If damages are found it should be immediately reported for the necessary remedial action.

8) Small scale landslides to be treated by:

- Reshaping to decrease the slope angle
- Removing the soil mass and dumping it at appropriate place
- Implementing suitable drainage and retaining structures such as Dry Stone Masonry, Gabion, Cement Masonry and Cribwork.

1.6.1 Road Slope Maintenance

Protection and maintenance work in road corridor and its vicinity are called “Road Side Support Maintenance . Under this category, the protection and maintenance work for road slopes and structures are such as culverts, retaining walls, drain systems, vegetation and river control works.

Road slope maintenance plays important role in the overall road maintenance works. Routine slope maintenance and implementation of preventive countermeasures are most effective for avoiding the possible slope disasters. However, implementation of preventive countermeasures demands much budgetary funding to meet all the requirements. Thus the significance of routine slope maintenance work should be given highest priority.

1.6.2 Necessity for Slope Maintenance

Slopes differ from road structures that are made of artificial material, soil, concrete, or bitumen. Slopes consist of natural materials, soil and rocks, which have many uncontrollable factors. Slope stability is subject to many factors such as, topography, geological structure, type of rocks and soils, grade of weathering, surface and ground water conditions, effectiveness of protection work, rainfall, and earthquakes. In due course of time various natural and artificial factors contribute to road slope instability despite of proper design and implementation during construction stage. Major natural and artificial factors are;

1) Weathering effect

Weathering effect is the deterioration of strength and other properties of rocks, soils, and slope protection works in due course of time after completion of construction. Even after several years of road construction and its successful operation, slope failures could occur due to weathering effect due to factors, which may not have been possible to foresee during the construction phase.

2) Effect of Rainfall

High intensity rainfall is most influential for slope instability in this country. Similarly prolonged rainfall during monsoon period weakens the shear resistance of soil, increases pore water pressure at the slip surface and weight of the groundmass resulting in slope failures.

3) Artificial Factors

Road Encroachment, Irrigation System, De-forestation, Uncontrolled Quarrying and Construction of Access Roads are among the major artificial factors contributing instabilities in the road slopes.

As many Natural and Artificial factors influence change in the road slope stability conditions, it is very difficult to predict and assess the stability of slope at the time of its design and construction. A continuous monitoring of road slopes and their timely maintenance are therefore indispensable.

Q. Priority Investment Plan (PIP) for SRN/NH Development बारे टिप्पणी गर्नुहोस् ।

Necessity: Future Networking, Funding, Sustainable and Worldwide accepted Road infrastructure, Maintenance Management and Asset Preservation

Define: Maintenance requirement

Upgrade: Existing and Potential SRN

Construct: New SRN Links both for rural access and Networking Strengthen

बिगतका PIP हरूको अवधि सकिसकेको अवस्था र नयाँ PIP तयारभई कार्यान्वयनमा आइनसकेको अवस्थामा

- दोस्रो PIP ले आधारभूत सडक संजालको पहुँच ८७ प्रतिशत (सन् २०१६ सम्म) जनसंख्या २ र ४ घण्टामा क्रमशः तराई र पहाड को लक्ष्य सन् २०१३ मै पुगेको उल्लेख भएको
- दोस्रो PIP ले 12494km Existing, 2093km Planning, 315km upgrade/construction गरेर 14902 km SRN लाई मन्त्रिपरिषदले सन् २०१२ मै स्वीकृत (७१NH र २०८ FR) तर सडक विभागको तथ्यांक अनुसार २०७५/७६ (सडक डायरी) मा १५९०२ km SRN उल्लेख गरेको
- दोस्रो PIP ले निर्धारण गरेको प्राथमिकता (SRN) को NH1, NH2, FR1 र FR2 को सान्दर्भिकता देश संघीय व्यवस्थामा गए संगै संबिधानको धारा २० अनुसूची ७को आधारमा दोस्रो PIP को अन्तिम अवस्था (तेस्रो PIP भए त्यसको शुरुको अवस्था) हेर्दा ४३ प्रतिशत कालोपत्रे , १२ प्रतिशत ग्राभेल, २९ प्रतिशत माटे सडक र १६ प्रतिशत planning/under construction देखिन्छ |
- तेस्रो PIP up to २०२१/०२२ सम्मले “Emphasis on the consolidation and upgrading of SRN to provide reliable and sustainable access considering the primary concern of the DoR because SRN has been expanded significantly in excess of its planned growth and most of the additional roads of low standard earthen construction and that may be one of local rather than strategic. यी कुराहरुमा ध्यान राख्दै ३१७ अर्ब आवश्यक पर्ने लगानी सहितको तेस्रो PIP २०१७ देखि २०२१/०२२ सम्म तयार भएको देखिन्छ | यसका मुख्य प्राथमिकता
- Regular maintenance (6400 km to 10,800 km) growth of paved road 740km per year in which 600km upgrading and 140 km new construction per year.

