

# ECONOMICS

## Classroom Study Material

### PART-4



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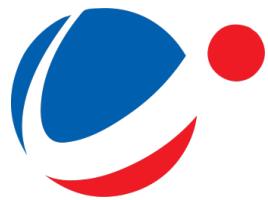
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## ECONOMY PART 4

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# UNEMPLOYMENT

Student Notes:

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# 1. Work and Employment

Student Notes:

**Work** can be defined as the carrying out of tasks requiring the expenditure of mental and physical effort with the objective of production of goods and services that cater to human needs. While **Employment** is a contract between two parties, where the work is paid for.

Worker is a person who enters into employment out of his own will. On the nature of employment, work can be of two types:

- 1) **Formal Work:** It is the work where the worker is governed by the formal rules and regulations. These rules and regulations may be defined by legislations or statutes of the government. All the public sector establishments and those private sector establishments which employ 10 hired workers or more are called **formal sector**.
- 2) **Informal Work:** It is the work where the workers are not governed by the fixed rules, but by the directions of employers. Unfortunately, in India, more than 80% of the workforce is in the informal sector where they have low social security. It includes farmers, agricultural labourers, owners of small enterprises etc.

Since informal sector is not regulated by the laws and statutes of the government, they are more vulnerable to exploitation. Their wages and tenure are not regularized. They can't form trade union which minimizes their bargaining capacity with their employers.

## Definition of 'formal' worker

In India, there exist various definitions of 'formal worker', such as:

- Those employed with enterprises registered under the Factories Act, 1948 (thus excludes those in services sector)
- Those in enterprises with 10 or more workers and all government workers
- Those who have a contract regardless of the size of the enterprise in which they work (Arjun Sengupta Committee Report)

A formal job is generally understood as regular salaried job in government establishments or private enterprises and one that comes with entitlement to one or more of the following social security benefits: provident fund, pension, gratuity, healthcare and maternity.

## Organized versus Unorganized

In India, the term "organized enterprise" was originally used to refer to the enterprises registered under the Factories Act, 1948. Industrial enterprises with 20 or more workers if not using power and 10 or more workers if using power are required to register under this Act. But in some contexts, the term has been widened to include all enterprises with 10 or more workers in both industry and services. By implications, enterprises with less than 10 workers are called unorganized enterprises.

## 1.1. Nature of Employment in India

The nature of employment in India is multifaceted. Some get employment throughout the year while some others get employed for only a few months in a year. Therefore the economic planning in India aims to utilise the available resources in a manner which would maximise the rate of growth with optimal employment generation. Following are the key features of employment in India:

- **Ruralization:** During 2011-12, India had about 473 million strong workforce. About 3/4th of them are **rural workers**. About 70 per cent of the workers are men and the rest are women.
- **Informalisation:** According to the International Labour Organization, 81% of the labour is working in the informal sector, with only 6.5% in the formal sector and 0.8% in the household sector.
- **Casualization:** The phenomena of shift from regular salaried employment and self employment to casual wage work is called 'casualization of the workforce'. Statistics show

- that there has been a gradual increase in the casual workforce over the last few decades.
- **Masculinization:** India's female Labour Force Participation Rate (LFPR) has fallen to a historic low of **23.3%** in 2017-18. It means that over three out of four women in India are neither working nor seeking work. This would imply that they are most likely engaged in the household chores. This leads to under-valuation of women's contribution to the economy as a whole.

These issues arise mainly because India's economy is highly informalized. There is need to a formal economy.

## 1.2. Formalization of Indian Economy

Formalization means creation and expansion of formal jobs, essentially, that come with social security, financial inclusion and legal empowerment of the workforce.

### Advantages of formalization

- Increased tax revenues for the government due to better reporting under taxation laws
- Coverage of population under social protection plans, saving from financial distress during difficult times
- Increase workers' welfare and the opportunities for decent jobs
- Reduce unfair competition between formal and informal enterprises arising from tax or regulatory arbitrage

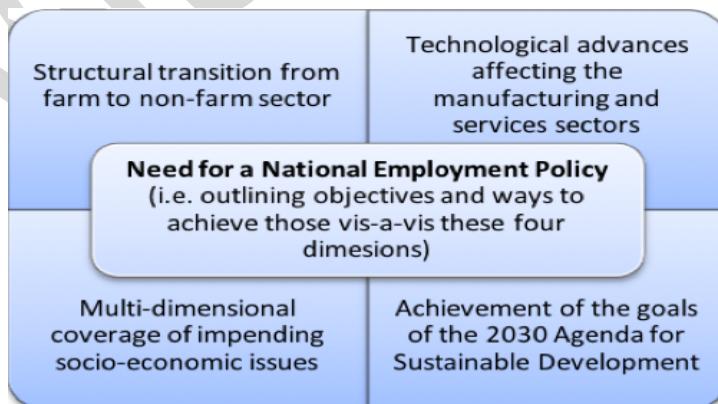
### Downsides of formalization

- Exclusion of population, if knee-jerk steps are taken e.g. demonetization
- Poverty and destitution as rapid formalization imposes additional costs on informal economy.

### How should we go about it?

- Stress on creation of high-productivity high- paying jobs (more under 'job creation')
- Build synergies between different sectors of economy, by inter-Ministries' coordination.
- Ensure employability by addressing skill- mismatch, formal skill training and re-training.
- Improve women's participation in the economy, in line with SDG 5 on Gender Equality.
- Slow transition of informal sector into the formal economy, to avoid downsides of formalization process.

Devising a **National Employment Policy** would go a long way in ensuring coherent and converging actions for formalization of Indian economy.



## 1.3. Sector Wise Employment in India

As per Employment-Unemployment Survey (by NSSO) of 2011-12 (latest available), total workforce employed stands at 47.36 crore; with 23.16 crore in agriculture and 24.2 crore in industry and services.

**SECTOR-WISE EMPLOYMENT: NSSO**

(in crore persons)

Workforce by Major Sector (in usual status)	2004-05	2009-10	2011-12
Agriculture & Allied	26.85	24.48	23.17
Industry	8.31	9.90	11.49
Services	10.74	11.64	12.73
Total Workforce*	45.90	46.02	47.38

\* Figures may not be additive due to rounding

## 2. Unemployment

Unemployment is a situation in which individuals are ready and willing to work at the prevailing rate of wages but cannot get the work. According to the NSSO, unemployment is a situation in which all those who, owing to lack of work, are not working but either seek work through employment exchanges, intermediaries, friends or relatives or by making applications to prospective employers or express their willingness or availability for work under the prevailing conditions of work and remunerations

$$\text{Number of unemployed} = \text{Labour Force} - \text{Work force}$$

Where, workforce = working or being engaged in economic activity and labour force = work force + not engaged in economic activity and either making tangible efforts to seek work or being available for 'work' if the work is available.

### 2.1. Types of Unemployment

- a) **Cyclical unemployment:** This kind of unemployment occurs when all those who want to work cannot be employed because there is not enough demand in the market for their work. It is called as cyclical unemployment because it varies with the trade cycle. For example, when the economy is doing well there would be greater demand for the goods, but the opposite is true for the years when the economy slows down. For example: In the aftermath of the US subprime crisis, many people lost their jobs.
- b) **Frictional Unemployment:** This kind of unemployment occurs when a person leaves/loses a job and starts looking for another one. This search for a job may take a considerable amount of time resulting in frictional unemployment. Frictional unemployment tends to be on a high when an economy is not doing so well. This kind of unemployment may also be high in an economy if people change jobs frequently due to high level of dissatisfaction with the working conditions in the economy.
- c) **Seasonal Unemployment:** This kind of unemployment is expected to occur during certain parts of the year. For example, tourism related jobs at a hill station may experience seasonal unemployment during the winter months. Another example could be the seasonal unemployment in agriculture depending upon the success of monsoon. Similarly if irrigation facilities are missing, only one crop may be produced in a year, rendering the farmer unemployed for the rest of the year.
- d) **Structural Unemployment:** This kind of unemployment happens when the structure of an industry changes. For example, as the country is tending to move from use of bicycles to motorcycles, the demand for labor in the cycle industry continuously falls. Therefore, structural unemployment essentially occurs when there exists a mismatch between the skills of the unemployed and the skills needed for the job. **Changes in technology and**

**changes in tastes** are two big reasons for the occurring of structural unemployment in the economy. One of the reasons why NITI Ayog focuses on skill development is to address the problem of structural unemployment in the country.

- e) **Underemployment:** This term can be used in multiple connotations but one of the primary usage is to showcase a situation where a person with high skills works in low wage and low skill jobs.
- f) **Disguised Unemployment:** Such type of unemployment is quite common in the agricultural sector in India. It occurs when people are employed in a job where their presence or absence does not make any difference to the output of the economy. Because of large families in the rural areas several people work on farms and at times the work of 2-3 people is done by 4-5 people.
- g) **Open unemployment** – this refers to a situation where there are some workers who have absolutely no work to do. They are willing to work at the prevailing wage rate, but they are forced to remain unemployed in the absence of work. These workers are completely idle. Such unemployment is clearly visible as the number of such person can be clearly counted and therefore it is known as open unemployment. It is found largely in cities and to a limited extent in rural areas. Frictional, structural and cyclical are different types of open unemployment.
- h) **Natural unemployment** – Unemployment ranging between 2 to 3% in the country is considered natural and inevitable. This minimal percentage of unemployment cannot be eliminated at all. It is called natural unemployment.

**Full Employment:** It is a situation when every able-bodied adult works the number of hours considered normal for a fully employed person.

#### The case of Jobless growth

It is an economic phenomenon in which a macro economy experiences growth while maintaining or decreasing its level of employment. India faced jobless growth from period 2004-05 to 2009-10. The robust growth witnessed by India, has been mostly associated with a rapid rise in labour productivity, rather than an expansion in employment. The total employment grew by only 0.1 per cent during five years till 2009-10 (from 457.9 million in 2004-05 to 458.4 million in 2009-10), while labour productivity grew by more than 34 per cent in total during this period.

Over-emphasis on services and neglect of the manufacturing were mainly responsible for this phenomenon. The number of people seeking jobs are growing in India and they need to be constructively engaged to avoid socio-economic conflict and arrest the increasing informalisation in the economy.

Experts argue that the growth of manufacturing will be the key for growth in income and employment for multiple reasons. For every job created in the manufacturing sector, three additional jobs are created in related activities. The other is that manufacturing in India is scalable and has higher labour absorption in comparison to services.

## 2.2. Nature of Unemployment in India

- Since India is a developing country, the nature of unemployment is starkly different from the developed countries. In developed countries unemployment is primarily driven by a **fall in demand**. As the demand for goods and services fall, the industries have to stop the production thus rendering the workers jobless.
- But in India under-employment or disguised unemployment is a major concern. This is not due to the lack of demand for goods but due to the shortage of capital equipment for setting up new industries. This creates **supply side constraints** in the economy. Because of the lack of capital, India has not been able to commensurately meet the needs of the

growing labour force in the country. This manifests itself in two ways- **firstly**, the prevalence of large scale unemployment in the urban areas; **secondly**, in the growing numbers engaging themselves in the agricultural sector resulting in disguised unemployment.

- The basic solution to the entire problem is **faster rate of capital formation** so as to enlarge employment opportunities. For this the government needs to **encourage savings and their productive utilization in increasing the rate of investment**.
- The state itself can participate in the process of capital formation by undertaking such development activities since the private entrepreneurs do not find it profitable to undertake. There is also a need for the government to increase and attract more foreign investment.

## 2.3. Measuring Unemployment

Currently, the National Sample Survey Office (NSSO) is the principal source of data on employment. Comparable survey rounds of sample populations are done once in five years. Ministry of Statistics and Programme Implementation (MOSPI) has decided to conduct quarterly and annual surveys of employment.

In measuring employment/unemployment in a country like India, certain specific features of the workforce need to be taken into account. The structure of workforce with dominance of self-employment and primary sector tends to depress unemployment rates in general. Inadequacy of the measure of unemployment in terms of open unemployment has, therefore, been well recognised by the method adopted by NSSO.

Therefore, National Sample Survey Organisation (NSSO) uses three different concepts.

- **Usual Principal Status** - A person is considered unemployed on Usual Status (US) basis, if he/she was not working, but was either seeking or available for work for the major part of the reference year. It is generally regarded as the measure of **chronic open unemployment**. Projections of labour force and employment have been made on the usual status concept, and qualified, where necessary, on the basis of the other two concepts below.
- **Current Weekly Status** - On the basis of a week as the reference period, a person is considered unemployed by Current Weekly Status (CWS), if he/she had not worked even for one hour during the week, but was seeking or available for work. The CWS unemployment rates also measure chronic unemployment, but with the reduced reference period of a week.
- **Current Daily Status** - The third concept of unemployment is the Current Daily Status (CDS), which is in terms of total person days of unemployment, and is the aggregate of all the unemployment days of all persons in the labour force during the reference week. The CDS is considered to be a comprehensive measure of unemployment, including both chronic and invisible unemployment.

## Improving Employment Data

Report of the NITI Aayog's Task Force (released in 2017) made recommendations to create a 21st century statistical system in India for the generation of comprehensive employment, unemployment and wage estimates on a sustained basis. These include:

- Conduct of household surveys on an annual basis.
- Introduction of time-use survey, that be conducted every three years (such surveys also help in measuring women's participation in unpaid work).
- Use of technology for faster and better data collection, processing and assimilation.
- Introduction of annual enterprise survey using enterprises registered with the GSTN as the sample frame.
- Separate annual survey of enterprises excluded from the GSTN database (i.e. those in health and education sectors, and those with turnover < INR 20 Lakh in other sectors).

- Adoption of inclusive and wider definition of 'formal workers'.
- Adoption of GSTN across all legislations, ministries and departments as the universal establishment number.

Student Notes:

CLASSIFICATION OF SURVEYS AND STUDIES TO STUDY EMPLOYMENT AND ITS COMPOSITION IN INDIA		
Type and Names	Description	Limitations
<b>Household Surveys:</b>		
<ul style="list-style-type: none"> <li>• (+) Comprehensively cover the entire labour force</li> <li>• (-) These are conducted every five years</li> <li>• (-) Time lag between data collection and availability of the results</li> <li>• E.g. - Employment-Unemployment Survey (NSSO), Annual Labour Force Survey (Labour Bureau)</li> </ul>		
<b>Enterprise Surveys:</b>		
<ul style="list-style-type: none"> <li>• (+) Better accuracy than Household surveys, in accessing industry structure, wages and other employment characteristics</li> <li>• (-) Available sample frames may not cover small, unorganized enterprises</li> <li>• (-) Self-employed and farm workers are excluded</li> <li>• E.g. - Economic Census (by MOSPI), Annual Survey of Industries (MoSPI), Unorganized Sector Surveys of Industries and Services (NSSO), Quarterly Employment Survey (QES) (Labour Bureau)</li> </ul>		
<b>Social Security Schemes:</b>		
<ul style="list-style-type: none"> <li>• (+) Wide coverage of new job additions</li> <li>• (-) Highly partial coverage and potential double-counting of jobs</li> <li>• (-) Substantial overlap across the government schemes</li> <li>• E.g. - Employees' Provident Fund Organization (EPFO), Employees' State Insurance Corporation (ESIC)</li> </ul>		
<b>Other Sources:</b>		
<ul style="list-style-type: none"> <li>• <b>Administrative data:</b> it includes tax returns and filings, pension and medical insurance programs etc. <ul style="list-style-type: none"> <li>○ (+) Good measure of formal employment</li> <li>○ (-) Partial coverage</li> <li>○ (-) Difficult to gauge addition of jobs</li> </ul> </li> <li>• <b>Data from government schemes:</b> it includes estimates via MGNREGA, MUDRA, job creations under programs such as ICDS, PMKVY, DDUGKY etc.</li> <li>• <b>Emerging sources:</b> GSTN, Big Data analytics</li> </ul>		

## 2.4. Unemployment Rate

Unemployment rate is defined as the number of people who were unable to find a job (though they were looking for jobs), as a ratio of total number of people who were looking for jobs.

### Unemployment in India

- ILO report "World Employment and Social Outlook Trends - 2018": The number of unemployed persons in India is expected to rise from 18.3 million in 2017 to 18.6 million in 2018 and 18.9 million by 2019. At the same time, the unemployment rate is expected to remain static at 3.5 per cent.
- The World Bank in its comprehensive report on India's economy opines that India needs to create a lot of salaried jobs (formal jobs) to meet the working population demands and step up its growth to a middle-income country.
- About 65 percent of the population in the country has an average age of less than 35 years. A large section of unemployed within this can become a demographic burden for India.

- The unemployment rate in urban areas reduced from 4.5% in 2004-05 to 3.4% in 2011-12. While in urban areas it reduced from 4.5% in 2004-05 to 3.4% in 2011-12.
- Unemployment rate across all the religious groups in rural areas was on the lower side compared to urban areas for both males and females.
- The **most astonishing finding** was that Christians have the highest rate of unemployment in both rural (4.5%) and urban (5.9%) areas in 2011-12.
- While the unemployment rate in rural areas has decreased for Sikhs (**lowest among all religious groups**) it has slightly increased for Muslims. At 3.3%, Hindus have the lowest unemployment rate in urban areas.
- Self-employment** is the major source of income for almost half the households, across all religious groups, in rural areas, followed by casual labour.

## 2.5. Labour Force Participation Rate

- The labour force participation rate measures the proportion of people in the working-age (16 - 64years) group who are actually available for work.
- Following are few findings from the latest report by the NSSO:
  - The labour force participation rate (LFPR) stood at 49.8 per cent in 2017-18, falling sharply from 55.9 % in 2011-12.
  - The proportion of the active labour force declined twice for females between 2011-12 and 2017-18.
  - The fall in LFPR was far more in rural areas, from 67.7% to 58.7%, than in urban areas, from 49.3% to 47.6%. The gap in LFPR has narrowed between urban and rural areas due to a decline in the active labour force in villages.
- There is a small decline in labour force participation among men in the working-age group, attributable to their **increasing preference for higher education**. The decline in labour force participation among children and, especially, women is attributable to **declining poverty**.

## 2.6. Women's Participation in the Labour Force

- The relatively low proportion of working women in India is one of the most significant obstacles to economic progress. The difference in the labour participation rate of the two main genders in India is over 50 percentage points, one of the highest among G-20 nations, according to World Bank data.
- The labour force participation rate of women in urban areas is less than the participation of women in rural areas.

### Reasons for low participation

- lower wages for women
- the inability to provide flexibility, childcare benefits and maternity leaves creates disincentives for women to seek work outside the home
- gender discrimination in Indian society - low social status of women compared to men
- security issues also hinder labour mobility among women

### Economic Consequence of Low participation of Women-

- A new study by the McKinsey Global Institute estimated that India's gross domestic product (GDP) in 2025 can be higher by as much as 60% if women's participation in the economy were on par with that of men.
- A study by Asian Development Bank (ADB) also points to the similar fact. It says that if women's participation in India increases to the level prevailing in the advanced countries, annual GDP will be higher by 4.2%.
- No country can attain its full potential if half of its human capital is unable to contribute fully to its growth and development. India is no exception.

