CHALLENGES OF HYDROPOWER PROJECT DEVELOPMENT IN NEPAL

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Abstract

Experts estimate that Nepal has potential to generate 83,000mv hydroelectricity out of which 43,000mv is economically and technically feasible. Despite of the huge potential, Nepal is only able to produce 995mv electricity and 40% of the total population of Nepal has access to electricity by the end of 2016.

Considering the massive potential, many of the foreign investors are intending to invest in the hydropower sector. However, it is necessary to ascertain the potential challenges the investor may face during the hydropower project development. This paper explains about the challenges associated with the development of hydropower project in Nepal along its mitigation measures. The challenges are determined on the basis (a) past instances that the hydropower project have faced and (b) review of existing governing law related to hydropower sector.

Private land acquisition is one of the main challenges for the investor which requires a lot of time and effort. There are many instances where the local community has opposed for the construction of hydropower project. In addition to this, the local community has high expectation from the investor which includes (a) expectation for construction of road, bridges, schools and hospitals and (b) local ownership over the project.

At the current situation national and cross broader transmission lines are inadequate which is the major constraint in evacuation of generated power is. Further access road upto the hydropower project site are insufficient. Moreover, there are other challenges such as (a) government lacks comprehensive resettlement and rehabilitation policy for the effected person of the project and (b) lack of availability of market for surplus energy.

Nepal has a huge potential for hydropower but to utilize it in the most fruitful way is much needed. Local consultation and local participation is much required for the project development. Further government should (a) enact comprehensive resettlement and rehabilitation policy for the effected person and (b) approach for neighboring country such as China, Bangladesh, India and other SAARC member countries for the sale of the surplus electricity.

Keywords: *Infrastructure, Hydropower, mitigation, resettlement and rehabilitation etc.*

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INTRODUCTION

Experts estimates Nepal have potential to generate 83,000mv hydroelectricity out of which 43,000mv is economically and technically feasible. There are more than 6,000 big and small rivers originated from Himalayas discharging 224 billion cubic meter of success run of water annually.[1] Despite of the huge potential, Nepal is only able to produce 995mv electricity by end of 2017[2] and 40% of the total population of Nepal has access to electricity by the end of 2016. More than 97% of feasible capacity has not been realized yet.

To fulfil the energy demand Nepal is importing 380mv from India. [3] Looking after the current scenario only 3% of energy demand of the country is fulfilled through electricity produce from hydropower. The remaining is fulfilled by bio mass (78%), petroleum products (12%), Modern Renewal (3%) and coal (3%). Having immense potential of hydropower development, it is important for Nepal to increase its energy dependency through hydropower project.

Considering the massive potential, lot of foreign investors are intending to invest in the hydropower sector of Nepal. The ratio of the investment through the private sector is increasing in number. Many foreign companies have come forward with their interest in the country's energy sector. On recent days' hydropower sector has dominated the investment portfolio, among which China and Indian companies are the main investor. According to the Independent Power Producers Association, Nepal (IPPAN), the private sector has invested Rs 55 billion in 25 hydro projects till the date since the first private power plant was established in 2000.[4]

Government has understood that the hydropower project development can be one of the means for the economic development of the country. As a result, this sector is on government's topmost priority. With the enactment of the Hydropower Development Policy, 2049 (1992), private sector was opened for the investment in hydropower. This policy was incorporated with the objective to raise the investment from foreign and the national private sector.

To encourage the investment numbers of acts, rules and policies have been amended. Government has provided fiscal incentives for the hydropower project which includes (a) 100 percent income tax exemption for the first 10 years and 50 percent income tax exemption for the next five years after the commercial generation of electricity and (b) 100 % Value Added Tax is exempted to imports machinery, equipment, and the tools required for hydropower

[1] Rajuria, A., *Development of Small Hydropower Project in Nepal*, Business Development Forum, Volume 9, 2016, pg. 6.

[2] Department of Electricity Development, *List of License*, Available at: http://doed.gov.np/operating_projects_hydro.php

[3] *Nepal to Import 500mv from India: Sport Light News Magazine*, August 10, 2017, Available at: *https://www.spotlightnepal.com/2017/08/10/nepal-import-over-500-mw-electricity-india/*

[4] *Market Data for Private Sector Investment in Nepal in Renewal Sector*, Dolma Development Fund at al. September, 2014.

project. Similarly, no Value Added Tax is applicable on transaction of such machines and equipment's. Hydropower Company can also carry forward the project loss for 12 years. Moreover, the prevailing law has assured protection from nationalization of the project during the term of hydropower license. In addition, Nepal Rastra Bank (NRB) has issued a circular making mandatory for commercial banks to make 10 % of their total lending to the agriculture and energy sectors.