- Periodic 6400 km in which 2500km NH overlay, 1200 KM NH DBST, 2700 KM FR Sealing and total cost 64.882 arba.
- Upgrading 3500 km (NH +FR1) i.e., 500 km per year, 1690 km NH AC, 1850 FR DBST 149.25 arba . Midhill, Postal (phase1), DHQ all sealed, Birgunj Narayanghat Mugling, Arniko NH
- Network Expansion 740km/year (100km/year for 7 year), Ktm Fasttrack, outer ringroad, koshi River crossing Diversion to EWH, Remote area Access, ND trade route, Network strength in central region 60 arba.
- Bridge construction in 29.5 arba, गरी जम्मा ३१७ अर्बको तेस्रो PIP

Latest strategic Plan 2073-2078 planned to invest 820 arba in which 629 arba investment for Road sector.

In which

DHQ	All	Ktm जोड्ने र प्रत्येक प्रदेश राजधानी जोड्ने ४ लेन सहित safe, reliable, balanced Road network
B/T DHQ	Except 2 , all	
4 Lane B/T	941 km	
2 Lane B/T	4656 km	
Other B/T	4400 Km	
Bridge	2454 complete and 500 under Construction	

- संविधानको धारा २० अनुसूची ५ बमोजिम २०७६/२/२६ मा अनुमोदन भएको NH ८० वटा १४९१३ km जस मध्ये गत २०७८ फाल्गुन सम्मको आधारमा ७२३७ km (लक्ष्य ९४९६ कि.मि.) कालोपत्रे दुइलेन, दुई लेन भन्दा बढी चौडाइको सडक २०४ कि.मि. (लक्ष्य ३४५ कि.मि.)
- तर सडक विभागबाट कुल सडक बनेको ३३८७१ कि.मि. जस मध्ये ग्रावेल ८१११ कि.मि., माटे ८८२९ कि.मि. र बाकी १६९३३ कि.मि. कालोपत्रे सडक रहेको
- प्रदेश र स्थानीय निकाय बाट बनेको सडक कुल ६४६१७ कि.मि. जस मध्ये ४५५७ कि.मि. सडक कालोपत्रे, ग्रावेल १३६२९ कि.मि. र बाँकि माटे सडक रहेको यसरी हेर्दा कुल सडक ९८७८८ कि.मि सडक नेपाल अधिराज्य भरि बनेको जसमा कालोपत्रे २१.८ प्रतिशत मात्र सडक कालोपत्रे रहेको र राष्ट्रिय राजमार्ग मा करिव ५० प्रतिशत (७४४१ कि.मि.) सडक कालोपत्रे सहित को सडक घनत्व ०.६६८ km/sqkm

आगामी कार्य योजना//PIP मा गर्नुपर्ने कार्यहरू

- Need assessment for NH, PR and LR because basic road network reached at satisfactory level.
- Revised the NH based on the fact and strategic requirement another important factor.
- DHQ all must be BT double lane all weather road within 5 years
- Core road network concept by applying RAMS to achieve safe, reliable, good condition
- All under construction road and upgrading roads such as mid hill, postal, east west will be completed within 5 year

आगामी १० बर्षे कार्य योजना

कालोपत्रे करिव २००० कि.मि. कम्तिमा ४ लेनको एसियन मापदण्डको

ग्रावेल करिव १२०० कि.मि. सडक लाइ दुइलेन को कालोपत्रे गर्ने

माटे करिव ३२०० कि.मि. लाइ २ लेनको कालोपत्रे बनाउने

निर्माणाधीन २५०० कि.मि. लाई २ लेनमा कालोपत्रे यथासिग्र सम्पन्न गर्ने

प्लानिङ मा रहेको २००० कि.मि. लाइ समेत दुई लेनको सडकमा विस्तार गर्ने

Q. नेपालमा सडकको वर्तमान अवस्था र भावी कार्य योजना बारे आफ्नो राय व्यक्त गर्नुहोस् ।

बिगतमा सडक निर्माण गर्ने मुख्य दायित्व भौतिक पूर्वाधार मन्त्रालयको रहेकोमा संबिधान अनुसार हाल नेपालमा तिनै तहको सरकारले सडक निर्माण तथा मर्मत सम्भार गर्दै आएपनि कार्य क्षेत्रमा दोहोरापन देखिन्छ ।