- Job creation in Industry and Services
- Create Coastal Employment Zones to boost exports and generate high-productivity jobs.
- Enhance labour-market flexibility through reforming key laws
- Address the high and rising share of Non-Performing Assets (NPAs) in India's banks through supporting the auction of larger assets to private asset reconstruction companies (ARCs), and strengthening the State Bank of India-led ARC.
- Action points for specific sectors- Apparel, Leather and footwear, Electronics, Food processing, Gems and jewelry, Tourism, Finance, Real estate.

## 2.7. Reasons for Unemployment

India has comparative advantage in terms of cheaper and more abundant labour. But this is nullified by other factors that render them less competitive than their peers in competitor countries.

- **Defective education system** - Failing education system that creates thousands of 'unemployable graduates'. National Employability Report for Engineers (Aspiring Minds) reveals that over 80 per cent of Indian engineers are unemployable
- **Slow economic growth** - Inadequate job creation (therefore non-farm sector (such as manufacturing) needs to be encouraged as farm land is limited)
- **Lack of infrastructural development**- India is behind its competitors when it comes to infrastructure such road and logistics. The costs and time involved in getting goods from factory to destination are greater than those for other countries.
- **Poor ranking in Global Competitiveness Index**-reflected in the high average tariff that India is maintaining on its imports, low level of factor accumulation, and relatively high incremental capital-output ratio. India has slipped 10 ranks in the latest Global Competitive Index.
- **Rapid population growth** - Skilling and job creation is hard to catch up with a rapid growing population especially when the population base is large and the institutions and policies are not effective in creating quality jobs.
- **Inadequate employment planning** by government in comparison to the population growth.
- **Lack of entrepreneurship culture**- India needs to develop a culture of job-providers than being a job-seeker among its youth.

## 2.8. Consequences of Unemployment

- **Unrest in population – especially the youth**- The Jaat reservation stir in Haryana is a visible manifestation of violent form of the problem of unemployment. Similarly other locally dominant caste and communities like Patels in Gujarat, Kapu community in Andhra Pradesh, Gujjar in Rajasthan are also demanding reservation in employment.
- **Low economic growth** – The human capital of a nation is not fully utilized if the unemployment rate is high. It turns the people who are an asset into a liability. Increase in unemployment is an indicator of a depressed economy.
- **Vicious cycles of Poverty** – Unemployment and poverty feed are the two sides of the same coin with one leading to the other. It also reduces demand which in turn affect other sectors of the economy.
- **Lower social indicators & burden on government** – Unemployment leads to reduced spending on health and education by people. This affects social indicators of the population.
- **Source of exploitation** - People cannot remain completely unemployed for very long because of their desperate economic condition. Thus, they are forced to accept jobs that may be unpleasant or exploitative.

- **Loss of labour efficiency** – When a person is out of work for long, his/her efficiency decreases as a result of loss of skills and work habits.
- **Adverse effects on savings** – As the employed person have to take care of the unemployed ones in the family, their capacity to save falls.
- **Leads to inequalities of income** – Unemployment pushes people to poverty. During the period of mass unemployment, the extent of poverty and inequality of income tends to increase.

Student Notes:

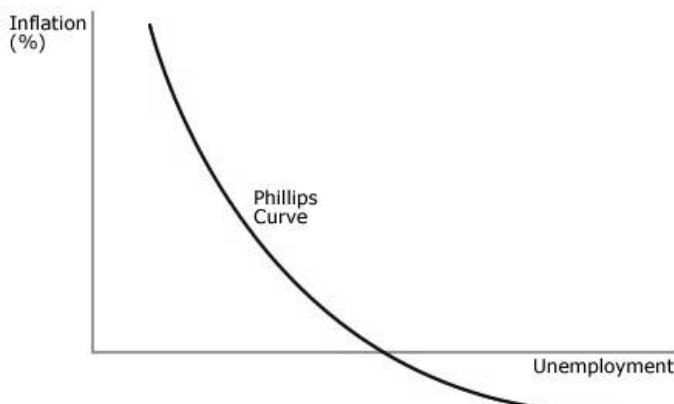
## 2.9. Steps Taken by the Government to Tackle Unemployment

India is midway through its demographic dividend – a period of time when demography gives economic growth a boost by expanding the working-age share of the population. To exploit the dividend and meeting the aspirations of people entering the labour force, India's economy needs to create enough "good jobs". Many steps have been taken for increasing employment in recent times.

- **National Rural Livelihood Mission:** Two initiatives for skill development are undertaken under this scheme:
  - **Pandit Deen Dayal Upadhyaya Grameen Kaushalya Yojana:** It is a placement linked skill development program which allows skilling in a PPP mode and assured placements in regular jobs in an organization not owned by the skilled person.
  - **Rural Self Employment and Training Institutes (RSETI):** It enables the trainee to take Bank credit and start his/her own Micro-enterprise
- **Make in India:** It aims at promoting India as an important investment destination and a global hub for manufacturing, design and innovation.
- **Startup India Programme:** It aims to build a strong eco-system for nurturing innovation and startups in the country which will drive economic growth and generate large scale employment opportunities.
- **Mudra Scheme:** It provides access to institutional finance to unfunded micro / small business units by extending loans upto Rs.10 lakh for manufacturing, processing, trading, services and activities allied to agriculture, which help in creating income generating activities and employment.
- **Stand Up India:** It provides access to institutional finance to unfunded micro / small business units by extending loans upto Rs.10 lakh for manufacturing, processing, trading, services and activities allied to agriculture, which help in creating income generating activities and employment.
- **National Manufacturing Policy** to engage in job creation numbering 10 crore work opportunities by 2022.
- **National Urban Livelihoods Mission:** It focuses on organizing urban poor in self help groups, creating opportunities for skill development leading to market-based employment and helping them to set up self-employment ventures by ensuring easy access to credit.

## 3. Relationship between Unemployment and Inflation Rate

- Professor Phillips, emphasized that there exists a close relationship between the level of unemployment and the rate of wage increase in an economy. This relationship between the two is depicted in the form of **Phillips curve**.
- It is a graphic curve, which advocates a relationship between inflation and unemployment in an economy. As per the curve there is a 'trade off' between inflation and unemployment i.e. an inverse relationship between them. The curve suggests that lower inflation, higher unemployment and higher inflation, lower unemployment.



Student Notes:

## 4. Potential Sectors for Employment Generation

At present almost half of India's population is concentrated in the agricultural sector. In fact the agricultural sector shows signs of **disguised employment** and **low productivity**. There is an urgent need to take workforce out of this sector towards manufacturing and services. Creating jobs in the latter sectors is India's central challenge. India needs to generate jobs that are formal and productive, provide bang-for-buck in terms of jobs created relative to investment, have the potential for broader social transformation, and can generate exports and growth.

Moreover, India's growth has to be led by manufacturing, not services because, among other reasons, employment elasticity is higher in manufacturing. Also, a large section of the labour force has little or no education, and cannot be employed in skilled jobs in the services sector. Nor can they be easily skilled, given their lack of basic education. Outside agriculture, they can only be employed in low-skill jobs in the manufacturing sector.

### Top 10 job-generators

The construction sector has accounted for more than a third of new jobs in post-liberalization India

Sectors	Share of new non-farm jobs created between			Productivity per worker (Rs1,000/worker, in 2015-16)
	1980-81 and 1990-91 (in %)	1990-1991 and 2015-16 (in %)	Share in total workforce in 2015-16 (in %)	
Construction	20.13	<b>35.74</b>	14.40	126.56
Trade	24.84	<b>14.56</b>	10.04	235.78
Miscellaneous services (includes real estate brokerage)	7.38	<b>8.43</b>	5.02	415.53
Transport and storage	9.78	<b>7.44</b>	4.29	255.39
Education	3.13	<b>6.26</b>	3.22	222.13
Business services	1.47	<b>5.99</b>	2.18	811.68
Hotels and restaurants	2.49	<b>3.75</b>	1.89	123.53
Gems, jewellery and misc. manufacturing	3.02	<b>2.46</b>	1.43	87.19
Food products, beverages and tobacco	4.92	<b>2.28</b>	2.42	158.72
Financial services	2.42	<b>2.26</b>	1.11	1259.52
Health and social work	0.81	<b>2.07</b>	1.08	290.04

Note: only sectors which account for at least 1% of the total workforce have been considered here.

Source: KLEMS India Database, RBI, Mint calculations

Meeting the challenge of jobs may require paying attention to labour-intensive sectors. The apparel and leather sectors meet many desirable attributes for policy attention: bang- for buck for creating jobs, especially for women, opportunities for exports and growth. Nearly every successful economic growth take-off in post-war history in East Asia has been associated with rapid expansion in clothing and footwear exports in the early stages. Apparels and Leather sectors offer tremendous opportunities for creation of jobs, especially for women.

Rising labor costs means that China is gradually vacating its dominant position in these sectors, affording India an opportunity. To not cede this space to competitors such as Vietnam and Bangladesh will require easing restrictions on labor regulations, negotiating FTAs with major partners such as the EU and UK, and ensuring that the GST rationalizes current tax policy that can discriminate against dynamic sectors.

Student Notes:

### **25 focus sectors under MSME**

'Make in India' aims at projecting India as an investment destination and develop it as a global hub for manufacturing, design and innovation. The 'Make in India' initiative does not target manufacturing sector alone, but also aims at promoting entrepreneurship in the country. Under the initiative various components have been identified which will lead to creation of a positive investment climate. These components involve improvement in Ease of Doing Business, creation of modern infrastructure, opening of new Sectors for FDI and change in the mindset of government agencies from being regulators to facilitators.

As part of Make in India initiative, 25 focus sectors have been identified in which there is an Action Plan which has been approved to encourage and promote investments in those sectors. These sectors include Textiles, Tourism and Hospitality, Leather, Pharmaceuticals, Electronic System Design and Manufacturing, Food processing, construction, Aviation etc.

### **Employment prospects in India's IT Sector: Robust Outlook**

Indian IT sector employment prospects, both in the near and long-term are expected to be broadly positive and encouraging for the future. India IT companies currently serve two thirds of the fortune 500 companies and have created 40 lakhs direct jobs in India.

India's total software product market grew at 9.5% in FY2017 to reach USD 7 billion. In comparison, the domestic market grew much faster, at 10.4%, reaching USD 4.8 billion.

The emerging and promising digital economy in the country is going to create a very powerful potential for job creation. The Government is encouraging greater stress on cyber security and this will lead to greater focus on innovation, research and thus significant potential for job creation.

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# POVERTY & INEQUALITY

Student Notes:

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# 1. Poverty

Student Notes:

*"Poverty is the worst form of violence."*

This quote by Mahatma Gandhi precisely sums up the overall impact of poverty on the lives of the poor. It places many disabilities hampering the development of the poor by restricting their freedoms and trapping generations in poverty if adequate level of support is not provided to them.

The natural questions that rise are- What is poverty? What are its causes? How is poverty measured? What steps have been taken to mitigate poverty? What more needs to be done? We will find answers to these in subsequent sections of this document.

## 1.1. What is Poverty?

Poverty, in simplest terms, is a condition where people are **unable to fulfil basic needs** of life such as- food, clothes, shelter etc. **for want of money**. Over the time, poor access to healthcare services, education and poor standard of living have also come to be attributed to poverty.

## 1.2. Types of Poverty

Poverty is defined in either relative or absolute terms. **Absolute poverty** measures poverty in relation to the amount of money necessary to meet basic needs such as food, clothing, and shelter. **United Nations** defines it as a condition characterized by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information. It depends not only on income but also access to service. The **World Bank** has defined the absolute poverty line as the percentage of population of country living on **less than \$1.90 a day (PPP)** at constant prices at 2011 price levels.

However, the concept of absolute poverty is not concerned with broader quality of life issues or with the overall *level of inequality* in society. The concept therefore fails to recognize that individuals have important social and cultural needs. This, and similar criticisms, led to the development of the **concept of relative poverty**.

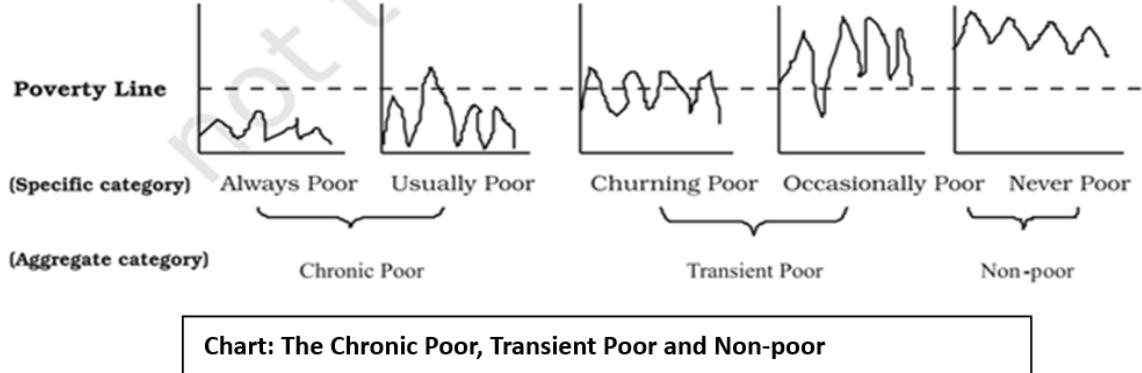
**Relative poverty** defines poverty in relation to the economic status of other members of the society: people are poor if they fall below prevailing standards of living in a given societal context. One of its criticisms is that it is merely a *measure of inequality*, using the term 'poverty' for it is misleading. For example, if everyone in a country's income doubled, it would not reduce the amount of 'relative poverty' at all. However, others have pointed out that **the problem of poverty in the industrialized nations today is mostly a problem of relative poverty**. That after a certain minimum level of economic development the effects of poverty is not seen in any absolute form but the effects of the contrast, daily perceived, between the lives of the poor and the lives of those around them. Nonetheless, poverty is not equal to inequality and both are two distinct concepts affecting each other which we will deal with later in this document.

### Other Ways of Categorizing the Poor-

**Chronic Poor-** People who are always poor and those who are usually poor but who may sometimes have a little more money (example: casual workers) are grouped together as the chronic poor.

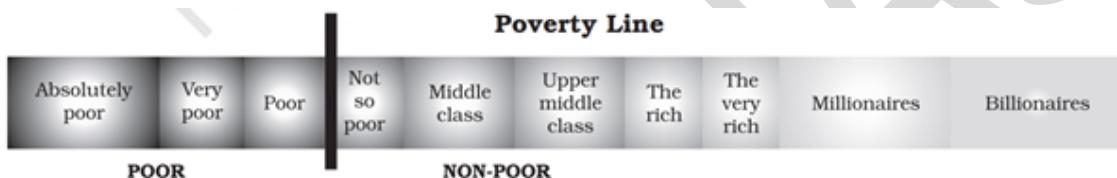
**Churning Poor-** Another group are the churning poor who regularly move in and out of poverty (example: small farmers and seasonal workers).

**Occasionally Poor-** Those who are rich most of the time but may sometimes have a patch of bad luck. They are called the transient poor.



### 1.3. Measuring Poverty

For the purpose of defining poverty, we divide people into two categories; the poor and the non-poor and the poverty line separates the two. However, there are many kinds of poor; the absolutely poor, the very poor and the poor. Similarly, there are various kinds of non-poor; the middle class, the upper middle class, the rich, the very rich and the absolutely rich. Think of this as a line or continuum from the very poor to the absolutely rich with the poverty line dividing the poor from the non-poor.



**The Poverty Line:** Poverty Line is a monetary threshold under which an individual is considered to be living in poverty. National Sample Survey Organization is the institution which collects data regarding estimation of poverty in India. There are many ways of measuring poverty. One way is to determine it by the monetary value (per capita expenditure) of the minimum calorie intake that was estimated at 2,400 calories for a rural person and 2,100 calories for a person in the urban area. Based on this, in 2011-12, the poverty line was defined for rural areas as consumption worth Rs 816 per person a month and for urban areas it was Rs 1,000. Thus the government uses Monthly Per Capita Expenditure (MPCE) as proxy for income of households to identify the poor.

#### Poverty Estimation in Pre-independent India

In pre-independent India, Dadabhai Naoroji was the first to discuss the concept of a Poverty Line. He used the menu for a prisoner and used appropriate prevailing prices to arrive at what may be called 'jail cost of living'. However, only adults stay in jail whereas, in an actual society, there are children too. He, therefore, appropriately adjusted this cost of living to arrive at the poverty line.

#### Poverty Estimation in Independent India

In 1962, the Planning Commission constituted a working group to estimate poverty nationally, and it formulated separate poverty lines for rural and urban areas – of Rs 20 and Rs 25 per capita per year respectively. VM Dandekar and N Rath made the first systematic assessment of poverty in India in 1971, based on National Sample Survey (NSS) data from 1960-61. They argued that the poverty line must be derived from the expenditure that was adequate to provide 2250 calories per day in both rural and urban areas. This generated debate on minimum calorie consumption norms while estimating poverty and variations in these norms based on age and sex.

**Alagh Committee (1979):** In 1979, a task force constituted by the Planning Commission for the purpose of poverty estimation, chaired by YK Alagh, constructed a poverty line for rural and urban areas on the basis of nutritional requirements.

**Lakdawala Committee (1993):** In 1993, an expert group constituted to review methodology for poverty estimation, chaired by DT Lakdawala, made the following suggestions:

1. Consumption expenditure should be calculated based on calorie consumption as earlier;
2. State specific poverty lines should be constructed and these should be updated using the Consumer Price Index of Industrial Workers (CPI-IW) in urban areas and Consumer Price Index of Agricultural Labour (CPI-AL) in rural areas;
3. Discontinuation of 'scaling' of poverty estimates based on National Accounts Statistics. This assumes that the basket of goods and services used to calculate CPI-IW and CPI-AL reflect the consumption patterns of the poor.

**Tendulkar Committee (2009):** In 2005, another expert group to review methodology for poverty estimation, chaired by Suresh Tendulkar, was constituted by the Planning Commission to address the following three shortcomings of the previous methods: (i) consumption patterns were linked to the 1973-74 poverty line baskets (PLBs) of goods and services, whereas there were significant changes in the consumption patterns of the poor since that time, which were not reflected in the poverty estimates; (ii) there were issues with the adjustment of prices for inflation, both spatially (across regions) and temporally (across time); and (iii) earlier poverty lines assumed that health and education would be provided by the State and formulated poverty lines accordingly.

It recommended four major changes:

1. Using *Mixed Reference Period* (MRP) based estimates, as opposed to Uniform Reference Period (URP) based estimates that were used in earlier methods for estimating poverty.
2. A uniform poverty line basket (PLB) across rural and urban India;
3. A change in the price adjustment procedure to correct spatial and temporal issues with price adjustment; and
4. Incorporation of private expenditure on health and education while estimating poverty.