Despite the government effort to encourage the private investor for investment in hydropower still there are some challenges that need to be addressed. The major challenges are explained in below paragraphs:

Policy Inefficiency: Government has made many reforms and amendment in laws governing the hydropower. However, there are not sufficient. The main policy challenging issue for the investor are (a) long and complex legal procedure to receive the hydropower license and Foreign Direct Investment (FDI) approval, (b) Non-implementation of One Window Policy, (c) Lack of proper comprehensive resettlement policy, (d) complex environment clearance approval such as Initial Environment Examination (IEE)/ Environmental Impact Assessment (EIA) and other regulatory approval.

Procedural hassles to set up the business and operation challenges after incorporation are one of the main bottle necks to attract the investment in Nepal. Receiving the hydropower survey/generation license is time consuming with the procedural hassles. The same applies to other approval required during the project development such as (a) FDI Approval, (b) IEE/EIA Approval, (c) land acquisition approval and other government approval required. Along with Ministry of Energy and Department of Electricity Development (DOED) the investor has to collaborate with 6 Government Ministries' and 22 Governments Departments while developing the hydropower project, despite the government has committed to adopt one window policy. The investors need to take approvals and permit from many departments. This has caused delay in project development, which is one of the main factors of discouragement to the investor.

Similarly, the investor has to relay on 36 laws during the process of development of the project. Furthermore, there are various impartial laws as well which hinder the construction of project. For instance, forest clearance procedure is one of the hectic issues for the developer since 25 trees has to be planted if one tree is cut down. Investors get frustrated due to delays in the process of documents like permit, approval and clearance. Moreover, the Government of Nepal lacks comprehensive resettlement and rehabilitation policy for the effected person by the hydropower project.

To address this policy inefficiency, government need to reform and enact the necessary law. Similarly, the implementation of one window policy has to be implemented promptly.

Issue of Land Acquisition: Most often hydropower project face problems during acquisition of private land from local communities. Special approval is required from Ministry of Forest and Social Conservation for the use of land of forest, national parks and conservation area.

Acquisition of land requires lot of time and effort as different level of negotiation has to be done to local community. To address this problem project has to prepare effective resettlement plan with adequate compensation and facilities.

There are many instances where the local people has opposed for the construction of hydropower project because of non-providing appropriate compensation amount. Opposition of the local community has caused delay in completion of hydropower project on the schedule time.

Market Availability of Surplus Energy: After the generation of electricity most challenging issue is availability of market for surplus energy. By October 2018, DOED has granted the Survey License for Electricity Generation for 310 projects with the total capacity of 18,583mv. In addition, Generation License is granted to 185 projects with the total capacity 5,881mv. Similarly, 20 projects have newly applied to receive the Survey License with the total capacity of 971mv.[5] Nepal expects to produce the surplus energy in few years. Only few percent of electricity will be consumed by Nepal and the surplus energy needs to be export abroad after the completion of the approved project. Therefore, Nepal should create viable alternate electricity market to export its surplus energy. Neighboring country India, Bangladesh and other SAARC countries are potential country where surplus energy can be exported. Similarly, China is also another viable market.

Despite of availability of wide possible market there are several challenges for export. The major challenge is restraint created by Indian law to export energy produced by the foreign investor other than India. Ministry of Power of India has issued a Guideline on Cross Border Trade of Electricity' on 5th December 2016 to regularize electricity trade with its neighbors Nepal, Bangladesh, Bhutan and Myanmar. The guidelines have imposed certain restriction to export of electricity produced by the foreign companies in Nepal. Pursuant to the guidelines companies fully owned by the government of Nepal and companies having 51 percent equity investment of Indian public and private companies can only export power to India. However, India may also allow the cross broader transmission to other project on case to case basis with the special approval of concerned authority.[6] Further Nepal want to export the Surplus energy to other SAARC Countries such as Bangladesh, Pakistan and other countries, for that purpose Indian transmission line has to be used which requires co-operation with Indian Government. Therefore, India is the role player of electricity market to the third country.

Besides SAARC countries other potential market is China however due to geographical condition it will be difficult to construct the cross boarder transmission line crossing the Himalayan range. Nepal and China has jointly initiated to develop cross broader transmission line between countries and the progress is ongoing. Further to note that Nepal has already signed MOU with Bangladesh for energy co-operation. This are some little steps made for

[5] Department of Electricity Development, *List of License*, Available at: http://doed.gov.np/operating_projects_hydro.php

[6] Section 5.2.1 of Guideline for Cross Border Trade of Electricity of India, 2016

energy co-operation. A lot of government effort is required to co-ordinate with foreign countries to export surplus energy on days to come.

Insufficient Infrastructure: Most of the hydropower projects sites are located on the remote area of Nepal which lacks access of road, transport, communication facilities, transmission line for power evacuation and other infrastructure facilities. Because of insufficient infrastructure cost of the hydropower project is expected to be higher.