सडकको बर्तमान अवस्था हेर्दा

- संविधानको धारा २० अनुसूची ५ बमोजिम २०७६/२/२६ मा अनुमोदन भएको NH ८० वटा १४९१३ km जस मध्ये गत २०७८ फाल्गुन सम्मको आधारमा ७२३७ km (लक्ष्य ९४९६ कि.मि.) कालोपत्रे दुइलेन, दुई लेन भन्दा बढी चौडाइको सडक २०४ कि.मि. (लक्ष्य ३४७ कि.मि.)
- तर सडक विभागबाट कुल सडक बनेको ३३८७१ कि.मि. जस मध्ये ग्रावेल ८१११ कि.मि., माटे ८८२९ कि.मि. र बाकी १६९३३ कि.मि. कालोपत्रे सडक रहेको
- प्रदेश र स्थानीय निकाय बाट बनेको सडक कुल ६४६१७ कि.मि. जस मध्ये ४७५७ कि.मि. सडक कालोपत्रे, ग्रावेल १३६२९ कि.मि. र बाँकि माटे सडक रहेको
यसरी हेर्दा कुल सडक ९८५८८ कि.मि सडक नेपाल अधिराज्य भरि बनेको जसमा कालोपत्रे २१.८ प्रतिशत मात्र सडक कालोपत्रे रहेको र राष्ट्रिय राजमार्ग मा करिव ५० प्रतिशत (७४४१ कि.मि.) सडक कालोपत्रे सहित को सडक घनत्व 0.668 km/sqkm
र राष्ट्रिय राजमार्गको अवस्था समेत सन्तोषजनक नरहेको

नेपाल सरकारले सडक, रेल तथा यातायात बिकासको लागि ५ बर्षे रणनीतिक योजनामा

- देशको राजधानी र प्रत्येक प्रादेशिक राजधानी लाई कम्तिमा ४ लेनको सडक सहित अन्य बैकल्पिक सडकले जोड्ने
- नेपाल सरकारबाट निर्माण हुने सडक र पुल कम्तिमा दुई लेनको हुने
- रास्ट्रिय सडक सञ्जाललाई व्यापार विस्तार, विविधिकरण एवं अन्टर देशीय पारवहन सेवाको विकास र विस्तारमा टेवा पुर्याउने हुने
- Latest strategic Plan 2073-2078 planned to invest 820 arba in which 629 arba investment for Road sector.
- In which

DHQ	All	Ktm जोड्ने र प्रत्येक प्रदेश राजधानी जोड्ने ४ लेन सहित safe, reliable, balanced Road network
B/T DHQ	Except 2 , all	
4 Lane B/T	941 km	
2 Lane B/T	4656 km	
Other B/T	4400 Km	
Bridge	2454 complete and 500 under Construction	

संघिय सरकारको कार्यक्षेत्रमा रहेको मुख्य सडकहरू

मुलुक संघिय संरचनामा प्रवेश गरे संगै संघ र प्रदेश, प्रदेश र प्रदेश तथा छिमेकि मुलुक संगको परिवाहन सुविधा सहितको प्रभावकारी, दिगो, भरपर्दो र कम खर्चिलो सुरक्षित सडक निर्माण गर्ने र व्यवस्थापन गर्ने उद्देश्यले १४९१३ कि.मि. सडक लाई राष्ट्रिय राजमार्गको रूपमा चित्रण गरिएपनि सो को पुनरावलोकन गर्नुपर्ने अवस्था विद्यमान देखिन्छ ।

राष्ट्रिय राजमार्गमा सामबेश मुख्य सद्खारू
 पूर्वपश्चिम राजमार्ग
 मध्य पहाडी राजमार्ग
 हुलाकी राजमार्ग
 मदन भण्डारी राजमार्ग
 उत्तर दक्षिण ७ वटा जस्तै कोशी, कर्णाली, कालीगण्डकी, महाकाली, आदि

आगामी दिनमा गर्नुपर्ने कार्यहरूको प्राथमिकता

- Need assessment for NH, PR and LR because basic road network reached at satisfactory level.
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आगामी १० बर्ष कार्य योजना

कालोपत्रे करिव २००० कि.मि. कम्तिमा ४ लेनको एसियन मापदण्डको
 ग्रावेल करिव १२०० कि.मि. सडक लाइ दुइलेन को कालोपत्रे गर्ने
 माटे करिव ३२०० कि.मि. लाइ २ लेनको कालोपत्रे बनाउने
 निर्माणाधीन २५०० कि.मि. लाइ २ लेनमा कालोपत्रे यथासिग्र सम्पन्न गर्ने
 प्लानिङ मा रहेको २००० कि.मि. लाइ समेत दुई लेनको सडकमा विस्तार गर्ने

राष्ट्रिय यातायात नीति २०७८ को हालसम्मको कार्यान्वयनको अवस्था, कमजोरी

- PIP मा सबै जिल्ला सदरमुकाम जोड्ने लक्ष्य भएपनि हुम्ला सदरमुकामलाई राष्ट्रिय सडक संजालले नजोडिएको र ७३ वटा जिल्ला सदरमुकाम लाई कालोपत्रे सडक संग जोडेको
- हुलाकी र मध्यपहाडी राजमार्गको काम अन्तरिम चरणमा पुगेको
- Core road network को अवधारणामा आधारित मर्मत सम्भार शुरु गरिएको
- ARMP मा ट्राफिक घनत्व अनुसार बजेट बिनियोजन हुने गरेको
- केहि हदसम्म नेपाल सरकार राष्ट्रिय राजमार्गमा केन्द्रित भएको
- वातावरणीय अध्ययन पश्चात मात्र योजनाहरू कार्यान्वयनमा जाने गरेको
- सडक सुरक्षाको कार्यलाई सडकको डिजाइन देखि नै आत्मसाथ गर्ने गरेको
- सडक तथा पुलहरूको विभिन्न मापदण्डहरू कार्यान्वयन आएको
- RBN लाइ प्रभावकारी बनाउने कार्य भएको
- NRSC लाई पुनर्जीवन दिन थप कदमहरू चालिएको
- पुर्व पश्चिम राजमार्ग लाइ Asian राजमार्ग स्तरको बनाउने कार्य भैरहेको
- यात्रु तथा यतायात व्यवस्थापन, बिमा आदि व्यवस्थाहरू लाइ कडाईक साथ लागू गरेको
- विधुतीय सवारी साधनको प्रयोग लाइ बढावा दिने र प्रयोग बढ़ादै गरएको
- तिनै तहका सरकारहरूले सडक पूर्वधारलाई विशेष महत्वका साथ अगाडी बढाएको