It based its calculations on the consumption of the following items: cereal, pulses, milk, edible oil, non-vegetarian items, vegetables, fresh fruits, dry fruits, sugar, salt & spices, other food, intoxicants, fuel, clothing, footwear, education, medical (non-institutional and institutional), entertainment, personal & toilet goods, other goods, other services and durables. The Committee computed new poverty lines for rural and urban areas of each state. To do this, it used data on value and quantity consumed of the items mentioned above by the population that was classified as poor by the previous urban poverty line. It concluded that the all India poverty line was Rs 446.68 per capita per month in rural areas and Rs 578.80 per capita per month in urban areas in 2004-05.

The following table outlines the manner in which the percentage of population below the poverty line changed after the application of the Tendulkar Committee's methodology.

Committee	Rural	Urban	Total
Lakdawala Committee	28.3	25.7	27.5
Tendulkar Committee	41.8	27.5	37.2

**Table: Percentage of population below poverty line calculated by the Lakdawala Committee and the Tendulkar Committee for the Year 2004-05**

The Committee also recommended a new method of updating poverty lines, adjusting for changes in prices and patterns of consumption, using the consumption basket of people close to the poverty line. Thus, the estimates released in 2009-10 and 2011-12 use this method instead of using indices derived from the CPI-AL for rural areas and CPI-IW for urban areas as

was done earlier. Table below outlines the **poverty lines computed using the Tendulkar Committee methodology** for the years 2004-05, 2009-10 and 2011-12.

Student Notes:

Year	Rural	Urban
2004-05	446.7	578.8
2009-10	672.8	859.6
2011-12	816.0	1000.0

**Table: National poverty lines (in Rs per capita per month) for the years 2004-05, 2009-10 and 2011-12**

**Rangarajan Committee:** In 2012, the Planning Commission constituted a new expert panel on poverty estimation, chaired by C Rangarajan. The Rangarajan committee estimation is based on an independent large survey of households by Center for Monitoring Indian Economy (CMIE). It has also used different methodology wherein a household is considered poor if it is unable to save.

The methods also include certain normative levels of adequate nourishment, clothing, house rent, conveyance, education and also behavioral determination of non-food expenses. It also considered average requirements of calories, protein and fats based on ICMR norms differentiated by age and gender.

According to the report of the committee, the new poverty line was set **at Rs 32 in rural areas and Rs 47 in urban areas**. The earlier poverty line figure was Rs 27 for rural India and Rs 33 for Urban India (see following table).

	No. of Rural poor	No. of urban poor	Total	Percent of poor in the year 2011-12
Rangarajan Committee	260.5 million	102.5 million	363 million	<b>29.5%</b>
Tendulkar committee	216.5 million	52.8 million	269 million	<b>21.9%</b>

**Hashim Committee-** The Hashim Committee in its 2012 report recommended three stage identification process to identify the families living Below Poverty Line in **urban areas** which include automatic exclusion, automatic inclusion and scoring index of the remaining urban families in this order. The methodology recommended mainly emphasizes on capturing residential, social and occupational vulnerabilities.

**Saxena Committee-** Dr. N.C. Saxena Committee was set up by the Ministry of Rural Development to advise it on the **suitable methodology for BPL Census and not for estimation of poverty**. However, in the Report submitted by the Expert Group on 21st August 2009 it was mentioned that the percentage of people entitled to BPL status should be revised upwards to at least 50%.

## 1.4. Multidimensional Poverty

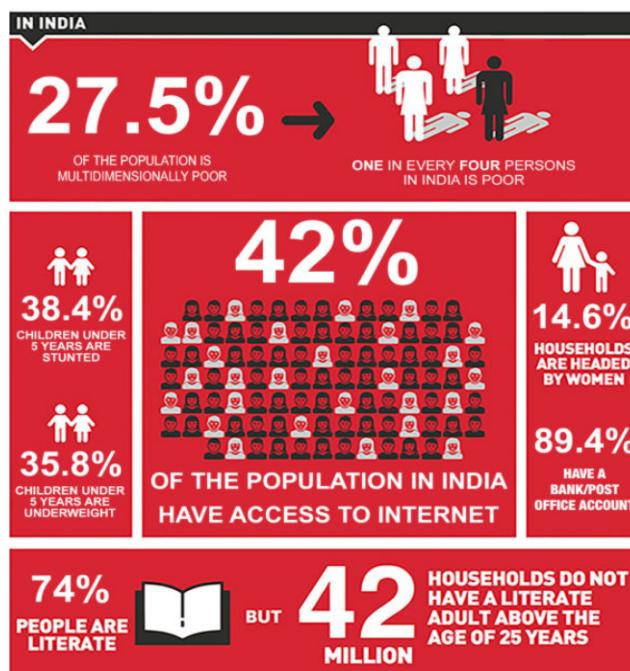
*"What use is equality before law if there is no equality in fact? Freedoms guaranteed by Article 19 will become empty slogans for a person who has no food to eat, no roof under which he can take shelter and no clothes to wear; and what is the use of vote to a person who is hungry and kept illiterate and denied the knowledge required to participate in the affairs of the State?" - Justice K. S. Hedge.*

The above quote drives home the point that poverty is not only economic hardship but it affects other aspects of life hampering overall growth of poor. The United Nations in the Sustainable Development Goal 1, also, calls **to eradicate poverty in all its forms everywhere**. In this context, traditional poverty measures – often calculated by numbers of people who earn less than a certain income level – shed light on how little people earn but not on whether or how they experience poverty in their day-to-day lives.

The **Multidimensional Poverty Index** helps answer that call, providing immensely valuable information for all those seeking to understand what poverty looks like for a particular place or group of people, and for those working on the policies to help people escape poverty now and into the future.

#### About Multidimensional Poverty Index

- It was developed in 2010 by the **Oxford Poverty and Human Development Initiative (OPHI)** and the **United Nations Development Programme (UNDP)**.
- The global Multidimensional Poverty Index (MPI) is an **international measure of acute multidimensional poverty** covering over 100 developing countries.
- The MPI goes **beyond income as the sole indicator for poverty**, by exploring the ways in which people experience poverty in their **health, education, and standard of living**. It captures **both the incidence and intensity of poverty**.
  - The MPI assesses **poverty at the individual level**.
  - If someone is deprived in three or more of ten (weighted) indicators, the global index identifies them as '**MPI poor**', and the extent – or intensity – of their poverty is measured by the percentage of deprivations they are experiencing.
- The global MPI can be used to create a **comprehensive picture of people living in poverty, and permits comparisons both across countries and world regions**, and within countries by ethnic group, urban/rural area, subnational region, and age group, as well as other key household and community characteristics.
- It **complements the international \$1.90 a day poverty rate** by showing the nature and extent of overlapping deprivations for each person.
- The **2019 update of the global MPI** covers 101 countries—31 low income, 68 middle income and 2 high income.



Dimensions of Poverty	Indicator	Deprived if living in the household where...	Weight
Health	Nutrition	An adult under 70 years of age or a child is undernourished.	1/6
	Child mortality	Any child under the age of 18 years has died in the five years preceding the survey.	1/6
Education	Years of Schooling	No household member aged 10 years or older has completed six years of schooling.	1/6
	School Attendance	Any school-aged child is not attending school up to the age at which he/she would complete class 8.	1/6
Standard of living	Cooking Fuel	The household cooks with dung, wood, charcoal or coal.	1/18
	Sanitation	The household's sanitation facility is not improved (according to SDG guidelines) or it is improved but shared with other households.	1/18
	Drinking Water	The household does not have access to improved drinking water (according to SDG guidelines) or safe drinking water is at least a 30-minute walk from home, round trip.	1/18
	Electricity	The household has no electricity.	1/18
	Housing	Housing materials for at least one of roof, walls and floor are inadequate: the floor is of natural materials and/or the roof and/or walls are of natural or rudimentary materials.	1/18
	Assets	The household does not own more than one of these assets: radio, TV, telephone, computer, animal cart, bicycle, motorbike or refrigerator, and does not own a car or truck.	1/18

Student Notes:

- **Improvement**
  - India lifted **271 million people out of poverty (down to 27.5 per cent from 54.7 per cent) between 2006 and 2016**, recording the fastest reductions in the multidimensional poverty index values during the period with strong improvements in areas such as “assets, cooking fuel, sanitation and nutrition.
  - **India's MPI value reduced from 0.283 in 2005-06 to 0.123 in 2015-16.**
  - Among the four Indian states with the most acute MPI — Bihar, Jharkhand, Uttar Pradesh and Madhya Pradesh — **Jharkhand has made the most progress.**
  - India **reduced**:
    - ✓ **deprivation in nutrition** from 44.3% in 2005-06 to 21.2% in 2015-16,
    - ✓ **child mortality** from 4.5% to 2.2%,
    - ✓ **people deprived of cooking fuel** from 52.9% to 26.2%,
    - ✓ **deprivation in sanitation** from 50.4% to 24.6%,
    - ✓ **deprivation of drinking water** from 16.6% to 6.2 %,
    - ✓ **access to electricity** as deprivation from 29.1% to 8.6%,
    - ✓ **housing** from 44.9% to 23.6%
  - Overall, India was among three countries where **poverty reduction in rural areas outpaced that in urban areas** is an indicator of pro-poor development.

#### Limitations of MPI

- The indicators **may not reflect capabilities** but instead reflect outputs (such as years of schooling) or inputs (such as cooking fuel).
- The health data are **relatively weak and overlook some groups' deprivations**, especially for nutrition.
- In some cases **careful judgments were needed to address missing data**.
- **Intra-household inequalities may be severe**, but these could not be reflected.
- MPI goes well beyond a headcount ratio to include the intensity of poverty, it **does not measure inequality among the poor**, although decompositions by groups can be used to reveal group-based inequalities.
- Estimates presented are based on publicly available data and cover various years between 2007 and 2018, which limits direct cross-country comparability.

## 1.5. What Causes Poverty

#### Economic Reasons

- Widespread unemployment and lack of gainful employment
- Lack of resources and wealth and inequality in wealth distribution
- Relatively lower rate of growth of income as compared to inflation
- Lack of capital and skill leading to a vicious circle of poverty
- Lower Per Capital Income
- Lack of professional and technical education and inadequate growth of industries
- Lower productivity in agriculture and industries
- Low level of wage rates
- Agriculture being over-burdened due to lack of alternative employment

#### Historical Reasons

- Exploitative colonial rule destroyed local industries i.e. de-industrialization and turned India into exporter of raw materials and imported of finished goods
- Destruction of rural and urban handicrafts and small scale industries
- Drain of Wealth by colonial government

- High rate of population growth
- Social discrimination – caste system and gender gap
- Regional disparity among different states
- High out of pocket expenditure on healthcare services
- Illiteracy and lack of skill labour

#### Government Policies

- Giving more importance to heavy and capital industry after independence while majority of the population was engaged in agriculture
- Adopting the policies followed in western developed country without adapting them to suit Indian needs

#### Miscellaneous Reasons

- Frequent destruction of wealth due to natural disasters in some regions like floods etc.
- Corruption in implementing poverty alleviation schemes

## 1.6. Policies and Programmes Aimed At Poverty Alleviation

The Indian Constitution and five year plans state social justice as the primary objective of the developmental strategies of the government.

The government's approach to poverty reduction is of three dimensions. The *first one is growth oriented approach*. It is based on the expectation that the effects of economic growth — rapid increase in gross domestic product and per capita income — would spread to all sections of society and will trickle down to the poor sections also. This was the major focus of planning in the 1950s and early 1960s. However, this approach could not produce desired outcome. Economists state that the benefits of economic growth have not trickled down to the poor.

The *second approach* is based on the *creation of additional assets by means of work generation*. This approach has been initiated from the Third Five Year Plan (1961-66) and progressively enlarged since then. One of the noted programmes initiated in the 1970s was *Food for Work*.

Examples of self-employment programmes are

- Rural Employment Generation Programme (REGP)
- Prime Minister's Rozgar Yojana (PMRY)
- Swarna Jayanti Shahari Rozgar Yojana (SJSRY)

These programs aim at providing financial help to create self-employment opportunities for unemployed. Additionally, SJSRY also aims at creating wage employment.

- Swarnajayanti Gram Swarozgar Yojana (SGSY) - Earlier, under self-employment programmes, financial assistance was given to families or individuals. Since the 1990s, this approach has been changed. Now those who wish to benefit from these programmes are encouraged to form *self-help groups (SHGs)*. Initially they are encouraged to save some money and lend among themselves as small loans. Later, through banks, the government provides partial financial assistance to SHGs which then decide whom the loan is to be given to for self-employment activities. This has now been restructured as **Deendayal Antyodaya Yojana-National Rural Livelihoods Mission (DAY-NRLM)**. A similar programme called **Deendayal Antyodaya Yojana- National Urban Livelihoods Mission (DAY-NULM)** has also been in place for urban poor.
- **Mahatma Gandhi National Rural Employment Guarantee Act**- This has been termed as the biggest scheme for poverty alleviation. In August 2005, the Parliament passed this Act to

- provide guaranteed wage employment to every rural household whose adult volunteer is to do unskilled manual work for a minimum of 100 days in a year.
- **PM Kisan Nidhi Scheme**- As it uses direct income support (DIS), it marks the beginning of a new policy direction. It can reach about 86 per cent of farm families compared to loan waivers that can benefit a maximum of 30 per cent of the peasantry and higher MSP policy which can benefit a maximum of 10-15 per cent of peasantry.

The *third approach* to addressing poverty is to ***provide minimum basic amenities to the people***. This has been sought to achieve through provision of food grains at subsidised rates, education, health, water supply and sanitation. Programmes under this approach are expected to supplement the consumption of the poor, create employment opportunities and bring about improvements in health and education. One can trace this approach from the **Fifth Five Year Plan**- “even with expanded employment opportunities, the poor will not be able to buy for themselves all the essential goods and services. They have to be supplemented up to at least certain minimum standards by social consumption and investment in the form of essential food grains, education, health, nutrition, drinking water, housing, communications and electricity.”

Three major programmes that aim at improving the food and nutritional status of the poor are Public Distribution System, Integrated Child Development Scheme and Midday Meal Scheme. Pradhan Mantri Gram Sadak Yojana, Pradhan Mantri Gramodaya Yojana, Valmiki Ambedkar Awas Yojana, Pradhan Mantri Awas Yojana are also attempts in developing infrastructure and housing conditions.

The government also has a variety of other social security programmes to help a few specific groups. National Social Assistance Programme is one such programme initiated by the central government. Under this programme, elderly people who do not have anyone to take care of them are given pension to sustain themselves. Poor women who are destitute and widows are also covered under this scheme. The government has also introduced a few schemes to provide health insurance to poor people. From 2014, a scheme called Pradhan Mantri Jan-Dhan Yojana is available in which are encouraged to open bank accounts. Besides promoting savings habit, this scheme intends to transfer all the benefits of government schemes and subsidies to account holders directly. Each bank account holder is also entitled to Rs. 1 lakh accident insurance and Rs. 30,000 life insurance cover.

## 1.7. Poverty Alleviation Programmes- A Critical Assessment

Identifying the multidimensional nature of poverty, various schemes are being implemented to address various facets of poverty. These schemes have given some good results as can be seen from following figures-

- The number of poor facing multidimensional poverty in India has nearly halved from 54.7% in 2005-06 to 27.5% in 2015-16.
- The ratio of poverty in India as per Tendulkar Committee stood at 21.9 % in 2011-12.
- The percentage of absolute poor in some states is well below the national average.
- There is improvement in terms of per capita income and average standard of living
- Housing has been provided to a sizeable population under various housing schemes.

However, despite various strategies to alleviate poverty, hunger, malnourishment, illiteracy and lack of basic amenities continue to be a common feature in many parts of India. Though the poverty alleviation programs have evolved progressively since independence but no radical change is observed in their character. None resulted in any radical change in the ownership of assets, process of production and improvement of basic amenities to the needy.

**Major areas of concern which prevent successful implementation of these programs are-**

- Unequal distribution of land and other assets, due to which the benefits from direct poverty alleviation programmes are appropriated by the non-poor.

- Compared to the magnitude of poverty, the amount of resources allocated for these programmes is not sufficient.
- These programmes depend mainly on government and bank officials for their implementation. Since such officials are ill motivated, inadequately trained, corruption prone and vulnerable to pressure from a variety of local elites, the resources are inefficiently used and wasted.
- There is also non-participation of local level institutions in programme implementation.
- High growth alone is not sufficient to reduce poverty. Without the active participation of the poor, successful implementation of any programme is not possible.
- Government policies also have proved inadequate to address the vast majority of vulnerable people who are living on or just above the poverty line.

Student Notes:

## 1.8. Way Forward

The government should work towards effective implementation of various ongoing programs by-

- Sufficient allocation of resources
- Providing adequate training and incentives to government and bank officials implementing these programs
- Ensuring participation of local government and institutions
- Ensuring active participation of poor in these programs
- Effective distribution of wealth and benefits of economic growth

It has also been realized that poverty can effectively be eradicated only when the poor start contributing to growth by their active involvement in the growth process. This is possible through a process of social mobilisation, encouraging poor people to participate and get them empowered. This will also help create employment opportunities which may lead to increase in levels of income, skill development, health and literacy. Moreover, it is necessary to identify poverty stricken areas and provide infrastructure such as schools, roads, power, telecom, IT services, training institutions etc.

## 1.9. Poverty: Last One Decade

One of the great achievements in recent decades has been the huge reduction in the numbers of people living in extreme poverty, defined by the World Bank as \$1.90 per person per day. India has been able to lift 270 million people out of poverty facing multidimensional poverty, thus reducing its poor population by nearly half. Yet new evidence from the World Bank shows that the rate of poverty reduction has halved since 2013. Extreme poverty is actually increasing in sub-Saharan Africa. This new evidence also shows that much of humanity has barely escaped poverty, with just under half the world's population – 3.4 billion people – subsisting on less than \$5.50 a day, which is the World Bank's new poverty line for extreme poverty in upper-middle-income countries. The Bank finds that women are more often among the poorest people, particularly during their reproductive years, because of the level of unpaid care work they are expected to do. This is a direct result of inequality, and of prosperity accruing disproportionately to those at the top for decades.

### 1.9.1. Nobel Prize in Economics

Indian-American economist **Abhijit Banerjee** has won the **2019 Nobel Prize in Economics**, along with **Esther Duflo** of the Massachusetts Institute of Technology and **Michael Kremer** of Harvard University “**for their experimental approach to alleviating global poverty.**” Their new experiment-based approach- called **Randomised Control Trials (RCTs)** has transformed development economics.

## What are Randomised Control Trials?

Student Notes:

- RCTs break larger questions about policy interventions into smaller, easier to test studies.
- For example, the big questions like ‘poverty’ are broken down into its various dimensions like- poor health, inadequate education, etc.
- Within poor health, they look at nutrition, provisioning of medicines, and vaccination, etc. Within vaccinations, they try to conduct various experiments and, based on such “evidence”, decide what needs to be done.
- This is extremely relevant when it comes to framing policy in low- and middle-income countries, where state capacity is quite limited and it is particularly necessary to be able to prioritise more effective policies over less.