In additional inadequate domestic and international cross border transmission line is one of the bottlenecks for the hydropower development in Nepal. Insufficient transmission lines are a major constraint in evacuation of generated power. There are few instance where some of the hydropower project were unable to evacuate the generated power because of absence of transmission line. Therefore, investment in domestic and international transmission line is most required for hydropower development.

High Expectation of Local Community: Expectation of Local Community towards the Hydropower Project is being increasing. Local Community has started to demand high facilities such as construction of road, bridges, schools, hospitals and other support before the investor which are unreasonable for the small hydropower project. This has increased the overall cost of the project.

There are some projects which were delayed due to local level demand. Satluj Jal Vidyut Nigam got permission to construct Arun III of capacity 900mv after making a commitment to provide 30 Unit/month to effected local people and securing the employment opportunity of the local community of Hydropower Project effected area. The Company also agreed to provide 21.9 percent free energy to Government of Nepal which is 197mv. Upper Madhi Hydropower Project- 25mv having investment of 80% of share of CWE has entered into 23 Point Agreement with local community before construction of project. Investor has committed to provide financial support for construction of roads, irrigation, school, health, provide ambulance and other additional support for the local community. Project such as Kaligandaki-A; along with resettlement established primary school, conducted different skill based training and high priority was given to local community while hiring in employment of project. Similarly, Chilime Hydropower Project (51% investment by Nepal Electricity Authority (NEA) and by General Public) has distributed 10% share to Local people affected by the project. Several other projects, namely Khimti (60mv), Bhotekoshi (45mv), Buddhigandaki (1200mv), Upper Balefi (50mv), have been facing problem associated with benefit sharing. The local residents demanded shares in Khimti and Bhotekoshi, which are completed and have been operational for several years. The Upper Balefi project (50mv) could not go into construction smoothly due to the demand for benefit sharing by local villagers.

High Cost of Hydropower Project: The existing cost for development of hydropower project is more expensive because of reliance on bilateral and multilateral financing agencies, costly foreign consultants/contractors and limited manufacturing equipment required for project. Similarly, unfavorable geographical condition of the country has also become one of the

reason for increase in cost project. In addition, unreasonable demand of local community has also been the cause of increase in cost.

Nepal's hydro-power sector remains to be non-competitive due to the lack of these pre-requisites, which Nepal fails to realize. It is estimated that the government developed medium-sized hydropower cost an average of US$ 2,800/KW while private generators have been able to produce at US $ 1,000/KW. In this context, making the government invested project cost is higher than that of the private sector.[7]

NEA is a Sole Authority: NEA is the sole authority to buy the energy produce by the hydropower project in Nepal. It is also the sole distributor of the electricity in the country. There is absence of competition on area of buying and distribution of electricity. Therefore, government should realize the importance of liberating the monopoly of NEA. Private sector should also be encouraged for transmission and distribution activities of electricity.

Political Risk: There is policy available to cover the risk of force measure and natural disaster. However, there is absence of policy to cover the political risk caused due to change in law and other form of government intervention. In Nepal Power Development Agreement is executed to undertake such type of risk. However, the current Power Development Agreement which are executed by the Government with the other investor has not adequately addressed the coverage of political risk. Therefore, Nepal should develop the appropriate mechanism to address the issue of political risk.

Foreign Currency Exchange Risk: Foreign Investors are demanding to execute the PPA in US Dollar. However, the government has declared policy of signing the PPA in dollar for 10 years only which is considered as the sufficient time to repay the loans. Though NEA is against the government policy pressuring not to implement this policy.[8] Considering the conflicting situation government official are reluctant to sign PPA in dollar.

NEA preference for signing the PPA in Nepalese currency may discourage for the foreign investor. This may cause long term implication for the foreign investors in the hydropower sector in Nepal as Nepalese Currency being a weak currency, is extremely prone to currency risk fluctuation.[9]The best way to address this issue to create a hedge fund and revenue received form the license fee, royalty , VAT ad Income Tax and change into dollar and deposit in the hedge fund.

CONCLUSION

Lots of commitment and declaration has been made by the government with the motive to attract the investment in hydropower sector and wipe out the challenges faced by this sector.

[7] Adhikari, Deepak, *Hydropower Development in Nepal*, Economic Review, pp. 72 to 86.

[8] Akilesh Tripathi, *Hydro Sharing the Risk; Republica Daily*, Available at: https://myrepublica.nagariknetwork.com/news/6304/ (Accessed on: September 26, 2016)

[9] *Supra note 4*

However, implementation of such commitment and declaration are not such progressive. Huge effort has to be made by the government to deliver the outcome of the commitment.

Legal reform on number of legislation is required to create the favourable environment. Further, no matter how much noble the law is, effectiveness of law depends on how the government agency function to implement the law therefore institutional efficiency is also necessary prerequisites. Government agency should be able to provide the best quality of service and the approvals and permits should be granted on time.

The another point to address is that the government target should not only be focused to attracting investment but also should give emphasis on finding the appropriate market to supply surplus energy and strengthening the power infrastructure.