- बैदेशिक ऋण बाट हुने निर्माण कार्यहरूमा प्राथमिकता र आवश्यकता पहिचान गरी मात्रै थालिएको
- सडक मार्ग लाई सहज बनाउन सुरुंग, flyover आदिको निर्माण थालिएको
- प्रयोगशालाको स्थापना र प्रयोग मार्फत गुणस्तरीय निर्माणको सुनिश्चितता गर्ने प्रयास गरेको कमजोरीहरू
 - संविधानले तिनै तहका सरकारको कार्य क्षेत्र स्पष्ट भए पनि कार्यान्वयनको अवस्थाफितलो
 - सरकारी मेसिन हरु भाडा मा नलगाउने भनिए पनि कार्यान्वयन को अवस्था कमजोर
 - २० बर्ष पुराना गाडी अझौ सडकमै रहेको
 - निजी लगानीमा सडक पूर्वाधारको निर्माण हुन नसकेको
 - Rigid pavement पद्धती बाट निर्माण लाई बढावा दिने भनिएको व्यबहारमा लागू नभएको
 - EMP के प्राबधानहरू सडक निर्माण तथा मर्मतमा लागू नभएको
 - सडक अतिक्रमणलाई रोक्ने भनिएकोमा सो अनुसार नभएको
 - मर्मत सम्भारको बजेट र कार्यान्वयन आवश्यकता अनुसार हुने भनिए पनि Ad hoc मा हुने गरेको
 - NTP ले सडक यातायातलाई मात्र प्राथमिकता दिएको ले पुनरावलोकन गर्नुपर्ने
 - नीति कार्यान्वयनको लागि आवश्यक पर्ने स्रोतको यकिन नै नभएको
 - ग्रामिण सडकको अवस्था दयनीय रहेको र मर्मतसम्भारको उचित व्यवस्था नै नभएको
 - ठुला पूर्वाधार निर्माण गर्ने जग्गा अधिग्रहण गर्ने भनिए पनि सो अनुसार नभएको
 - निर्माण व्य. हरुको पेशागत दक्षता खासै नभएको
 - सहरको भित्रि सडकमा non-motorized को व्यबस्था लागू नभएको
 - बैकल्पिक ऊर्जा बाट चल्ने गाडीको संख्या उल्लेख रूपमा बृद्धि नभएको
 - लगानीको प्रतिफलको विचार नगरी स साना र टुक्रे योजनामा बजेट बिनियोजन हुदौँ PIP अलपत्र पर्ने गरेको
 - सहरी क्षेत्रमा utility duct को व्यवस्था कार्यान्वयन नै नाभैएको

Evaluation of 20-year Road Plan

Progress:

- धैरै जसो लक्ष्य अनुसारको प्रगति पुगेको जस्तै RBN स्थापना, Planned Maintenance system, IEE/EIA, New Bridge, New road construction, Rehabilitation, traffic management cell, VTMA and VTMR २०७० आएको, KSTUP केहि हृदसम्म सफल, काठमाडौंको सडक विस्तार र भक्तपुरको सडक विस्तार, heavy vehicle management guideline आएको, etc.
- बिस बर्षे सडक योजना पाँच बर्षको आवधिक योजनाको आधारमा ९ औ देखि १३ औ सम्म राखेको तर बिचमा ३ बर्षे आवधिक योजना आएकोले तालमेल बिग्रेको अवस्थामा पुनरावलोकन नभएको
- तत्कालिन अवस्थामा रहेको करिब ५००० कि.मि. SRN लाई ९२०६ कि.मि. पुर्याउने लक्ष्य

रहेकोमा आ.व. २०७६/०७७ मा १४९६० कि.मि SRN पुगेकोले लक्ष्यको आँकलन नमिलेको

- काठमाडौं बिरगंज जोड्न बागमती करिडोर प्रस्ताव गरेकोमा पछि सडकको रेखांकन परिवर्तन भई हालको fast track भएको