## How RCTs Work?

- For instance, if one wanted to understand whether providing a mobile vaccination van and/or a sack of grains would incentivise villagers to vaccinate their kids, then under an RCT, village households would be divided into four groups A, B, C and D.
  - Group A would be provided with a mobile vaccination van facility,
  - Group B would be given a sack of food grains,
  - Group C would get both, and
  - Group D would get neither.
- Households would be chosen at **random** to ensure there was no bias, the groups are equal, and that any difference in vaccination levels was essentially because of the “intervention”.
- Group D is called the “**control**” group while others are called “**treatment**” groups.
- Such an experiment would not only **show whether a policy initiative works**, but would also provide a **measure of the difference it brings about**.
- It would also show what happens when more than one initiatives are combined. This would help policymakers to have the evidence before they choose a policy.

### Is there a flip side to RCTs?

- Randomly assigning people or households makes it likely that the groups are equivalent, but randomisation **“cannot guarantee”** it.
- So, one group may perform differently from the other, not because of the “treatment” that it has been given, but because it has more women or more educated people in it.
- Also, RCTs do not guarantee if something that worked in Kerala will work in Bihar, or if something that worked for a small group will also work at large scale.

## Some studies using RCTs

- **On vaccination:**
  - **Problem:** Low service quality one reason why poor families invest so little in preventive measures. For example, the staff at the health centres that are responsible for vaccinations are often absent from work.
  - **Solution:** Mobile vaccination clinics, where the care staff were always on site – could fix this problem. Vaccination rates tripled in the villages that were randomly selected to have access to these clinics, at 18 per cent compared to 6 per cent.
  - This increased further, to 39 per cent, if families received a bag of lentils as a bonus when they vaccinated their children.
  - Because the mobile clinic had a low level of fixed costs, the **total cost per vaccination actually halved, despite the additional expense of the lentils**.
- **On education:**
  - **Problem:** In many poor country’s schools, curricula and teaching do not correspond to pupils’ needs. There is a high level of absenteeism among teachers and educational institutions are generally weak.
  - **Solutions:** Reason for high level of absenteeism **was lack of clear incentives and accountability for teachers**. One way of boosting the teachers’ motivation was to **employ them on short-term contracts that could be extended if they had good results**.
  - Experiments found that pupils who had teachers on short-term contracts had significantly better test results, but that having fewer pupils per permanently employed teacher had no significant effects.

- Studies suggested that additional resources are, of limited value whereas, **targeted support for weak pupils had strong positive effects**, even in the medium term.
- **On health subsidy:**
  - **Question:** Whether medicine and healthcare should be charged for and, if so, what they should cost?
  - **Experiment:** A field experiment showed how the demand for deworming pills for parasitic infections was affected by price. They found that 75 per cent of parents gave their children these pills when the medicine was free, compared to 18 per cent when they cost less than a US dollar, which is still heavily subsidised.
  - **Inference:** Poor people are extremely price-sensitive regarding investments in preventive healthcare.

## 2. Inequality

*"You need some inequality to grow... but extreme inequality is not only useless but can be harmful to growth because it reduces mobility and can lead to political capture of our democratic institutions."* – Thomas Piketty.

The above quote points towards the perils of rising inequality which as per various reports is on an upward trajectory worldwide. There is widespread concern that economic growth has not been fairly shared, and that the economic crisis has only widened the gap between rich and poor. Similar concerns were voiced by former US President Barack Obama in 2013 when he termed **inequality as 'the defining challenge of our time'**.

### 2.1. What is inequality?

The Cambridge dictionary describes inequality as “the unfair situation in society when some people have more opportunities, etc. than other people”. The United Nations describes it as “the state of not being equal, especially in status, rights and opportunities”. While the term itself is quite vast and has various interpretations, **here, we are concerned with “economic inequality” and its relationship with poverty**. Economic inequality generally refers to the disparity of wealth or income between different groups or within a society. Often characterized by the aphorism **“the rich get richer while the poor get poorer,”** the phrase often refers more specifically to **the gap in income or assets between the poorest and richest segments of an individual nation.**

**Income inequality** is the inequality in and disparity in the incomes commanded by the top percentile of the population in comparison to the bottom percentiles, while **wealth inequality** measures look to do the same but by calculating disparities in wealth instead of income.

Economic inequality is used to measure relative poverty with the help of **Lorenz curve**.

### 2.2. Significance of Economic Inequality

Even though the basic concept of inequality has entered the public consciousness, the effects of highly concentrated wealth are hotly debated and poorly understood by observers. Research attributes advantages and disadvantages to pronounced levels of economic inequality. Global trends have led to an increasing concentration of wealth in an increasingly small number of hands. Some economists conclude inequality is beneficial overall for stimulating growth, improves the quality of life for all members of a society, or is merely a necessary part of social progress. Other economists claim wealth concentrations create perpetually oppressed minorities, exploit disadvantaged populations, hinder economic growth, and lead to numerous social problems.

## 2.3. Measuring Economic Inequality

Student Notes:

### ➤ Indices

#### A. Gini Coefficient/ Gini Index

Gini coefficient is the most widely used measure of inequality. It is based on Lorenz curve. The Lorenz curve plots percentiles of the population on the horizontal axis and corresponding cumulative income or wealth on the vertical axis.

The Lorenz curve is often accompanied by a straight diagonal line with a slope of 1, which represents perfect equality in income or wealth distribution; the Lorenz curve lies beneath it, showing the actual distribution. **Gini coefficient is the area between the straight line and the curved line which is expressed as a ratio of the area under the straight line.** A coefficient of 1 means that one person earns all of the income or holds all of the wealth, while zero represents that everyone has the same income, i.e. perfect equality.

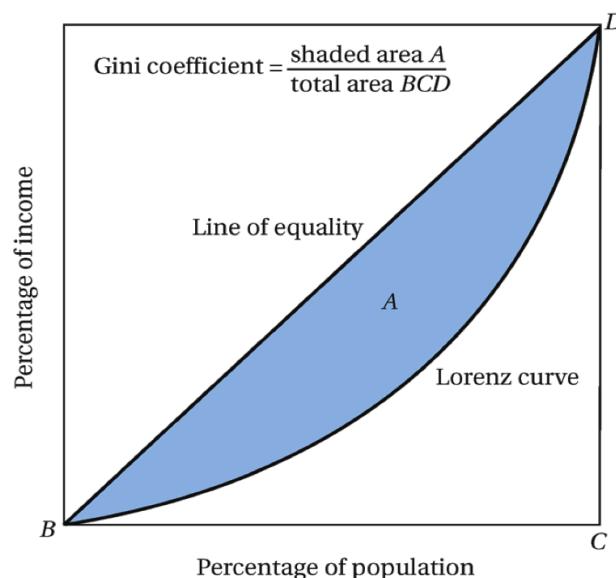
World Bank data reveals that inequality in India is on the rise with all-India Gini coefficient increasing from 0.30 in 1983 to 0.36 in 2011-12. As per United Nations, the Gini coefficient of income inequality for India fell from 0.36 in 2010 to 0.33 in 2015.

#### Shortcomings of Gini Coefficients

Though useful for analyzing economic inequality, the Gini coefficient has some shortcomings. Its main limitation is that it is **not easily decomposable or additive**. Also, it **does not respond** in the same way to income transfers between people in opposite tails of the income distribution as it does to transfers in the middle of the distribution. Furthermore, very **different income distributions** can present the same Gini coefficient. It also **does not show demographic variations** among subgroups within the distribution, such as the distribution of incomes across age, race, or social groups. In that vein, **understanding demographics** can be important for understanding what a given Gini coefficient represents. For example, a large retired population pushes the Gini higher.

Also, the metric's accuracy is dependent on **reliable GDP and income data**. Shadow economies and informal economic activity are present in every country. **Informal economic activity** tends to represent a larger portion of true economic production in developing countries and at the lower end of the income distribution within countries. In both cases this means that the Gini index of measured incomes will overstate true income inequality. Accurate wealth data is even more difficult to come by due to the popularity of tax havens.

#### B. Atkinson's inequality measure (or Atkinson's index)



This is the most popular **welfare-based measure of inequality**. It presents the percentage of **total income** that a given society would have to forego in order to have more equal shares of income between its citizens. This measure depends on the degree of society aversion to inequality (a theoretical parameter decided by the researcher), where a higher value entails greater social utility or willingness by individuals to accept smaller incomes in exchange for a more equal distribution. An important feature of the Atkinson index is that it can be decomposed into within and between-group inequality. Moreover, unlike other indices, it can provide welfare implications of alternative policies and allows the researcher to include some normative content to the analysis

#### C. Hoover index (also known as the Robin Hood index, Schutz index or Pietra ratio)

It shows the proportion of all income which would have to be redistributed to achieve a state of perfect equality. In other words, the value of the index approximates the share of total income that has to be transferred from households above the mean to those below the mean to achieve equality in the distribution of incomes. Higher values indicate more inequality and that more redistribution is needed to achieve income equality. It can be graphically represented as the maximum vertical distance between the Lorenz curve and the 45-degree line that represents perfect equality of incomes.

#### D. Theil index and General Entropy (GE) measures

The values of the GE class of measures vary between zero (perfect equality) and infinity (or one, if normalized). A key feature of these measures is that they are fully decomposable, i.e. inequality may be broken down by population groups or income sources or using other dimensions, which can prove useful to policy makers. Another key feature is that researchers can choose a parameter  $\alpha$  that assigns a weight to distances between incomes in different parts of the income distribution. For lower values of  $\alpha$ , the measure is more sensitive to changes in the lower tail of the distribution and, for higher values, it is more sensitive to changes that affect the upper tail. The most common values for  $\alpha$  are 0, 1, and 2. When  $\alpha=0$ , the index is called

Student Notes:

**WEALTH INEQUALITY IN INDIA**  
A STORY THROUGH THE FACTS

- 1 AS A SHARE OF NATIONAL WEALTH**  
The top 10% of the Indian population holds 77.4% of the total national wealth.  
Just the top 1% holds 51.53% of the national wealth
- 2 COMPARED TO THE UNION BUDGET**  
The total wealth of Indian billionaires is higher than the total Union Budget of India for the fiscal year 2018-19 which was at INR 24422 billion
- 3 THE WEALTH OF THE BOTTOM**  
The bottom 60%, the majority of the population, own merely 4.8% of the national wealth.  
Wealth of the top 9 billionaires = bottom 50% of the population
- 4 PERCENTAGE CHANGE**  
In the last 12 months, the wealth of the top 1% increased by 39% whereas wealth of bottom 50% increased a dismal 3%
- 5 WHAT THAT LOOKS LIKE IN REAL LIFE**  
Mukesh Ambani, is 19th on the Forbes 2018 billionaire list and is the richest Indian alive. His residence in Mumbai, a towering 570-foot, 27 storey building, is worth \$1bn and is the most expensive private house in the world.  
Pratima, who lives in a slum in Patna, eastern India, lost both her twins due to delays and scarce resources in her nearest clinic.

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"Theil's L" or the "mean log deviation" measure. When  $\alpha=1$ , the index is called "Theil's T" index or, more commonly, "Theil index". When  $\alpha=2$ , the index is called "coefficient of variation". Similarly to the Gini coefficient, when income redistribution happens, change in the indices depends on the level of individual incomes involved in the redistribution and the population size.

Student Notes:

## ➤ Ratios

Ratios constitute the most basic inequality measures available. They are simple, direct, easy to understand, and they offer few data and computation challenges. Accordingly, they do not provide as much information as the complex measures described above.

### A. Decile dispersion ratio (or inter-decile ratio)

It is the ratio of the average income of the richest x per cent of the population to the average income of the poorest x per cent. It expresses the income (or income share) of the rich as a multiple of that of the poor. However, it is vulnerable to extreme values and outliers. Common decile ratios include: D9/D1: ratio of the income of the 10 per cent richest to that of the 10 per cent poorest; D9/D5: ratio of the income of the 10 per cent richest to the income of those at the median of the earnings distribution; D5/ D1: ratio of the income of those at the median of the earnings distribution to the 10 per cent poorest. The Palma ratio and the 20/20 ratio are other examples of decile dispersion ratios.

### B. Palma Ratio

The Gini coefficient doesn't capture very explicitly changes in the top 10% - which has become the focus of much inequality research in the past 10 years - or the bottom 40%, where most poverty lies. Palma ratio is the ratio of national income shares of the top 10 per cent of households to the bottom 40 per cent. If the richest 10% of the population has five times the income of the bottom 40%, a country's Palma ratio is 5. The Palma ratio has been listed in the OECD rankings of countries' inequality, and in annual UN Human Development reports, alongside the Gini.

### C. 20/20 Ratio

It compares the ratio of the average income of the richest 20 per cent of the population to the average income of the poorest 20 per cent of the population. Used by the United Nations Development Programme Human Development Report (called "income quintile ratio").

## 2.4. Rising Inequality?

Oxfam 2019 report titled- "Public Good or Private Wealth?" provides following data about the **inequality existing in India-**

- **1%-** The top 10% of the Indian population holds 77% of the total national wealth. **73% of the wealth generated in 2017 went to the richest 1%**, while 67 million Indians who comprise the poorest half of the population saw only a 1% increase in their wealth.
- **70-** There are 119 billionaires in India. Their number has increased from only 9 in 2000 to 101 in 2017. Between 2018 and 2022, India is estimated to produce **70 new millionaires every day**.
- **10x-** Billionaires' fortunes **increased by almost 10 times over a decade** and their total wealth is higher than the entire Union budget of India for the fiscal year 2018-19, which was at INR 24422 billion.
- **63 M-** Many ordinary Indians are not able to access the health care they need. 63 million of them are **pushed into poverty because of healthcare costs every year - almost two people every second**.

- **941 years-** It would take 941 years for a **minimum wage worker** in rural India **to earn what the top paid executive** at a leading Indian garment company **earns in a year.**

Student Notes:

### Inequality in World

- According to Oxfam's report-
  - In 2018, world's 26 people owned the same wealth as the poorest 50% i.e. 3.8 billion people.
  - In the 10 years since the financial crisis, the number of billionaires has nearly doubled.
  - Between 2017 and 2018 a new billionaire was created every two days.
  - The world's richest man, Jeff Bezos, the owner of Amazon, saw his fortune increase to \$112bn. Just 1% of his fortune is equivalent to the whole health budget for Ethiopia, a country of 105 million people.
- The World Inequality Report 2018 showed that between 1980 and 2016 the poorest 50% of humanity only captured 12 cents in every dollar of global income growth. By contrast, the top 1% captured 27 cents of every dollar.

Thus the inequality is on an increasing trend in the world as well as in India.

## 2.5. Causes of Inequality

Some economists suggest following reasons for the widening inequality in India-

### A. Inequitable and Uneven Distribution of Economic Growth

- India's economy continues to grow with its GDP rising faster than most nations but people living at the bottom 10% are characterized by low wages; long working hours; lack of basic services such as first aid, drinking water and sanitation.
- Phenomenon of billionaire boom is a symptom of failing economic system where those who are working hard, growing food for the country, building infrastructure, working in factories are struggling to fund their child's education, buy medicines for family members and manage two meals a day.

### B. Oxfam report 2019 puts the blame for increasing inequality on biased economic framework towards rich, where

- Top rates of tax on the wealthiest people and corporations are lower than they have been for decades.
- Unprecedented levels of tax avoidance and evasion ensure that the super-rich pay even less.

### C. Urban- Rural Inequality

- India's badly shaped agricultural and rural safety nets. Per capita food production is going down. Rural infrastructure such as power, road transport facilities are in a poor state.
- Rural job scheme and public distribution system performing far below their potential. This has added to the suffering of rural India while market forces are acting in favour of urban India, which is why it is progressing at a faster rate."

## 2.6. Inequality, Poverty and Economic Growth

Economic growth and inequality play a major role in generating changes in poverty. High and sustained growth is essential for poverty reduction if the distribution of income remains more or less constant. Likewise, greater inequality tends to increase relative poverty. For these reasons, rise in growth has not led to commensurate reduction in poverty in countries where income inequality has been rising.

### 2.6.1. Inequality and Economic Growth

The relationship between growth and inequality has long been an important question for economists, and a number of influential theories have emerged over the years. But for most people, the issue boils down to this: is rising inequality good or bad for growth? Those who believe it's good, or at least necessary, argue that it provides incentives to entrepreneurs and a source of overall investment for the economy.

Those who believe it's bad argue that it can prevent poorer people from investing in their education and encourage the rich to grab a bigger slice of the economic pie without making the pie any bigger.

Kuznets curve provides a way to study the relationship between inequality and economic growth. It says that **as the economy grows, inequality increases in the beginning and then it decreases** with further growth in economy.

As per **Kuznets hypothesis**, as economic growth comes from the creation of better products, it usually boosts the income of workers and investors who participate in the first wave of innovation. The industrialisation of an agrarian economy is a common example. This inequality, however, tends to be temporary as workers and investors who were initially left behind soon catch up by helping offer either the same or better products. This improves their incomes.

### **Inequality is good for the Growth**

- Drives growth by allowing entrepreneurs – like Apple's Steve Jobs or HTC's Cher Wang – to enjoy the rewards of their risk-taking.
- Light tax and relatively little distribution allow people to accumulate wealth becoming sources for investment for the economy.

### **Inequality is bad for Growth**

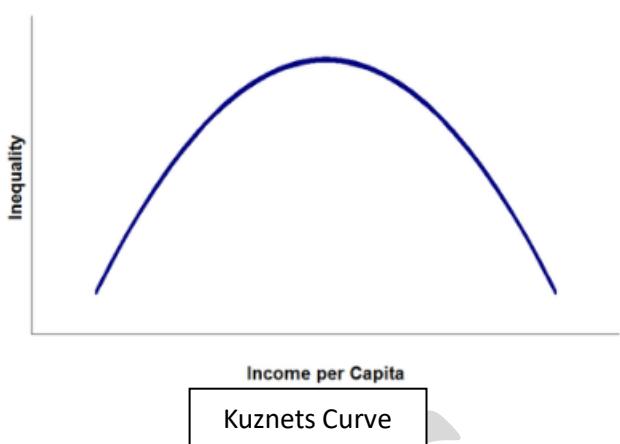
- A widening wealth gap leads low-earning families to invest less in education and skills. This probably hurts growth by reducing the number of skilled – and more highly productive – workers available for hire in the economy
- In OECD countries, the average increase in inequality of 3 Gini points over the past couple of decades is estimated to have cut GDP by around 8.5%.

## **2.6.2. Inequality and Poverty**

The continued accumulation of wealth by the very richest in our societies, while most of humanity subsists on barely anything, is extremely detrimental. **Relative poverty** has in present times been recognized as **growing inequality** and the main form of poverty in industrialized countries. Also, inequality affects the rate of economic growth which is very important for poverty reduction.