तर

- सडक चौडा गर्ने आधार normal traffic forecast र स्तरोन्नति traffic forecast लिने भनिए पनि सो अनुसार नभई haphazardly भएको र कतिपय सडक आवश्यकता भन्दा बढी चौडाई जस्तै जनकपुर जटहि सडक जसले गर्दा सडक सम्पति र मर्मत सम्भारमा असर पुग्ने
- सहरी क्षेत्रको लागि छुट्टै गुरु योजना बनाउने भनिएको सो नभएको
- काठमाण्डौ बिरगंजलाई जोड्ने बैकल्पिक fast track सडक हालसम्म नबनेको
- सडक क्षेत्र RoW लाई भाडामा दिने प्रावधान लागू नभएको
- सडक अतिक्रमणलाई रोक्ने प्रभावकारी संयन्त्र नभएको
- सडक विकास करको अवधारणा लागू नभएको
- NRSC को स्थापना र प्रभावकारीतामा प्रश्न

बिस बर्ष सडक, Business योजना, Mater plan आदि सबैको अवरोधहरू/Constraints (GAP)

- नीति, योजना बनाउदा कार्यान्वयनको लागि आवश्यक पर्ने संस्थागत, कानुनी, र आर्थिक स्रोतको व्यवहारिक उपलब्धताबारे सोच विचार नगरिनु
- नीति, योजना, अनुसारको बार्षिक विकास कार्यक्रममा योजना हरु समाबेश नभई राजनीतिक प्रभाव प्रेरित योजनाहरु छनौट हुनु
- सम्पूर्ण यातायत क्षेत्र समेट्ने umbrella act/नियमवाली र कार्यविधि नहुनु
- RBN स्थापना भयो तर ऐन अनुसार बजेट RB ले प्राप्त गर्न नसक्नु
- सडक सम्पति र मर्मत सम्भारमा सरकारको ध्यान न जानु, आवश्याकताको एक तिहाई बजेट मात्रै दिनु तर नयाँ योजना पर्नु
- सडक सिमा र राजमार्ग सम्बन्धि आवश्यक बर्गिकरण सहितको बिषयबस्तु राजपत्रमा प्रकाशित गर्न सरकार तयार नहुनुसरकारको दोहोरो चरित्र, बैदेशिक स्रोतबाट निर्माण हुने सडकमा मुआब्जा र नेपाल सरकारबाट निर्माण हुने सडकमा मुआब्जा नदिंदा सडकको ज्यामितीय रेखांकनहरु बिग्रनु र सडक सुरक्षामा असर पर्नु
- सडक सुरक्षा परिक्षण(RSA)लाई अनिवार्यताको लागि कानुनी व्यवस्था नहुनु
- सडक क्षेत्रमा निजी लगानीको वातवारण तयार नहुनु
- निर्माण व्य. हरुको पेशागत दक्षता, क्षमता बृथि गर्नुको सट्टा सरकार आफै ठेकदार बन्ने कोशिस गर्नु जस्तै दृतमर्गामा सेना, पूर्वाधार कम्पनि आदि
- बैदेशिक ऋणका सडकहरु समेत आर्थिक दृष्टिकोण बाट viable नभएका सडकपर्नु, जस्तै LOC II र III क सडक कतिपय सडक
- Policy सेक्टर specific हुनु जस्तै यातयात नीति भनिएपनि सडक नीति जस्तो देखिनु
- समयसापेक्ष नीति, गुरु योजनामा पुनरावलोकन नहुनु

Tenets of Good Transport Policies

1. Transparency

2. Non-Discrimination
3. Policy harmony
4. Consistent policy orientation
5. Focus on Financial sustainability
6. Focus on Environmental sustainability by ASI (Avoid, shift, improve) framework
7. Encourage private sector participation

Better Road Means

- Less Fuel Consumption
- Less frequent servicing to the vehicle
- Less repairs
- Less travel times
- Comfortability
- Environmentally friendly
- Highly safer
- Gender friendly and road for all user

Based on past policy and current achievement DoR/MOPIT should focus on

- Preserve the value of Road infrastructure and assets
- Set standardized transport prices
- Foster competition and strengthen regulation
- Promote transport safety
- Make transport more inclusive
- Develop a sustainable transport system
- Fight corruption
- Improve governance of the transport sector including transport planning, O and M, data monitoring and funding
- Improve regional and continental connectivity which is particularly important for landlocked country like Nepal.
- Building capacity simultaneously in government and private sector.
- Strengthening the institutional capacity
- Better integration of all road and other mode of transport network for the benefits of all citizens.
- Attract the private sector in transport sector effectively
- Promote the public transport
- Apply the road user pay principle

Major Transport sector issues, problems and Solution

Issues

- Weak link between national and sectoral objective/goals and too many projects under execution without priority for better utilization of resources and return
- Project implementation without appropriate study low economic returns from the completed roads and lack of holistic/integrated development approaches
- Young and fragile geological and environmental conditions causing road construction and maintenance more expensive
- Weak project M and E system
- Unstable project management
- Lack of system of performance evaluation and technical audit
- Lack of proper data base system
- Lack of social infrastructure, awareness people's participation causing ownership disputes
- Lack of application of appropriate technology and mobilization of local resources
- Internal security problems
- Lack of private sector participation
- Lack of competent manpower in GoN and private sector also.

- Politically driven project
- Delay in the approval process
- Lack of coordination among the other agencies etc.

Problems

- Traffic congestion
- Lack of mobility and accessibility
- Disconnected transportation modes
- Budgeting constraints
- Transportation following emergencies
- Crash injuries and fatalities

Solutions

- Increase roadway throughout: increase passenger and reduce demand
- Expand fixed route transit services
- Construct inter model connectivity
- Use existing fund, new funding sources by user pay principles
- Improve disaster response plan
- Establish emergencies response center during accident
- Improve road safety by using road geometric, grade separated crossing, driver training, alcohol check, ITS, partially and fully autonomous vehicle control system, Vehicle and driver condition monitoring, public awareness, RSA etc.
- Appropriate legal binding mechanisms etc.

Challenges and Opportunities of Transport Planning

Challenges

- Raising sustainable fund for road, bridge, safety
- Increasing and prioritizing investment
- Promoting coordinated effort among all stakeholder of transport sector
- Capacity building/institutional strengthening
- Revision of NT policy 2058
- Donor Harmonization
- Lack of absorption capacity
- The land acquisition issue
- Coordination among stakeholder
- The encroachment of transport corridor
- Effective and sustainable transport database management including asset preservation and management
- Climate change and sustainability, environmental concerns
- Retentions of planner and recognition of planner

Adoption of environmentally friendly transport infrastructure etc.

Climate change Resilience issue

- Road sector infrastructure is vulnerable to the effects of climate change and subject to risks from natural occurrences
- The expenditure demands for road rehabilitation and maintenance may increase through actions in response to climate events and in order to enhance climate change resilience
- Inadequate or untimely maintenance increase the vulnerability of road infrastructure to climate change.

Opportunities/way forward

- The growing expectation and awareness in people
- Start of multimodal transport including railways, waterways etc.

- Entering into era of expressways, tunnel, flyover, underpass
- Satellite towns and connectivity
- Adoption of cleaner mode such as waterways and rails
- Possibility to serve as transit to two giant economies and N S connectivity
- Asian highway and trans Asian railways
- Interest of donor in transport infrastructure
- Adoption of grooming skill manpower etc.

Road Sector Issues and challenges in Maintenance for DoR

Issues

- Optimization of overall performance of the network, over time i.e., reduce pavement deterioration, Lower VoC, keep road open and healthy, provide safe road, minimize the adverse impacts on disadvantage group to and from the roads, manmade or natural events
- Less or inadequate realization or even ignorance's or less awareness by all stakeholders.
- Importance of road as an asset and its impact on national economy, including social transformations
- Ownership of roads has been clearly defined but responsibility is vice versa
- Budgeting, planning, balance between construction and maintenance
- Inadequate land use plan: linear development with direct frontage
- Weak enforcement of rules and regulation for axle load, overloading
- Quality service delivery
- Commitment to maintenance culture and quality
- Collaboration among all key agencies like DoR, RBN, ADB, WD, MoF, MOPIT, NPC etc

Maintenance Challenges

1. Commitment to maintenance in DoR
 - Attitude and behavior of staffs, workers and contractors
 - Inadequate level of awareness of all stakeholders
 - Commitment, will and desire of all stakeholder
2. Managing the Environment
 - Technical management: strengthening of capacity of road agencies DoR, RBN and contractor
 - Financial management: Role of road agencies DOR/RBN/GON and support from bilateral and multilateral donor and user pay principle and also balance between new construction and maintenance with asset preservation etc.
 - Organization management: revisit of maintenance policy, rules, process, procedure etc. and staffs/contractor motivation also.

Road Maintenance strategies and way forward in strategies for DoR

DoR maintenance approaches

- Cyclic approach preferable for planned maintenance, principally actions to be undertaken few months early rather than later.

Management Level: network level, operational level and project level

Strategies

- Preservation and maintenance of fund for full utilization
- 95 percent or over SRN in fair and good condition in SDI
- Minimum road closure
- Satisfaction of Road users
- Safe, cost effective and efficient roads

Way forward

- Justice to NH: preservation and maintenance and awareness building, education and enforcement
- Safeguard the maintenance culture: external and internal threats and risks
- Strengthen the organization capacity and capability

- Enhance the business culture
- Review the maintenance policy and system
- Understanding the environment such as role of RBN, Donors agencies and users, proactive maintenance in NH, positive discrimination regarding the maintenance
- Reliable Fund generation
- Improvement in institutional, managerial, and technical capacity

Q. It is often claimed by the road agencies that there is a lack of fund for effective maintenances of highway in Nepal. Make a critical analysis of maintenance strategy and available funding structure now a days. Estimate the gap in funding if any and suggest workable solutions to overcome this problem.