Even, the United Nations Sustainable Development Goals recognizes the role of inequality in making the fight to end poverty much harder. Goal 10 of SDG talks about "**Reduced Inequalities**" which can be achieved by equitable and just distribution of benefits of economic growth to the poorest people. **As per the World Bank, unless growth benefits the poorest people more between now and 2030, the first Sustainable Development Goal (SDG) – to eliminate extreme poverty – will be missed.** Thus, inequality affects poverty both- directly and indirectly.

Student Notes:



## Other Impacts of Inequality

Student Notes:

- The growing income inequality in India has negatively impacted poor citizens' access to education and healthcare.
- Rising income inequality makes it difficult for the poor to climb up the economic ladder and increases their risk of being victims to poverty trap.
- Worldwide, the human cost of inequality is devastating. Today:
  - 262 million children will not be allowed to go to school.
  - Almost 10,000 people will die because they cannot access healthcare.
  - 4 billion hours of unpaid care work will be done, the majority by women in poverty.
- Inequality is destabilizing. For instance, in recent years we have seen a rise in authoritarianism by governments worldwide, with crackdowns on freedom of speech and democracy. We have also seen a rise in popularity for right-wing, racist, sexist views and authoritarian politicians who support them. Many have pointed to the link between this global trend and high levels of inequality.
- Inequality undermines our societies. It is bad for everyone, not just the poorest people. In more unequal countries, trust is lower and crime higher. Unequal societies are more stressed, less happy and have poorer mental health.
- Inequality makes the fight to save our planet from climate breakdown even harder. Oxfam has shown that the average carbon footprint of the richest 1% globally could be as much as 175 times higher than that of the bottom 10%.

## 2.7. Role of Government in Reducing Inequality

Current crisis of inequality is the direct result of the moral failure of present governance and market system which allows few persons to accumulate extreme wealth while masses languish in poverty. Such exclusive, highly unequal society may seem sturdy and inevitable in short term, but eventually it will collapse. Eventually the pitchforks will come out, and the ensuing chaos will not benefit anyone – not the wealthy people, and not the poorest people who have already been left behind. To avert this existential crisis, steps must be taken to not reward greed at the expense of future. The present system must be replaced with a new economic framework – what Oxfam has called a **more 'Human Economy'**, which recognizes that justice and inclusion are not the result of economic prosperity, but rather the cause of economic prosperity.

Governments face a stark choice today – a choice between a life of dignity for all their citizens or continued extreme wealth for a tiny few. The lesson is clear: to beat poverty, we must fight inequality.

## 2.8. Steps Taken to Tackle Income Inequality

- Government of India has taken various steps to reduce income inequality
  - Progressive taxation policy which taxes the rich more.
  - Land reforms and redistribution of surplus land after independence.
  - Various social security measures such as pensions, subsidized foodgrains through PDS etc.
  - Introduction of the three pronged Jan Dhan-Aadhaar-Mobile programmes aimed at a comprehensive strategy of inclusion, financial empowerment and social security.
  - Minimum wage rates have been revised upwards from time to time.
  - Provision of free of cost education and health services, however, these services need significant improvement.
- **Beyond extreme poverty: A focus on the bottom 40:** Sustainable Development Goal 10 presents to the international community the following task: ensure that the income growth of the bottom 40% of their population is higher than the national average by the year 2030.
- The World Bank in 2013 introduced **shared prosperity**, defined as the growth in the average income or consumption of the poorest 40 percent of the distribution in the population, as one of the twin goals, along with ending extreme poverty.

## 2.9. Way Forward

Student Notes:

Specifically, **policy measures in three areas** will be critical:

- Inclusive growth and the expansion of productive employment.
- Redistribution of incomes and assets.
- Pro-poor macro-economic policies.

**Oxfam has given following recommendations to reduce Income Inequality in India-**

- Address the needs of the **underfunded social sector in India**. More public resources should be mobilised for providing basic essential services like health and education, social protection, etc. to reach out to the poor and excluded. The affirmative policy interventions like Gender Budgeting, Scheduled Caste Sub Plan, Tribal Sub Plan, etc. must be implemented properly.
- **Promote inclusive growth** by encouraging labour-intensive sectors that will create more jobs; investing in agriculture; and effectively implementing the social protection schemes that exist.
- In taxation, the focus should be more on **generating revenue from direct taxes**. Ensure proper mobilisation of property & wealth taxes. Rationalize corporate tax exemptions/incentives.
- **Scrutinise the new Goods and Services Tax (GST) regime** from the perspective of the poor. The rates for different commodities should be such that they do not place an unfair burden of taxes on the poor households.
- It also sought **sealing of the “leaking wealth bucket”** by taking stringent measures against tax evasion and avoidance, imposing higher tax on super-rich and removing corporate tax breaks.

## 3. Previous Years UPSC Mains Questions

1. Explain various types of revolutions, took place in Agriculture after Independence in India. How these revolutions have helped in poverty alleviation and food security in India?
2. Establish the relationship between land reform, agriculture productivity and elimination of poverty in Indian Economy. Discussion the difficulty in designing and implementation of the agriculture friendly land reforms in India.
3. Pradhan Mantri Jan-Dhan Yojana (PMJDY) is necessary for bringing unbanked to the institutional finance fold. Do you agree with this for financial inclusion of the poorer section of the Indian society? Give arguments to justify your opinion.
4. Capitalism has guided the world economy to unprecedented prosperity. However, it often encourages shortsightedness and contributes to wide disparities between the rich and the poor. In this light, would it be correct to believe and adopt capitalism driving inclusive growth in India? Discuss.

## 4. Previous Years Vision IAS GS Mains Questions

1. *The idea of Universal Basic income has gained appeal in recent months. Enumerating the challenges in its implementation, discuss whether it can be a potent tool to reduce leakages in the system and address inequality in the economy.*

**Approach:**

- Briefly explain the idea of Universal Basic Income (UBI).
- Discuss UBI as tool for reducing leakages and inequality.
- List the challenges in its implementation.
- Conclude about its desirability in India.

Universal Basic Income is a radical and compelling paradigm shift to ensure social justice along with a productive economy. It is premised on the idea that a just society needs to guarantee to each individual a minimum income which provides the necessary material foundation for a life with access to basic goods and a life of dignity.

### Potent tool to reduce leakages and reduce inequality

- **Direct transfer:** UBI reduces out of system leakage because transfers are directed straight to the beneficiaries' bank accounts.
- **Reduced opportunities:** The scope for diversion is reduced considerably, since discretionary powers of authorities are eliminated almost wholly.
- **Increased accountability:** Furthermore, UBI's expanded coverage will likely impact out of system leakage since the state is answerable to a larger section of its citizens.
- **Better monitoring:** Finally, given the fewer avenues for leakages, monitoring a UBI would be easier than many other schemes.

UBI has immense potential to reduce inequality by way of direct and indirect effects.

- **Direct effects** include: redistribution of wealth, creating flexibility in labour market, enhancing productivity, positively affecting education.
- **Indirect longer-term effects** include: increased entrepreneurship and large multiplier effects, increased number choices for education and enhanced participation in democracy. All these will lead to even greater reduction in inequality than might be immediately apparent.

### Challenges in its implementation

- Given the current status of financial access among the poor, a UBI may put too much **stress on the banking system**
- **Gender disparity induced by cash-** Gender norms may regulate the sharing of UBI within a household – men are likely to exercise control over spending of the UBI. This may not always be the case with other in-kind transfers.
- **Fiscal cost given political economy of exit** -Once introduced, it may become difficult for the government to wind up a UBI in case of failure.
- Opposition may arise from the provision of the **transfer to rich individuals** as it might seem to trump the idea of equity and state welfare for the poor.
- **Exposure to market risks (cash vs. food)**- Unlike food subsidies that are not subject to fluctuating market prices, a cash transfer's purchasing power may severely be curtailed by market fluctuations
- **Moral Hazard**- A minimum guaranteed income might make people lazy and opt out of the labour market.

In spite of various challenges, implementing UBI in India is desirable due to high inequality, weaknesses in existing welfare schemes (which are riddled with misallocation, exclusions and leakages) and fast progress in JAM scheme. Moreover UBI stands greater chance in a developing country like India, where it can be pegged at relatively low levels of income but still yield immense welfare gains.

2. ***Briefly highlight the parameters used by the government to determine the extent of poverty in India. Examine the relationship of economic growth and poverty alleviation in the post-reforms era.***

Student Notes:

**Approach:**

- The answer should begin with a very brief definition of poverty, and how it is measured.
- Mention the different figures arrived at by Rangarajan and Tendulkar methodology.
- Then the answer should discuss the lack of consensus among scholars as to the efficacy of various methods and criteria to measure poverty estimates.
- The second part has to discuss the rise or fall of poverty with economic growth since the dawn of economic reforms. This part should end with an assessment with supportive argument.

**Answer:**

Poverty is a state of deprivation, in which some people are not able to meet their basic needs. For evaluating the effectiveness of poverty alleviation programs, we need to measure the extent of poverty, which is done using a poverty line. In India, Poverty line was determined by erstwhile Planning Commission based on consumption data provided by NSSO. However, what constitutes the representative basket of consumption is debatable and is decided differently by different committees. The two most common parameters are income and energy requirement for meeting basic demands.

**Rangarajan Methodology:** the latest It used the following parameters:

- 'Monthly expenditure of a Household of five', such as house rent, electricity etc.
- Certain normative levels of 'adequate nourishment' plus clothing, house rent, conveyance, education.
- Behaviorally determined level of other non-food expenses.
- For the first time, apart from calorie, it also considered fats and proteins as part of normative nutrition.

Based on these, it fixed Rs. 972 in rural and Rs. 1407 in urban areas as poverty line. Accordingly, the all-India poverty ratio was 29.5% and 38.2%, in 2011-12 and 2009-2010, respectively. This was quite high than 21.9% and 29.8% as estimated by the Tendulkar Committee methodology for the corresponding periods. These contrasting estimates were due to different methodologies adopted.

**Impact of economic reform on poverty:**

There are two conclusions on trends in poverty:

- Poverty declined by 1.3 percentage points per annum after 1991, compared to that of 0.44 percentage points per annum prior to 1991. Among other things, urban growth is the most important contributor to the rapid reduction in poverty in the post-reform period.
- In the post-reform period, poverty declined faster in the 2000s than in the 1990s.

According to Tendulkar committee, around 138 million people were lifted above the poverty line during 2004 to 2009 alone. Rangarajan committee report also showed faster reduction in poverty during 2009-10 to 2011-12. This indicates the success of reforms in reducing poverty.

Statistically, change in poverty can be separated into two components (assuming constant inflation indexed poverty line) - Growth and redistribution of income. If distribution (i.e. inequality) remains constant, only through growth can poverty be addressed.

However, as inequality increases, as has been the case in India, the growth would have to outstrip the pace of increase in inequality in order to reduce poverty. Another way of seeing this is that if the incomes of the super-rich increase at a higher pace (causing increasing inequality), the pace of increase of income of the people below poverty line would have to be higher. This is highly unlikely.

In this kind of scenario, there has been forced redistribution on part of the government. With government adding to incomes of poor through welfare schemes, the net growth of real income of poor becomes higher, contributing to reduced poverty.

Higher economic growth, agriculture growth, rural non-farm employment, increase in real wages for rural labourers, employment in construction and programmes like the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) contributed to higher poverty reduction in the 2000s compared to the 1990s.

World Bank in its latest report also estimated that based on \$1.90 income to measure extreme poverty, India's actual extent of poverty may be much less (approx. 11%). Still, 300 million people live below the poverty line in India.

#### **Issues with poverty measurement**

- No unanimity on appropriate parameters among different scholars, as shown above.
- Poverty line mainly focuses on economic criteria, whereas poverty may also have social, cultural, and political aspects, which are not addressed by the current approach.

#### **Way forward**

- Use the recently concluded Socio-Economic Caste Census for more effective targeting as it's based on 7 parameters to identify the poor.
- Accelerate economic growth along with redistributive justice, for eliminating poverty in medium to long term. For this we need to effectively implement the Sustainable Development Goals.

3. ***Despite the potential of Special Employment Programmes in alleviating poverty, their impact has largely been limited. Comment. Also discuss how they can be made more effective.***

#### **Approach:**

- By giving introduction in brief mention some Special Employment Programmes.
- Discuss the role of Special Employment Programmes in alleviating poverty and how their role is limited.
- Suggest some measures to make these programmes more effective.

#### **Answer:**

Since the 5th five-year plan, India has launched several special employment generation programs targeting poverty.

These programmes largely fall into two categories:

- Self-Employment Programmes: These include programmes like PM's Employment Generation Programme (PMEGP), NRLM, NULM etc.

#### **Shortcomings:**

- Lack of adequate financial resources, skills and capacity, and sustained institutional support.

- Low survival rate of promoted micro-enterprises.
- Bureaucratic apathy and corruption at all levels.
- The incidences of red-tapism by banks.
- Wage Employment Programmes

Student Notes:

Under this the flagship program is MGNREGA, launched in 2005 with legal backing guaranteeing 100 days of wage employment on demand at statutory minimum wages, to people in all rural areas.

#### **Shortcomings:**

- Work is not adjusted to agricultural lean season resulting in workers migrating for work during the lean season.
- Local government machinery not able to provide work for lack of technical and managerial capability.
- Corruption and fudging of rolls.
- Delayed or non-payment of wages.
- Non maintenance of assets created under it.
- Focus on manual labor with little or no provision of skill development and its utilisation.

#### **Steps to make programs more effective:**

- Link them with the infrastructural development programmes.
- Strict monitoring and evaluation made part of the implementation plan.
- Programmes should not be judged only for the economic impacts but for non-economic ones also.
- PRIs also need to be strengthened, especially for extracting accountability.
- MGNREGA work needs to be in line with lean agricultural season.
- MGNREGA should be integrated with the ongoing development programme, including skills and training.
- Transferring cash directly to intended beneficiaries.

Poverty is one of the evils that act as a major impediment in the development of the country. To eradicate poverty and to achieve social inclusion these employment generation programmes are a necessity. To make them successful they need to be dove-tailed with JAM (Jan Dhan, Aadhar and mobile banking) and universal social protection scheme (excluding the better off groups). Also **universal basic income** as a concept is good in tackling the problem of poverty but it needs to be vetted first.

#### **4. Discuss Financial Inclusion as a mean to Inclusive Growth? Also identify the associated issues.**

##### **Approach:**

Focus on showing 'clearly' how the financial services will help disadvantaged sections to come out of poverty. Then discuss a few reasons why we are not able to achieve financial inclusion.

##### **Answer:**

- Financial inclusion is envisaged to enormously empower the poor through low cost banking services and credit, at an affordable cost to the vast sections of disadvantaged and low-income groups.
- In India, more than 40 per cent of households avail no banking service at all. The ratio of total bank credit outstanding to GDP is only about 57 per cent as against

- over 140 per cent in East Asia and Pacific. Insurance premia account for less than 1 per cent of GDP, which is only about a third of the international average.
- Owing to difficulties in accessing formal sources of credit, poor individuals and small and macro enterprises usually rely on local moneylenders, who charge exorbitant interest rates and hence they are unable to come out of their poverty trap. Access to low cost financial services allows the poor to save money outside the house safely, prevents concentration of economic power with a few individuals.
  - Among the key financial services that are of great relevance here are risk management or risk mitigation services vis-à-vis economic shocks. Such shocks may be an income shock due to adverse weather conditions or natural disasters, or an expenditure shock due to health emergencies or accidents, leading to a high level of unexpected expenditure. This aspect of financial inclusion is of vital importance in providing economic security to individuals and families.
  - Financial services will help in getting easy credit for the small businesses and farmers in agriculture as well. It affects the extent of entrepreneurship and of competition. Though financing of first time entrepreneurs is risky but it is a must for inclusive growth. Similarly growth in agriculture will be more of inclusive nature.
  - Govt is increasingly relying on banking services e.g. direct cash benefits and insurances products etc., to provide benefits to the disadvantaged sections under various schemes. This helps in better monitoring of schemes and ensures that there are less leakages of money. These efforts will only bring fruit if people are financially inclusive.
  - Issues:
    - i. Often people do not have proof of identity to represent themselves formally to get into the financial system.
    - ii. Govt. banks have limited capacity and private banks are not willing to expand their branches in rural areas.
    - iii. People lack awareness and access to the sources of information.
    - iv. Microfinance institutions have exploited the rural masses e.g. chit fund scams or other financial frauds in rural areas.
    - v. High transaction costs relative to size of accounts are also the main reason for low banking coverage and this is compounded by high risk perception of banks, in part because of lack of insurance.
    - vi. Agriculture and other forms of MSMEs are particularly ill-served and the situation has in fact deteriorated in some ways over the last two decades because of problems afflicting the cooperative banking sector.
    - vii. Reaching out to the illiterate people or people who can handle only the regional languages is also difficult without developing a suitable communication mode.
  - The promotion of financial inclusion can be done in two major ways:
    1. by expanding the role of the formal financial system, including banking.
    2. through the growth of micro-finance institutions in rural and urban areas.
  - Expansion of banking infrastructure, opening new branches, zero-frills bank accounts, banking correspondents(BCs) (use of services of intermediaries in providing financial and banking services through the use of Business Facilitators (BFs) and Business Correspondents (BCs), setting up of ultra small branches etc. are a few of the modalities under financial inclusion strategies of the govt.

5. *Most rural poor are excluded from the ambit of the formal financial system, which raises their dependence on informal sources as well as exposure to financial distress. In this context, explain why formal sector lending, especially to farmers, is so limited. Also suggest some steps that need to be taken to increase access to formal credit in rural areas.*

Student Notes:

**Approach:**

- Introduce the statement by writing about ineffectiveness of formal financial system in rural areas.
- Discuss the limitation of the government's financial initiatives in rural areas.
- List the relevant remedies.

**Answer:**

The ratio of agricultural credit to agricultural GDP has increased from 10 per cent in 1999-2000 to around 38 per cent by 2012-13. However, the share of long-term credit in agriculture or investment credit has declined (55 % in 2006-07 to 39% in 2011-12). Moreover the following trends depict the issues with formal credit in rural sector:

- **Inequity in credit disbursed**—the share of loans above Rs.10 lakh is going up and over a quarter of the credit is advanced from urban and metropolitan branches of banks. These loans mostly cater to input dealers, agri-businesses such as food and agro-processing industries and warehousing companies.
- **Steady share of informal sector** in loans to agricultural households (around 40% between 2003 and 2013).
- **The declining share of small loans (less than 2 lakh).**
- **March Phenomenon**—banks lent over 46% of agricultural credit between January and March— perhaps to meet year-end targets —although farm loans are most likely required before the crop season begins, around June and November.