“Road maintenance: Huge gap in funding”

“सडक सम्पतिको मर्मत सम्भार र संरक्षण : दिगो यातयात पूर्वाधारको संरक्षण”

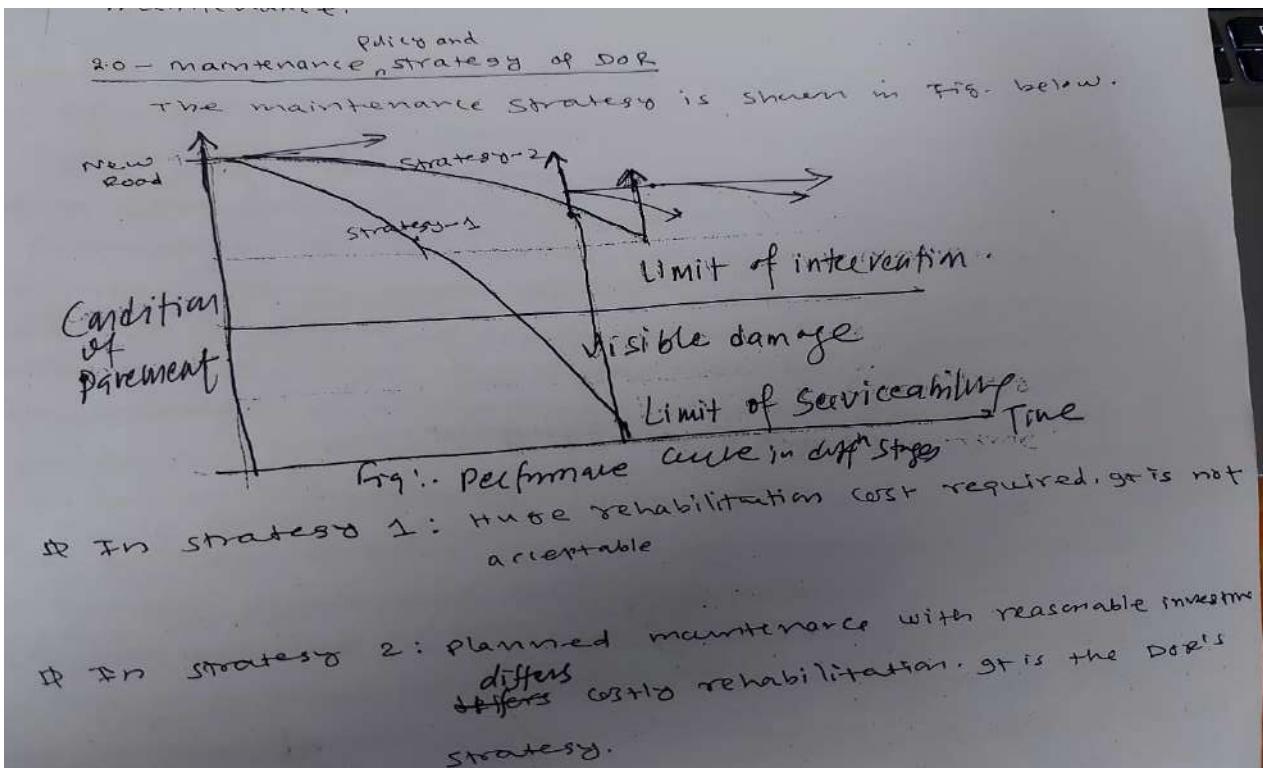
1. **Background:** series of interdependent activities applied on road (on carriageway) and on the roadside support (off road) to defer the rehabilitation to indefinite period is called road maintenance. It is the main components of road asset management. It saves additional VOC, defer costlier repair and maintenance, maintain the safety of the road, mitigate the environment issues.

It is reported that boosting asset utilization, asset maintenance, scale up demand management measure potentially could reduce the infrastructure investment demand by 15 percent. Deterioration of roads in developing countries are extensive, 15% of road are deteriorating eroded due to lack of maintenance fund and it increases 3 to 4 times for every delay maintenance. For every 1km new road construction, 3km of existing road become no more operation and 1 unit cost of maintenance save 3 units to road users and 2 units to road agency cost.

2. नेपालमा सडकको वर्तमान अवस्था

- संविधानको धारा २० अनुसूची ५ बमोजिम २०७६/२/२६ मा अनुमोदन भएको NH ८० वटा १४९१३ km जस मध्ये गत २०७८ फाल्गुन सम्मको आधारमा ७२३७ km (लक्ष्य ९४९६ कि.मि.) कालोपत्रे दुइलेन, दुई लेन भन्दा बढी चौडाइको सडक २०४ कि.मि. (लक्ष्य ३४७ कि.मि.)
- तर सडक विभागबाट कुल सडक बनेको ३३८७१ कि.मि. जस मध्ये ग्रावेल ८११ कि.मि., माटे ८८२१ कि.मि. र बाकी १६९३३ कि.मि. कालोपत्रे सडक रहेको
- प्रदेश र स्थानीय निकाय बाट बनेको सडक कुल ६४६१७ कि.मि. जस मध्ये ४५५७ कि.मि. सडक कालोपत्रे, ग्रावेल १३६२९ कि.मि. र बाँकि माटे सडक रहेको
- यसरी हेर्दा कुल सडक ९८५८८ कि.मि सडक नेपाल अधिराज्य भरि बनेको जसमा कालोपत्रे २१.८ प्रतिशत मात्र सडक कालोपत्रे रहेको र राष्ट्रिय राजमार्ग मा करिव ५० प्रतिशत (७४४१ कि.मि.) सडक कालोपत्रे सहित को सडक घनत्व ०.६६८ km/sq km
- राष्ट्रिय राजमार्गहरू मध्ये ६५१०.४ km को IRI/SDI हेर्दा, १९% राम्रो र ठिकै अवस्था, ५९% खराव IRI बाट, SDI अनुसार ७८% राम्रो र ठिकै छ भन्ने २२% खराब अवस्थाको चित्रणले समेत हाम्रो राष्ट्रिय राजमार्गको अवस्था समेत सन्तोषजनक नरहेको पुष्टि गर्दछ |