**Reasons for limited formal nature of credit to farmers**

- Banks' reluctance to lend to small farmers which is further accentuated by **inherent risks (say, deficit or unseasonal rains)** associated with farming. Partly, the decline could also be due to **rising costs of cultivation, inflationary pressures, and more people moving out of farming**
- A large share of credit has channelized through **non-bank financial intermediaries without collateral**; in contrast to commercial banks, which requires collateral. But they charged higher rate of interest and resorted to coercive practices (example: microfinance crisis in Andhra Pradesh. The credit disbursed by MFIs has not resulted in raising agricultural productivity because these loans require regular monthly repayments and regular meeting and oversight on borrowers)
- **A part of credit under priority lending and interest subvention scheme being diverted to agribusiness, input dealers etc.**
- High cost of disbursing loans in rural areas and mandated interest rates being too low under various schemes.
- Rural branches have declined to 37% of total branches from 54% in 1994.

**Steps required to be taken**

- **Priority Sector Lending Certificate (PSLCs):** it will provide a market-driven incentive for efficiency, will enable banks to sell their surplus lending and thus earning a premium for their efficiency/geographical spread. RBI has already issued instructions on trading in Priority Sector Lending Certificates in April this year.
- **Popularising Negotiable Warehouse Receipts (NWRs):** The small and marginal farmers with Kisan Credit Cards (KCCs) can also avail the benefit of interest

subvention scheme extended for a further period of up to six months (post-harvest) against Negotiable Warehouse Receipts (NWRs) at the same rate as available to crop loan to discourage distress sale of corps by small farmers.

- **Creating Big-sized banks:** which unlike smaller ones, have the ability to cross-subsidize their stakeholders. Former RBI deputy governor K.C. Chakrabarty has highlighted the importance of big banks in improving allocation efficiency between rural and urban areas.
- The government may consider **removing the subvention restrictions** on interest rates. Then banks would be free to set interest at rates that cover their costs and it would make loans viable.
- The bank may **channel credit through non-bank intermediaries** such as MFIs and allow the MFIs to charge rate of interest above the rate charged by banks.
- There should be **provisioning for delivering institutional credit to poor farmers without collateral**. It may lead to increased credit availability to rural poor.
- **Banking correspondents** need to be appointed and adequately incentivized with commissions linked to loan repayments.
- There is also a need to **incentivize the financial institutions** to provide farmers with credit.

**6. Examine the advantages of direct cash transfer of subsidies over other mechanisms of disbursing them. In this context, bringing out the role of JAM Trinity, identify the challenges in its implementation and suggest possible solutions to address them.**

**Approach:**

- Evaluate the advantages of direct cash transfer of subsidies.
- Bring out the role of JAM Trinity in its implementation.
- Discuss the challenges in its implementation.
- Conclude by suggesting possible solutions.

**Answer:**

Direct cash transfer is a mechanism by which government subsidies and other benefits are directly credited in the bank account of beneficiary.

**Advantages**

- **Market distortions are minimized** through direct cash transfers of subsidies. Otherwise dual price markets are created where two sets of prices for the same goods are present.
- **Leakages, corruption and black marketing can be eliminated** by direct transfer of cash. In PDS system where goods are physically moved, lots of diversions take place.
- **Cash transfer reduces cost and is simpler to administer.** Government spends a huge amount of money over administrative apparatus for subsidy disbursement.

**Role of JAM**

For effecting direct cash transfers, government must be able to identify beneficiaries; transfer money to beneficiaries; and beneficiaries must be able to easily access their money.

- **Aadhar** helps in beneficiary identification.
- **Jan Dhan Yojana** increased people with bank accounts. It enables transferring money to intended beneficiaries.
- The **Mobile money payments** technologies enable beneficiaries to access their money.

## Challenges in implementation

Student Notes:

The implementation challenges can be categorized as first mile, middle mile and last mile challenges.

### First mile

- **Targeting:** targeted subsidies require detailed information about beneficiaries.
- **Beneficiary databases:** the databases needs to be continuously updated and seeded with Aadhaar and bank account information and mobile numbers.
- **Eligibility:** Some benefits are for households while others are for individuals.

### Middle mile

- **Within-government coordination:** ministries and state government departments share authority in administering subsidies and transfers.
- **Supply chain interest groups:** agents along a commodity's supply chain can obstruct the spread of JAM if their interests are threatened.

### Last mile

- **Beneficiary financial inclusion:** in rural areas physical connectivity to the banking system remains limited.
- **Beneficiary vulnerability:** exclusion error risks increase when the beneficiary population is poorer.

### Way forward

The government should incentivize the ministries and states to:

- Invest in first-mile capacity (by improving beneficiary databases).
- Deal with middle-middle challenges (by designing incentives for supply chain interest groups to support DBT).
- Improve last-mile financial connectivity (by developing the BC and mobile money space).

## 7. Suggest some measures to make implementation of Targeted PDS more effective.

### Approach:

Straight forward question. Suggest few measures.

### Answer:

- Sugar should be kept outside the purview of PDS. It should be decontrolled and the system of levy on sugar discontinued.
- The average shelf life of coarse grains is limited, making them unsuitable for long-term storage and distribution under PDS. Initiatives on the part of state governments catering to the needs of specific localities are possible.
- Kerosene oil witness large-scale diversion of this commodity and subsidized kerosene is used for adulteration with diesel. The subsidy on kerosene should be phased out by raising its supply price under PDS while eliminating all domestic central nd state taxes on it.
- All further attempts to include more and more commodities under the coverage of food subsidy should be resisted.
- The FPS should be permitted to sell all commodities (other than rice and wheat) at full market prices in order to ensure their economic viability.

8. *Starvation in the midst of plenty; this reflects the sorry state of affairs associated with the issue of food security today. In light of this statement, what role does buffer stock play in promoting food security? Comment on the Institutional Setup for the management of buffer stocks and bring forward challenges as well as solutions associated with the same.*

Student Notes:

**Approach:**

Explain the concept of Buffer Stock and why it is required to maintain. Further, Elaborate on the institutional setup for the management of stocks, analysing the current shortcomings and suggestions for revamping the system.

**Answer:**

The Buffer norms are the minimum food grains the Centre should have in the Central pool at the beginning of each quarter to meet requirement of public distribution system and other welfare measures. Buffer stock constitutes an important parameter for ensuring food security in the country. It is well known that a modicum of self-sufficiency in food is desirable which immediately means that the state will have the responsibility of maintaining a certain amount of food stocks. Further, it is argued that in a big country like ours, it is politically risky to rely entirely on private traders and international trade to iron out excessive price fluctuation and international experiences in the past have shown that relying entirely on international market comes with its own strategic costs.

Maintaining buffer stocks helps in achieving multiple objectives i.e. they are required to feed TPDS and other welfare schemes; ensure food security during the periods when production is short of normal demand during bad agricultural years and stabilize prices during period of production shortfall through open market sales.

The Food Corporation of India, is the nodal agency for procurement, storage and release of food grains in India. It was setup under the Food Corporation Act 1964. The objectives of FCI are

- Effective price support operations for safeguarding the interests of the farmers
- Distribution of food grains throughout the country for public distribution system
- Maintaining satisfactory level of operational and buffer stocks of food grains to ensure National Food Security.

Buffer stocks have been under frequent attacks in recent times. The level of stocks is said to be too high in relation to the buffer stock norms which is causing huge cost in terms of storage, interest on value of produce, and wastage, tying up huge resources that could have been put to better use. It is argued that price stabilization can be better achieved through trade rather than stocks and the former is found to be much cheaper than latter. Further, it is also argued that buffer stocks for absorbing shocks due to production fluctuation were justified when India did not have enough foreign exchange reserve to maintain excessive stocks held by public agencies.

What needs to be done is to vary our procurement, taking in more when the weather is good, supply plentiful and with low prices, when the weather is bad and prices are high. Further, the efficacy of the policy of offloading of grains is enormously dependent on the size of packages to be offloaded in the open market.

Inspired by the sight of food grain going waste, it is often made out to be that our central problem is that of poor food grain storage. Though there is no doubt regarding improving our storage facilities, it is important to be clear that this will not lower the price of food. To achieve that we need to redesign the mechanics of how we acquire and release food on the market.

9. *Financial inclusion is a pre requisite for inclusive growth in India. What do you understand by the term financial inclusion? What are the challenges to achieve financial inclusion in India? Examine the various models of financial inclusion in India.*

Student Notes:

**Approach:**

- Define Financial inclusion.
- Establish a relation between financial inclusion and inclusive growth.
- Discuss the challenges in achieving financial inclusion.
- Examine the various models of financial inclusion.

**Answer:**

Financial Inclusion is the process of ensuring access to appropriate financial products and services needed by deprived and low income groups at an affordable cost, in a fair and transparent manner.



**Financial Inclusion and Inclusive growth**

Inclusive growth implies participation as well as sharing the benefits from the growth process. Financial inclusion and inclusive growth are the two sides of same coin. Both are interrelated and interdependent. For growth to be inclusive, all people should be come under access to financial services.

**Challenges in achieving Financial Inclusion**

- Inadequate last mile delivery.
- Lack of financial literacy, lack of awareness of financial services and products, social exclusion and the unsuitable products for the poor.
- Naxal Movement, low Return-on-Investment (ROI), operating expenses inhibits banks from expansion in rural areas.
- Low formal link of micro and small enterprises.
- Seasonal inflow of income from agricultural operations.
- Migration from one place to another.
- Seasonal and irregular work availability
- Over indebtedness.
- Agrarian Distress

The two most prominent model of Financial Inclusion in India are:

- Business Correspondent model
- Bank led or Brick and Mortar Branch Model

### **Business correspondent Model:**

The role of Business Correspondents (BCs) is considered as important for increasing the extent of financial inclusion in rural areas. They offer cost –effective alternative to traditional brick-mortar branch approach. However their effectiveness is limited by the following concerns:

- **Low aspirational value of BC as a profession:** The lack of permanency and growth opportunities are important reasons for the low value attached to the profession.
- **Preference for a brick and mortar branch:** Large segment of the population was not comfortable with salesman like BC and preferred a brick and mortar branch for banking
- BCs are not making enough income due to catering of services to low-income customers with low volume transactions.

More and more innovative products will have to be introduced which would benefit both banks as well as the rural people and at the same time make the BC model more viable.

### **Bank led Model:**

The bank- led model requires increasing density of bank branches to promote financial inclusion. The goal of financial inclusion is better served through mainstream banking institutions as only they have the ability to offer the suite of products required to bring in effective/meaningful financial inclusion.

However, in rural and remote areas, it is not always financially viable to operate bank branches. To overcome this challenge, the Banking Correspondence model has been adopted by many banks.

Thus, India requires blend of both the models to promote financial inclusion. The job of BC need to be made more specialized and adequate training should be imparted. On the other hand, banks should partner with new finance – technology companies to promote financial inclusion.

- 10. Instead of running piecemeal schemes that do not address the specific challenge of poverty-ridden households it is better to use concrete tools such as SECC. In light of the above statement, explain how SECC data can be utilized to address multi-dimensional aspects of poverty.**

#### **Approach:**

- Highlight failure of earlier approaches in getting results. Discuss benefits of a targeted approach.
- Enumerate the criteria for determining deprivation in SECC.
- Mention how can various schemes be targeted based on these criteria.

#### **Answer:**

Anti-poverty programmes in the past have been based on National Sample Surveys, covering 1,50,000 households nationally. However, reliability and utility of even such a large survey declines as one moves down administrative levels. The programmes and targets have been based on national averages, which have less relevance in the local context. Further, these have been based on household's consumption expenditure and sources of livelihood, and do not consider asset ownership pattern, which is also an important determinant of design of poverty alleviation program.

The SECC data, on the other hand addresses multi-dimensionality of poverty by identifying indicators of deprivation and consequent inclusion or exclusion of households from poverty alleviation programmes. It divides the total rural households (17.91 Cr) into three categories:

- Automatically included: Based on fulfilling **any of the 5** of the criteria viz. Primitive tribal Groups, Released bonded labour, those living on alms, manual scavengers or households without shelter.
- Automatically excluded: Based on fulfilling **any of the 14** parameters of exclusion such as motorised vehicle/fishing boat, mechanised agricultural equipment, KCC limit more than Rs. 50,000, etc.
- Households based on **7 markers of deprivation**:
  - Households with Kutchha house
  - No adult member in working age
  - Household headed by female and no working age male member
  - Household with handicapped members and no able bodied adult
  - Household with no literate over 25 years
  - Landless households engaged in manual labour
  - SC/ST households.

Households of third category show poverty on some markers, even though the depth of poverty may not be enough to categorise them as absolute poor. Rather than using income as a sole determinant, SECC data addresses this multidimensionality of poverty. It provides information to assess dimensions of poverty in a household – income, literacy, disease, social or gender inequality, indebtedness, exploitation and landlessness.

The data can be utilised for a convergent, evidence based planning with Gram Panchayat as a unit. It provides for criteria based selection, prioritisation and targeting of beneficiaries in different programmes. For example, 2.34 Crore households with one room or less and kutchha house should be the first claimants of any rural housing scheme when targeted properly. Instead of extending monetary help to a homeless family, the government should be providing them with a house under one of its schemes and use the funds for sustaining livelihood through skill development, MGNREGS, etc.

The data shows inter-state and intra-state variations in states that were presumed similar – Bihar has much higher landlessness (51%) than UP (31%); Tamil Nadu (56%) is more than Karnataka (22%). It will help governments at all levels to delve into variations across regions, identify the causes of deprivation and design differentiated approaches to tackle poverty.

Used effectively, the SECC data can be leveraged to combine economies of scale with benefits of precision targeting. With use of technology, progress can be monitored on real time basis and targets and targeted groups updated regularly.

**11. *Rising income inequality is a widespread concern for advanced as well as emerging economies. Illustrate how inequality impedes economic growth. Also, examine the steps taken by India to tackle income inequality.***

**Approach:**

- Introduce the answer by illustrating the rising income inequality.
- Discuss the impact of income inequality on economic growth.
- Analyze the initiatives by India to reduce income inequality.

Widening income inequality is the defining challenge of our time. In advanced economies, the gap between the rich and poor is at its highest level in decades. Inequality trends have been more mixed in emerging markets and developing countries (EMDCs), with some countries experiencing declining inequality, but pervasive inequities in access to education, health care and finance remain.

Wealth is now even more concentrated at the top level, exacerbating the overall disadvantage of low-income households. In 2012, the bottom 40% owned only 3% of total household wealth. In contrast, the top 10% controlled half of all total household wealth and the wealthiest 1% owned 18%. The top 1% share almost 10% of total income worldwide.

#### **Economic Growth and Income Inequality:**

- **Inequality affects growth drivers.** Higher inequality lowers growth by depriving the ability of lower-income households to stay healthy and accumulate physical and human capital.
- For instance, it can lead to underinvestment in education as poor children end up in lower-quality schools and are less able to go on to college. As a result, labor productivity could be lower than it would have been in a more equitable world.
- Increasing concentration of incomes could also reduce aggregate demand and undermine growth, because the wealthy spend a lower fraction of their incomes than middle- and lower-income groups
- Inequality dampens investment and hence growth by fueling economic, financial and political instability. Extreme inequality may damage trust and social cohesion and thus is also associated with conflicts, which discourage investment.
- A growing body of evidence suggests that rising influence of the rich and stagnant incomes of the poor and middle class have a causal effect on crises, and thus directly hurt short- and long-term growth. In particular, studies have argued that a prolonged period of higher inequality in advanced economies was associated with the global financial crisis of 2008.

#### **Examining steps taken by India to reduce Income inequality:**

- Social protection is a cushion for those at the bottom against the effects of inequality. Social protection policies play an important role in reducing poverty and inequality and supporting inclusive growth by boosting human capital. However, India fares poorly in case of social protection measures. The global average on social spending is 8.8% of GDP. Among BRICS nations, India spends the lowest proportion of public expenditure on social protection around 4%, while the highest is Brazil with 21.2%.
- The performance of existing protection measures is dismal in terms of access, quality and equity. Health, education and nutrition schemes face great challenges.
- Taxation policy is critical in income redistribution. Regressive tax code and complex tax structure has resulted in widespread tax evasion in India. The redistributive role of fiscal policy could be reinforced by greater reliance on wealth and property taxes, more progressive income taxation, removing opportunities for tax avoidance and evasion. Government is in the process to reform the tax code in India. However, the rate of reforms is dismal. Direct tax code, Goods and Services tax proposals are still awaiting the approval by the Parliament.

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# INFRASTRUCTURE

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## 1. Introduction

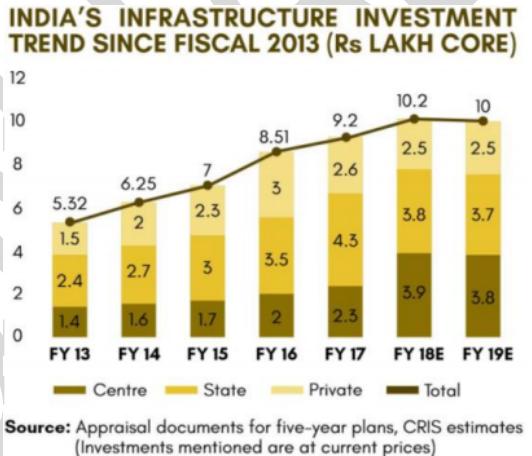
Infrastructure is the support system on which depends the efficient working of a modern industrial economy. Infrastructure contributes to economic development of a country both by increasing the productivity of the factors of production and improving the quality of life of its people. It provides supporting services not only for industrial and agricultural production, but also for domestic and foreign trade and commerce.

These services include roads, railways, ports, airports, dams, power stations, oil and gas pipelines, telecommunication facilities, the country's educational system including schools and colleges, health system including hospitals, sanitary system including clean drinking water facilities and the monetary system including banks, insurance and other financial institutions. Some of these facilities have a direct impact on the working of the system of production while others give indirect support by building the social sector of the economy.

## 2. Infrastructure & Economic Development

Infrastructure works both directly and indirectly on a number of determinants of economic development, such as follows:

- **Improving growth:** To achieve the GDP of \$5 trillion by 2024-25, India needs to spend about \$1.4 trillion (Rs. 100 lakh crore) over these years on infrastructure (as announced under National Infrastructure Pipeline)
- **Increase in investment:** It opens up possibilities of investment by making available a number of necessary inputs and services, opening up the size of the market as well as increasing the supply elasticity and efficiency of factors of production.
- **Industrial development:** It also depends on a sound infrastructure base to a large extent.
- **Employment generation:** Infrastructure plays a significant role in the generation of employment opportunities. They improve mobility, productivity and efficiency of labour.
- **Trade & commerce:** Infrastructure facilities play a vital role in the development of trade and commerce. In fact they act as a platform for the expansion of trade and other commercial activities at a rapid speed.



Thus, infrastructure development can have a significant impact on economic growth. For low-income countries basic infrastructure such as water, irrigation and to lesser extent transport are important. As the economies mature into middle-income category, the share of power and transport and telecommunications in infrastructure and investment increases. Also, infrastructure not only contributes towards the development of backward regions and removal of regional imbalance but also acts as an instrument of social change. Extensive studies undertaken by the World Bank show that 1% increase in investment in the stock of infrastructure leads to a corresponding 1% increase in the Gross Domestic Product of a nation.

### Why infrastructure needs an overhaul?

- **Increasing urbanization:** 42 per cent of population to live in urban areas in 2030 as opposed to 31 per cent now. Moreover, contribution of urban areas in total employment will increase at a higher rate than the contribution of rural areas during the period 2018-30.
- **Shift to services-based economy:** The trends in GDP and employment are reflective of India's economy gradually transitioning from an agrarian economy to a service centric economy requiring overhaul in infrastructure.

- **Climate change and disaster resilience:** There is a clear need for ensuring that all new and existing infrastructure systems are climate and disaster resilient.
- **Improving global competitiveness:** infrastructure bottleneck is a primary constraint in terms of India's competitiveness, as reflected in the World Economic Forum's Global Competitiveness Index. India's Rank- in overall infrastructure quality is 70 out of 140 countries.

Student Notes:

### 3. Roads and Road Transport

The share of transport sector in the GVA for 2017-18 was about 4.77 per cent of which the share of road transport is the largest at 3.06 per cent, followed by the share of the Railways (0.75 per cent), air transport (0.15 per cent) and water transport (0.06 per cent).

Transport and connectivity are central to India's economy and society.

- Contributes to growth directly as it accounts for a large part of construction activity.
- The transport sector facilitates trade and migration, thereby raising productivity in other parts of the economy.
- The movement of people, which this sector facilitates, Its a key source of social integration and transformation

Road Transport is a critical infrastructure for the economic development of a country. It impacts the pace, structure and pattern of development. India has the second largest road network in the world of about 58.98 lakh km. This comprises National Highways, Expressways, State Highways, Major District Roads, Other District Roads and Village Roads as under:

<b>National Highways</b>	<b>1,32,500 km</b>
<b>State Highways</b>	<b>1,56,694 km</b>
<b>Other Roads</b>	<b>56,08,477 km</b>
<b>Total</b>	<b>58,97,671 km</b>

The road sector in India accounts for the **largest share in the movement of both passengers and freight**. As per the National Transport Development Policy Committee Report, as of 2011-12, road transport is estimated to handle 69 per cent and 90 per cent of the countrywide freight and passenger traffic, respectively. Driven by a rapidly growing economy, access to vehicle finance and improved road connectivity, the demand for mobility on roads has risen continuously, leading to a sharp rise in the number of road transport vehicles. The total number of registered vehicles in India increased from 58.9 million in 2001-02 to 182.4 million in 2012-13, a CAGR of almost 11 per cent during this period.

The private sector has emerged as a key player in the development of road infrastructure in India. The government's policy to increase private sector participation has proved to be a boon for the infrastructure industry with a large number of private players entering the business through the public-private partnership (PPP) model. In PPP, different types of model are being used by the government – Hybrid Annuity Model, Toll-Operate-Transfer (TOT) Model, Build-Operate and Transfer (BOT), Engineering Procurement and Construction (EPC) etc. (*More on these will be discussed in Investment Models Document*)

Also, the Government has permitted 100 per cent foreign direct investment (FDI) in the road sector, thus facilitating several foreign companies in entering into partnerships with Indian players to capitalise on the sector's growth.

#### 3.1. Constraints

- **Capacity of existing highways:** The existing length of the NH network is only about 2.2 per cent of the country's total road network and in that also the NH length with 4-lane standard is just about 22 per cent.

- Further, national and state highways are already overstrained, carrying more than 65 per cent of the road traffic. National highways carry 40 per cent of India's total road traffic.
- **Maintenance of existing infrastructure:** The annual outlay earmarked for maintenance and repair of national highway stretches is only about 40 per cent of the funds required. This is one of the main reasons for the inability to take up timely maintenance interventions.
- **Accidents and safety concerns:** Road safety is a major issue in the country with nearly 400 road related deaths being recorded daily. In 2013, India had an accident death rate of 18.9 for every 100,000 people, higher than other South Asian countries such as Bangladesh, Mauritius and Sri Lanka. At least a part of the fatalities is because of the poor quality of roads.
- **Cost escalation for roads:** Delays in acquiring land can affect project costs as the average cost of land has escalated from Rs. 0.80 crore per hectare during 2012-13 to Rs. 3.20 crore per hectare during 2017-18.

## 3.2. Government Initiatives

The Ministry of Road Transport & Highways (MoRTH) is mandated with the development and maintenance of road networks especially the National Highways as well as the implementation of the Motor Vehicle Act under which it formulates broad policies relating to road transport

### 3.2.1. Bharatmala Pariyojana

- It aims at construction/ up-gradation of National Highways of 34,800 kms length over a period of 5 years (2017-18 to 2021-22).
- The programme focuses on optimizing efficiency of freight and passenger movement across the country by bridging critical infrastructure gaps through effective interventions like development of Economic Corridors, Inter Corridors and Feeder Routes, National Corridor Efficiency Improvement, Border and International Connectivity roads, Coastal and Port Connectivity roads and Green-field expressways.
- Multi-modal integration is also built into this program. Special attention has been paid to fulfilling the connectivity needs of backward and tribal areas, areas of economic activity, places of religious and tourist interest, border areas, coastal areas and trade routes with neighbouring countries.
- The project is to be funded through debt funds, private investment or from central road fund or toll collection.
- The main agencies tasked with the construction are the National Highways Authority of India, National Highway and Industrial Development Corporation and State Public Works Department.

### 3.2.2. Infrastructure Investment Fund (InvIT)

NHAI has been given the mandate to set up an InvIT to monetize its completed stretches of public funded national highways with the objective of mobilizing additional resources through capital markets. These are investment scheme similar to mutual funds that allow investment from individuals and institutional investors in infrastructure projects to earn a portion of the income as return. NHAI's InvIT will be a trust established under the Indian Trust Act, 1882 and Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014.

It will attract long-term capital, allowing the investors to have an indirect exposure in the project(s). This proposition is more attractive for foreign investors, which are hesitant to take direct exposure in highway projects.

NHAI currently addresses its funding requirement through ToT (toll-operatetransfer), partnering NIIF (National Investment and Infrastructure Fund), issuance of bonds to LIC and central budgetary allocations.

### 3.2.3. Motor Vehicle (Amendment) Act, 2019

The act has amended the Motor Vehicles Act, 1988 to provide for road safety. It has been passed in the Parliament. Some of its key provisions are

- **Compensation for road accident victims:** The central government will develop a scheme for cashless treatment of road accident victims during golden hour. The Bill defines golden hour as the time period of up to one hour following a traumatic injury, during which the likelihood of preventing death through prompt medical care is the highest.
- **Compulsory insurance:** The Act requires the central government to constitute a Motor Vehicle Accident Fund, to provide compulsory insurance cover to all road users in India.
- **Advisory body:** It sets up a National Road Safety Board that will advise the government on road design and motor vehicle safety.
- **Good samaritans:** The Act defines a good samaritan as a person who renders emergency medical or non-medical assistance to a victim at the scene of an accident.
- **Offences and penalties:** The Act increases penalties for several offences under the Act. For example, the maximum penalty for driving under the influence of alcohol or drugs has been increased from Rs 2,000 to Rs 10,000.
- **Recall of vehicles:** The Act allows the central government to order for recall of motor vehicles if a defect in the vehicle may cause damage to the environment, or the driver, or other road users.

### 3.2.4. Special Accelerated Road Development Programme for the North-Eastern region (SARDP-NE)

It envisages improvement of road connectivity to the State capitals with district headquarters in the north-eastern region. It aims to improve about 4,099 km in the North-East in Phase A.

### 3.2.5. North-East Road Network Connectivity Project Phase I'

improve infrastructure in Meghalaya and Mizoram and enhance connectivity with inter-state roads and international borders.

### 3.2.6. E-initiatives

- **Bhoomi Rashi – Land Acquisition Portal:** The process of issuing Land Acquisition notification was beset with delays due to clerical mistakes, time taken in processing notification etc. With the adoption of the portal from 2018, the system has become transparent, errorfree, and paperless. The system also ensures accountability at each level. The portal has also reduced the time period for publication of notification in the Gazette of India.
- **Enterprise Resource Planning (ERP) Project-eDISHA:** eDisha, Digitally Integrated System of Highway Assets is the face of 'Design, Development, Implementation and Enablement of Technology Solution. This will eliminate data duplication and provide data integrity with a "single source of truth" along with digitization. eDISHA will facilitate the flow of real time

Student Notes:

#### Other measures taken for Road safety

- Pradhan Mantri Surakshit Sadak Yojana launched with initial funding of about Rs 2,000 crore which will eliminate dangerous spot from highways.
- Mandatory for two-wheeler from to have Anti-Break lock System in order to improves control over the vehicle at the event of emergency braking
- Signed the Brasilia declaration committing to reduce road accident and fatality by half.

#### Some measures that can be taken

- Use data to monitor accidents.
- Standardise reporting of accidents and enhance preparedness through better logistics.
- Start providing skills training to all employees in the field of safety and raise awareness about safety issues through various media.

information across departments and ecosystems, so businesses can make data-driven decisions and manage performance-live.

Student Notes:

- **E-tolling:** Electronic Toll Collection (ETC) system, has been implemented on pan India basis in order to remove bottlenecks and ensure seamless movement of traffic and collection of user fee as per the notified rates, using passive Radio Frequency Identification (RFID) technology.

### **3.2.7. Other recent initiatives**

- In August 2020, the Government of India revised the Model Concession Agreement for build-operate-transfer (BOT) projects to plug delays by imposing a deadline on the NHAI and incentivising timely work by concessionaires
- In May 2020, Border Roads Organisation (BRO) achieved major milestone by digging up a 440-metre long tunnel below the busy Chamba town on Rishikesh-Dharasu highway (NH 94).
- To widen and revamp 1.25-lakh km of roads, Government of India has approved the launch of Phase-III of its rural road programme Pradhan Mantri Gram Sadak Yojana (PMGSY). PMGSY-III is envisaged to upgrade 1,25,000 kms of road length over the next five years at an estimated cost of Rs 80,250 crore (US\$ 11.48 billion).
- Under the Union Budget 2020–21, 30,000 km of PMGSY roads have been built using Green Technology, Waste Plastic and Cold Mix Technology, thereby reducing carbon footprint.

## **3.3. Way ahead**

- **Increase connectivity by expanding the road network:** Four projects needs to be completed in this respect - Bharatmala Pariyojana phase 1, Special Accelerated Road Development Programme for the North-Eastern region (SARDP-NE) Phase A, North-East Road Network Connectivity Project Phase 1 and Chardham Mahamarg Vikas Pariyojna.
- **Improve road maintenance and safety:** In this respect various steps need to be undertaken:
  - Earmark funds from the Central Road Fund (CRF) for maintenance activities. India should begin with earmarking 10% of its annual budget for road and highways for maintenance to move towards the developed country norm of earmarking 40 to 50% of the budget
  - Build in heavy penalties on contractors for poor quality of operations and maintenance (O&M) into contracts across all contract modes.
  - Eliminate black spots by constructing permanent structures such as flyovers/vehicular underpasses (VUPs) and pedestrian underpasses (PUPs)
- **Skill development:** It includes introducing vocational training courses on road construction in Industrial Training Institutes (ITIs), setting up training of commercial vehicle drivers and ensuring testing of driving skills before granting driving licences
- **Increase emphasis on research and development** A centre needs to be established at the national level for applied research on roads including IT-enabled traffic management systems, new materials/techniques for construction, latest technological developments in the highways sector and setting standards & guidelines.
- **Enhance Public Transport in the road segment** through allowing private providers.
- **Increase the coverage of Electronic Toll Collection (ETC)** in National and State Highways- FASTag equipped highways to improve the collection as well as flow and efficiency of traffic

A few of the CAG recommendations with respect to the use of Geographical Information System (GIS) for tracking assets; strengthening quality control and monitoring; adopting social audit etc. should also be considered.

### Some recommendations of Rakesh Mohan Committee (National Transport Development Policy Committee (NTDPC))

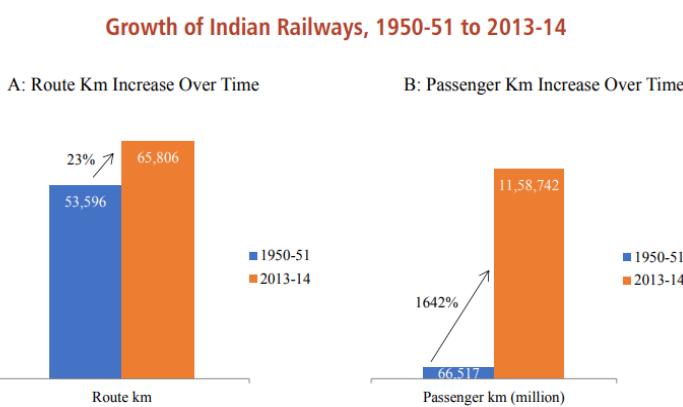
- Roads should not be looked at in isolation, but as part of an integrated multi-modal system of transport. The planning and development of the primary road network must tie up with planning of railways' dedicated freight corridors and other segments of rail network, connectivity with ports, airports, SEZs, logistic hubs, major tourist centres and linkage with neighbouring countries.
- The program of PMGSY should be expanded to achieve universal connectivity to all habitations on time bound basis.
- There is need for continuous upgradation of technology in the auto industry, especially the commercial vehicle sector, to meet the objectives of better comfort, productivity, energy efficiency, safety and emission standards in line with international practices and standards.
- Private sector financing in the highways will remain confined to commercially viable and high traffic density stretches. It will be prudent, therefore, to enhance the availability of public sector funding.
- The existing network of National Highways and State Highways may be expanded in tune with the economic growth and development of industrial hubs, SEZs, ports, tourist centers and connectivity to international routes – Asian Highways and the European Road Network.
- States should encourage citizen and user oversight through undertaking road user satisfaction surveys.
- A dedicated road design institute should be set up, which should function under the umbrella of MoRTH. Similar institutes should be set up in each state PWD and Rural Roads Agency.

Student Notes:

## 4. Railways

The Indian Railways had a modest beginning in 1853 when the first train journeyed from Mumbai to Thane, covering a distance of 34 km. Currently, the Indian Railways (IR) is the fourth largest network in the world in terms of route km (67,368 km in FY17).

During the year 2018-19, Indian Railways carried 120 crore tonnes of freight and 840 crore passengers making it the world's largest passenger carrier and 4th largest freight carrier.



The national railway network is divided into 17 zones, which are further subdivided into divisions. There are a total of 68 divisions. There are thirteen undertakings under the control of the Ministry of Railways.

Modernization/upgradation of Railway stations in Indian Railways is a continuous and on-going process. 1,253 stations have been identified for development under Adarsh Station Scheme and are planned to be developed by 2019-20. A dedicated SPV, Indian Railway Station Development Corporation (IRSDC) Limited has been set up to carry out modernization of railway stations. IRSDC is working on modernization of many stations on PPP mode

### 4.1. Issues

- **Congested networks:** Over-stretched infrastructure with 60 per cent plus routes being more than 100 per cent utilized, leading to a reduction in average speed of passenger and freight trains.
- **Organizational structure:** Delays in decision-making, inadequate market orientation and long project approval durations lead to slow turnover times and delays in the implementation of railways projects.

- **Internal generation of resources:** Negligible non-fare revenues and high freight tariffs have led to a sub-optimal freight share. The lower relative cost of transporting freight by road has led to a decline in the share of the railways. Low and static prices for the passenger segment have also contributed to low internal generation of resources.
- **Safety and poor quality of service delivery:** There have been a number of accidents and safety issues in the IR in recent years. Poor cleanliness of trains and stations, delays in train departures/arrivals, quality of food and difficulties in booking tickets are key issues.
  - Anil Kakodkar committee was appointed in 2011 for reviewing the rail safety issues and recommend improvements. Committee observed key issues: poor financial condition, inadequate performance and lack of autonomy at functional level.
- **Efficiency of terminals:** Poor terminal facilities lengthen loading and unloading times. Eighty per cent of railway loads come from terminals. The functioning of terminals needs to be strengthened to improve rail freight.

## 4.2. Key Developments

### 4.2.1. Private Participation in Railways

Bibek Debroy Committee in 2015 recommended that private entry into running both freight and passenger trains should be allowed. Ministry of Railways has **invited private participation for operation of passenger train services** over 109 Origin Destination (OD) pairs of routes using 151 modern trains on existing rail infrastructure.

It would be the first initiative of private investment for running passenger trains over Indian Railways network attracting investments of an estimated ₹30,000 crore which is expected to begin in 2023.

Entry of new operators is said to **bring in competition** with Indian railways and encourage **growth and improve services**.

- It would help meet increasing demand of railways which is not met currently. As per Railway Board, 5 crore intending passengers could not be accommodated during 2019-20 for want of capacity.
- It would ensure modernisation of services offered to passengers in terms of cleanliness, quality of food, safety, delays etc.
- The recent initiative also aims to introduce modern technology rolling stock with reduced maintenance and provide world class travel experience to passengers.

However, there are **apprehensions** that if IR itself plays the role of regulator (or there is no independent regulator) then it would be detrimental to the competition and interests of private sector. Moreover, railways also tend to cross-subsidize passenger fares through freight revenue. This translates to below cost pricing, which will make it difficult for private players to compete.

#### **Pros and Cons of privatization in railways**

Benefits	Challenges
<ul style="list-style-type: none"> <li>• Improved efficiency: A private firm is interested in making a profit, and so it is more likely to cut costs and be efficient.</li> <li>• Lack of political interference: Governments often make poor economic managers as they are motivated by political pressures rather than sound economic and business sense.</li> <li>• Long term Planning: A government might think only in terms of the next election and thus be unwilling to invest in infrastructure improvements which will benefit the firm in the long term. This could be facilitated by private enterprises.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Natural monopoly:</b> Privatization in railways might create a private monopoly which might seek to set higher prices which exploit consumers.</li> <li>• <b>Public interest:</b> Given that a private enterprise runs on profit, it might hike fares, thus rendering the service out of reach for lower income groups.</li> <li>• <b>Coverage Limited to Lucrative Sectors:</b> With privatization routes which are less popular could be</li> </ul>

<ul style="list-style-type: none"> <li>• Shareholders: Private players face pressure from shareholders to perform efficiently.</li> <li>• Increased competition: It would ensure improved quality of service with competitive fares.</li> <li>• Prevent Government's loss: The revenue generated by the Indian Railways is low and keeps the system always in losses.</li> <li>• Improved quality of service: The quality of service in Indian Railways faces massive criticism especially in the fields of catering and punctuality.</li> <li>• Latest technology: The privatization will also help in accommodating the latest technology in railway coaches, station facilities, online services etc.</li> <li>• Lesser accidents: Private ownership is considered synonymous with better maintenance, which will reduce the number of accidents, thus resulting in safe travel and higher monetary savings in the long run.</li> <li>• Reducing the supply demand deficit: Since waitlisted passengers comprise ~15% of the reserved passengers.</li> <li>• Facilitating capacity augmentation: as capacity constraints lead to loss of passenger business to other modes such as air travel.</li> </ul>	<p>eliminated, thus having a negative impact on connectivity, rendering some parts of the country virtually inaccessible.</p> <ul style="list-style-type: none"> <li>• <b>Accountability:</b> Private companies are unpredictable in their dealings and do not share their governance secrets with the world at large. In such a scenario it would be difficult to pin the accountability on a particular entity, in case of a discrepancy.</li> <li>• <b>Fragmentation in railways industry:</b> In the UK, rail privatization led to breaking up the rail network into infrastructure and train operating companies. This led to areas where it was unclear who had responsibility.</li> <li>• <b>Regulatory Burden:</b> High costs and lower returns, policy uncertainty, lack of a regulator to create a level playing field, lack of incentives for investors and procedural/operational issues such as delays in land acquisition etc. have significantly restricted private sector participation.</li> </ul>	Student Notes:
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#### 4.2.2. Railway restructuring

Recently, Union Cabinet approved organisational restructuring of the Indian Railways (IR). Presently, the management and administration of Railways is governed by a pool of Group A officers, drawn from Indian Engineering Services (such as Indian Railway Service of Engineers etc.) and the Civil Services (such as Indian Railway Traffic Service etc.) in eight technical and non-technical cadres respectively.