DoR is using only 0.20 to 0.25% of GDP for road maintenance and tentative 8 to 10 percent of total budget for maintenance and rehabilitation (DOR+RBN), which is far below the international practice (0.75% of GDP in developed countries). Using this fund for road maintenance using two different types of maintenance contracts. The mostly used is SMD based planned maintenance such as routine, recurrent, and periodic and PMBC had been piloted in some road using technical assistant by WB and ADB. But the result are not encouraging and department is studying on this still.



3. Available funding and Gap analysis

Road board is the main agency responsible for funding maintenance activities in DoR. RBN receive fund from a fuel levy Rs.3 per liter for diesel and kerosine, and Rs 5 per liter in petrol and 5% of new vehicle registration tax and some limited road tolls. The toll produces a relatively small amount of money with adverse publicity. The fuel levies are never deposited directly to the road board account. The fuel levy are collected in national treasury and later transferred to road board account. It is observed that the whole amount are not transferred to RB account. The obtained total fund are divided to SRN or NH amounting 70% and remaining in other roads like provincial and local level.

The funding status : amount are in Billion

F.Y.	DoR (NH rehab) allocation by separate budget head	RBN for maintenance for DoR	Demand	Expenditure	Funding GAP
2076/77	10.9	6.05	26.3	66%	48%
2077/78	8.7	13.65	22	56%	45%
2078/079	8	5.6	19.058	30%	30%

This shows the funding gap is nearly 50% i.e. ultimately backlog for maintenance

Another burning issue is expenditure capacity is nearly 60% of annual budget, this also backlog ultimately

4. GON or DOR policy regarding SRN/NH maintenance

- DoR strategy 1995: the maintenance of the network is to provide a reasonable level of serviceability for road user at all times and to protect the considerable capital investment made in roads. All the objective and policy are related to road maintenance
- NTP 2058: maintenance of existing transport infra, transport fund
- 20-year road plan, SWRP and PIP
- SRN maintenance policy
- 15th plan and annual budget
- RBN act and regulation

Maintenance Challenges/constraints in maintenance

1. Commitment to maintenance in DoR

- Attitude and behavior of staffs, workers and contractors
- Inadequate level of awareness of all stakeholders
- Commitment, will and desire of all stakeholder
- Adoption of PBMC and user pay principle
- 2. Managing the Environment
 - Technical management: strengthening of capacity of road agencies DoR, RBN and contractor
 - Financial management: Role of road agencies DOR/RBN/GON and support from bilateral and multilateral donor and user pay principle and also balance between new construction and maintenance with asset preservation etc.
 - Organization management: revisit of maintenance policy, rules, process, procedure etc. and staffs/contractor motivation also.

5. Workable suggestion and way forward

1. RBN funded as per act and strengthening the RBN with respect to procedural delay, timely allocation of budget, M and E etc.
2. Adoption of maintenance in core network principles for all NH
3. Generation of additional fund from RoW lease, insurance of road infrastructure, asset securitization, land development tax, co2 trading etc.
4. Improve the wrong practice of budget freezing in maintenance
5. Improve the expenditure capacity of allocated budget timely
6. Improved the SMD maintenance practice by adding length worker, departmental work by routine maintenance etc.
7. Adoption of PBMC properly by evaluating the past experiences
8. Increase the DLP for new constructed road
9. Adoption of 3P method such as toll operation and transfer (ROT), toll operation, maintenance and transfer (TOT) in major NHs
10. Establish “national road authority” for paradigm shift for planning, construction, maintenance and rehabilitation, operation and traffic management.
11. Safeguard the maintenance culture: external and internal threats and risks
12. Understanding the environment such as role of RBN, Donor’s agencies and users, proactive maintenance in NH, positive discrimination regarding the maintenance
13. Improvement in institutional, managerial, and technical capacity

Conclusions

There is a critical resources gap for maintenance of roads in Nepal. Ensuring alternative sources of funding and using fund efficiently and effectively can improve the quality of road. It is also time to move paradigm shift for start most promising method like PBMC, 3P, ROT etc. in road maintenance in line with international practices.