This was recommended by many committees in the past including Bibek Debroy committee, Sam Pitroda committee etc. The main reason behind this is that railway departments are currently working "in silos", which manifests itself in the form of unhealthy competition among departments as well as pursuing narrow departmental goals at the cost of organisational goals and objectives.

##### What is approved in restructuring?

- **Creation of Indian Railway Management Service (IRMS):** A unified central service by the unification of the existing eight Group A services of the Railways in consultation with Department of Personnel and Training and UPSC to facilitate recruitment and enable Railways to recruit engineers/non-engineers as per need.
- **Re-organisation of Railway Board:** Railway board will no longer be organised on departmental lines, and replaced with a leaner structure organised on functional lines.
  - The board will have a Chairman, who will act as 'Chief Executive Officer (CEO)' along with 4 Members responsible for Infrastructure, Operations & Business Development, Rolling Stock and Finance respectively.
  - The Board will also have some independent members, who will be highly distinguished professionals with deep knowledge and 30 years of experience including at the top levels in industry, finance, economics and management fields to help Railway Board in setting a strategic direction.
- The existing service of Indian Railway Medical Service (IRMS) to be consequently renamed as Indian Railway Health Service (IRHS).

#### **4.2.3. Dedicated Freight Corridors (DFCs)**

The Indian Railways' quadrilateral linking the four metropolitan cities of Delhi, Mumbai, Chennai and Howrah, commonly known as the Golden Quadrilateral; and its two diagonals (Delhi-Chennai and Mumbai-Howrah), adding up to a total route length of 10,122 km carries more than 55% of revenue earning freight traffic of IR. The existing trunk routes of Howrah-Delhi on the Eastern Corridor and Mumbai-Delhi on the Western Corridor are highly saturated, with line capacity utilization varying between 115-150 per cent.

The surging power needs requiring heavy coal movement, booming infrastructure construction and growing international trade has led to the conception of the **Dedicated Freight Corridors**. The Sanctioned Dedicated Freight Corridors are:

- **Western Dedicated Freight Corridor, (Dadri, U.P to Jawaharlal Nehru Port, Mumbai—1,468 km) (WDFC)**
- **Eastern Dedicated Freight Corridor, (Ludhiana Punjab to Dankuni West Bengal—1,760 km) (EDFC)**
- Four more Freight Corridors were also announced later - East-West Corridor (Kolkata-Mumbai); North-South Corridor (Delhi-Chennai); East Coast Corridor (Kharagpur-Vijaywada); Southern Corridor (Chennai-Goa)

Being executed by the **Dedicated Freight Corridor Corporation of India Limited (DFCCIL)**, a Special Purpose Vehicle set up under the **Ministry of Railways in 2006**, the dedicated freight corridors will provide relief to the railways' heavily congested Golden Quadrilateral along the western and eastern rail routes, and facilitate fresh industrial activity and multi-modal value-addition services hubs along the corridors.

Other significance of DFC is that the diversion of freight to DFCs on trunk routes will free up the existing network for the kind of capacity expansion needed for passenger movement. It will bring fundamental changes by **reduction in unit cost of transportation, smaller organization and management cost, with higher efficiency** and lower energy consumption.

- DFC can allow train speed to a maximum of 100 kmph from the current average speed of around 25kmph.
- It will allow a time-tabled freight services for movement of the cargo to the gateway ports with guaranteed transit time. This would enhance international connectivity from India

#### **Challenges faced**

- **Issue of Land Acquisition:** Due to route alignment, the railways have to acquire large swathes of private land that are already developed, making the construction of the corridor difficult. The ministry is also required to pay market price for any land acquisition, further compounding to financial problem.
- **Concern over technology:** While the railways want to run double-stacked containers in the DelhiMumbai corridor on diesel locomotives, Japanese International Cooperation Agency (JICA), which has financed the project, has suggested electric ones, saying it is more environment-friendly.
- **Double stack vs single stack:** The project has adopted different technical standards for WDFC and EDFC. WDFC would have moving dimensions made for double stacked containers and moving dimensions for EDFC are being made for single stack container operations. This makes seamless movement of double stack trains from WDFC to EDFC impossible.

Student Notes:



- **Not enough bidders:** Given the conditions set by the Japanese government (which is giving soft loans) and which stipulates involvement of a Japanese partner, the total number of bidders has been low for the Western corridor.
- **Cancelled Tenders:** Cancellation of a tender and iterating the process again have a ripple effect on the overall advancement of the project.

Student Notes:

#### How can DFCs help in reviving the manufacturing sector:

- Dedicated Freight Corridors are proposed to adopt world class and state-of-the-art technology. Significant improvement is proposed to be made in the existing carrying capacity by modifying basic design features. Both these improvements will allow longer and heavier trains to ply on the Dedicated Freight Corridors. This will provide infrastructure to allow heavy loaded trains to move.
- Its completion will have a major impact on improving transportation infrastructure which will enhance attractiveness of India as an investment destination including the manufacturing sector
- The time taken would be considerably, thereby reducing the shipping time.
- It would also introduce time tabled freight services and guaranteed transit time
- Once completed, the dedicated freight corridors will enable Indian Railways to improve its customer orientation and meet market needs more effectively thereby affecting the entire business ecosystem.
- Unlike the existing rail network, which runs on a combination of diesel and electrical locomotives, the proposed DFC corridor will operate entirely through electric locomotives, thereby lowering the transportation costs for the manufacturing sector which are considerably higher when compared to developed countries of the world.

#### **4.2.4. Rail Development Authority**

Government has approved the constitution of Rail Development Authority (RDA) in April, 2017. The role/mandate of RDA inter-alia includes providing expert advice to Government to make informed decision on:-

1. Pricing of services commensurate with costs;
2. Measures for enhancement of non-fare Revenue;
3. Protection of consumer interests, by ensuring quality of service and cost optimization;
4. Promoting competition, efficiency and economy;
5. Encouraging market development and participation of stakeholders in the rail sector and for ensuring a fair deal to the stakeholders and customers;
6. Creating positive environment for investment;
7. Promoting efficient allocation of resources in the Sector;
8. Benchmarking of service standards against international norms and specify and enforce standards with respect to the quality, continuity and reliability of services provided them;
9. Providing framework for non-discriminatory open access to the Dedicated Freight Corridor (DFC) infrastructure and others in future;
10. Suggesting measures to absorb new technologies for achieving desired efficiency and performance standards; and
11. Suggesting measures for human resource development to achieve any of its stated objectives.

#### **4.2.5. Safety**

The Indian Railways made safety its foremost priority and achieved its best ever (in last 57 years) safety record in 2018-19. During 2018-19, consequential train accidents decreased from 73 to 59 in comparison to the corresponding period of the previous year

- Incident of train collisions has come down to zero in the year 2018-19.
- The incidents of derailment have decreased from 78 in 2016- 17 to 46 in the year 2018-19.

- There has been an 81% drop in the number of deaths from 152 in 2013-14 to 29 till January 31, 2019.
- All unmanned level crossings on broad gauge network have been eliminated.

Student Notes:

#### **Steps taken by the Government**

- **Strong acceleration in track renewal related works-** To eliminate track infirmities and to quickly replace old/damaged rail tracks, track renewal projects were prioritised. As a result, the speed of track renewal almost doubled from about 2,400 track km in 2014-15 to around 4400 track kms in 2017-18.
- **Modernisation of track and rolling stock monitoring and maintenance-** To ensure that defects in track or rolling stock are detected and addressed.
- **De-congesting railway network and upgrading rolling stock technology-** the government increased the average pace of commissioning new lines from an average of about 4.1 km per day (2009-14) to 6.5 km per day (2014-18). It is also upgrading the existing rolling stock by shifting to new technology such as LHB coaches and gradually procuring state-of-the-art diesel and electric locomotives.
- **Increased pace of elimination of unmanned level crossings-** which was close to 1,140 per year during 2009- 14 was improved to about 3,400 unmanned level crossings in just 7 months (April 2018 – October 2018).
- **Ensuring adequate funds-** The Rashtriya Rail Sanraksha Kosh fund has been created for safety expenditure, which provides Indian Railways a dedicated corpus of `1 lakh crore for investing in safety projects during the 5 year period 2017 to 2022.
- **Other measures-** introduction of state-of-the-art signaling technology (European Train Control System (ETCS) level 2), proliferation of electronic interlocking, increased provision of foot over bridges, escalators, lifts in stations, filling safety related vacancies on priority.

#### **4.2.6. Other recent initiatives and developments**

- In September 2020, the Indian Railways announced the '**Clone Train Scheme**', wherein it planned to run a clone train with the train of the same number, to help and provide relief to the waitlisted passengers over heavy passenger traffic routes.
- In September, 2020, Indian Railways sanctioned a feasibility study for seven bullet train projects - all open to PPP investments.
- In July 2020, The Ministry of Railways decided to create a special cell, Project Development Cell (PDC), in the railway board to increase investments and inflow of foreign direct investment (FDI).
- In November 2019, Indian Railways entered into Procurement cum Maintenance Agreement with Madhepura Electric Locomotive Pvt. Ltd. (MELPL), a joint venture of Indian Railways and France-based Alstom to manufacture 800 electric locomotives for freight service and its associated maintenance.
- In October 2019, Indian Railway launched One Touch ATVM for fast ticketing at 42 Suburban Stations of Central Railway.
- The Government is going to come up with a '**National Rail Plan**' to enable the country to integrate its rail network with other modes of transport and develop a multi-modal transportation network.

#### **4.3. Way ahead**

The strategy for Indian Railways as discussed below essentially is based on 3 pillars - **Nav Arjan** or New revenues (focus on new sources of revenue); **Nav Manak** or New norms (optimising outgo on each activity); and **Nav Sanrachna** or New Structures (revisiting all processes, rules, and structures)

- **Better utilization of existing infrastructure to address congestion:** Prioritize ongoing projects to improve capacity utilization. Timely completion of these projects will generate

more revenue. At the same time, we need to maintain and upgrade the existing network to ensure that supply keeps up with demand.

- **Ease organizational rigidity through structural reforms:** Consider opening up the ownership and operations of freight terminals and ownership of locomotives and rolling stock to the private sector under a transparent, neutral (nonrailway) and fair regulatory mechanism. This will improve performance and attract private players and investments.
  - Consider transferring coach and locomotive manufacturing and repairs to private players. However, since human safety is involved in the case of coaches and wagons, IR should continue to have regulatory and technical control over their manufacture and maintenance to ensure the safety of users in compliance with the General Rules of IR.
  - Separate suburban passenger transport from the rest of the network and put a light rail network in place in all major urban areas under local governments.
- **Rationalize fare structures and subsidies, and monetize assets to generate revenues:**
  - Revisit IR's pricing model to make the passenger and freight segments sustainable. Freight tariffs should be competitive with the cost of road transportation.
  - Monetize land resources with the railways, particularly through developing non-railway revenues such as through retail or other activities.
  - Increase retail revenues from railway stations by investing in facilities, modernizing stations and contracting space to private players.
- **Enhance the ease of doing business:** Set up an independent homologation and standardization agency to adopt new railway technology and improve the speed and reliability of the railway network
  - Complete by 2022-23 the commissioning of the remaining 55 of the 100 new freight terminals announced in the Rail Budget of 2016-17 under 'Mission Hundred'.
  - Improve terminal efficiency by promoting the concept of 'engine-on-load' system, developing proper terminal layouts, adopting efficient operational practices, operating trains end-to-end, and using proper handling methods/ systems for loading and unloading operations

#### **4.3.1. Recommendation by Various Committees for Reforms**

##### **4.3.1.1. Rakesh Mohan Committee (National Transport Development Policy Committee (NTPDC))**

The Government of India set up the NTDPC in the year 2010, under the chairmanship of Dr. Rakesh Mohan. The aim of NTDPC was to provide a long-term transport policy for the country up to the year 2029-30.

- Increase in investment in railways from 0.4 per cent of GDP in 11<sup>th</sup> plan to 0.8 per cent in 12<sup>th</sup> plan and 1.1 per cent in 13<sup>th</sup> plan and beyond.
- Separation of railways management and operations from the Government. The Ministry of Railways in the future should be limited to setting policies. A new Railways Regulatory Authority should be setup, which would be responsible for overall regulation including the setting of tariffs. The management and operations should be carried out by a corporatized entity, the Indian Railway Corporation (IRC) (to be setup as a statutory corporation).
- Accounting system to be revamped into a company account format in line with the Indian GAAP (Generally Accepted Accounting Principles).
- Indian Railways should take steps to capture a significant share of the fast growing FMCG, Consumer Durable and Information Technology, containerized cargo and other segments like automobiles, etc, where its presence is negligible.
- Strategy for passenger services should include augmentation of supply, shift of focus to long distance and inter-city transport, upgradation of speed and development of select High Speed Rail corridors.

- Improved connectivity to industry clusters as well as significant ports, based on their current and projected traffic volumes.
- Development of 15-20 logistics parks at the main network hubs such as Mumbai, Bangalore, Delhi NCR etc.
- Construction of six Dedicated Freight Corridors (DFCs) on top priority.
- Establishment of National Board for Rail Safety & Establishment of Railway Research and Development Council.
- Setting up a National Railway Construction Authority, partially independent of Ministry of Railways, to expedite delivery of projects.
- Multiple services and cadres of Railways at the management level need to be rationalized and coalesced into fewer services.
- Indian Railways should expedite the execution and operationalization of identified inter-connectivity projects.

Student Notes:

#### **4.3.1.2. The Bibek Debroy Committee**

“Mobilization of Resources for Major Railway Projects and Restructuring of Railway Ministry and Railway Board” is the theme of the Report. The final Report was submitted in June, 2015 and reviews almost all areas of Indian Railways operations. The key recommendations of this committee are as follows:

- **Transition to commercial accounting:** The financial statements of Indian Railways need to be re-drawn, consistent with principles and norms nationally and internationally accepted.
- **Streamline recruitment & HR processes:** There is a multiplicity of different channels through which people enter the railway services. It essentially recommended unifying and streamlining the process.
- **Establishment of Independent Regulator RRAI:** setting up an overarching Railway Regulatory Authority of India (RRAI) as an independent regulatory body. The Railway Board should continue only as an entity for the Indian Railways (PSU).
- **Encouraging private entry:** Private entry into running both freight and passenger trains in competition with Indian Railways should be allowed and private participation in various railway infrastructure services and non-core activities like production and construction, should be encouraged.
- **Indian Railway Manufacturing Company:** The Committee proposes that all these existing production units whether it is for coaches or locomotives should be placed under a government SPV known as the Indian Railway Manufacturing Company (IRMC).
- **Raising resources:** An Investment Advisory Committee may be set up, consisting of experts, investment bankers and representatives of SEBI, RBI, IDFC and other institutions for raising resources for investment.
- **Social costs & JVs to bear them:** Constructing new suburban lines should be undertaken as joint ventures with state governments. There are too many Zones and Divisions and thus a rationalization exercise is required.
- **Changing relationship between government & Railways:** A separate Railway budget should be phased out progressively and merged with the General Budget.
- **Decentralisation:** Decentralisation should happen at the bottom level duties.
- **Non- core areas:** Separation of activities like running of hospitals, schools, catering, real estate development, manufacturing of locomotives, coaches and wagons from the core business of running trains.

Clearly, the panel has articulated a very far sighted report with major changes that will take time for completion. Many recommendations of this committee has already been undertaken by the government.

## 5. Civil Aviation

India is the third largest domestic market for civil aviation in the world. India has 136 commercially-managed airports by Airports Authority of India (AAI) and 6 under PublicPrivate Partnerships (PPP) for Operation, Maintenance and Development of airports. The Airports Authority of India (AAI) aims to bring around 250 airports under operation across the country by 2020.

The civil aviation sector **contributed USD 8.9 billion to India's GDP** in 2014 and supported 1.31 million direct, indirect and induced aviation jobs. In 2016, the demand for domestic air travel was twice that in China. India's domestic air traffic made up 69 per cent of total airline traffic in South Asia.

The World Economic Forum's Global Competitiveness Report, 2018 ranks India as 53rd out of 140 countries worldwide in **air transport infrastructure**.

India's civil aviation sector has been growing steadily; the **number of passengers** was 158 million in 2016-17. Domestic passenger traffic increased at a CAGR of almost 10 per cent between 2007- 08 and 2016-17 and international passenger traffic grew at a CAGR of 8.07 per cent during the same period.

The airline operators in India have **scaled up their aircraft seat capacity** from an estimated 0.07 annual seats per capita in 2013 to 0.12 in 2018.

India is also catching up with other leading aviation markets in terms of **market penetration**. There has been an increase in air cargo, both domestically and internationally, in 2016-17. IATA has forecast that India will cross over into the top 10 air freight markets in 2018-19.

Currently, Director General of Civil Aviation (DGCA) is the regulatory body in the field of civil aviation under the Ministry of Civil Aviation. Airport Authority of India is the PSU under the Ministry of Civil Aviation engaged in development and building of airport infrastructure & managing airports across the country.

### 5.1. Issues

- **Capacity and infrastructure:** Due to the rapid expansion of India's civil aviation sector, airspace, parking bays and runway slots will become increasingly scarce over the next few years, especially at metro airports. Mumbai and Chennai airports are already close to saturation. Capacity and infrastructure constraints could decrease efficiency and safety and have negative economic effects.
  - **Inadequate hangar space and unavailability of land** to expand airports at their current sites, particularly in major cities, are two of the major constraints that face the sector.
- **Lack of Skilled workers:** According to a study conducted by the Ministry of Civil Aviation, Indian aviation could directly support 1.0 to 1.2 million jobs by 2035. This implies that about 0.25 million persons will need to be skilled over the next 10 years.
  - Shortage and gaps in availability of industry-recognised skills – from airline pilots and crew to maintenance and ground handling personnel – could constrain the growth of different segments of the sector.
  - High price of Avgas (an imported fuel used by almost all training aircraft) coupled with a shortage of instructors, makes flying training an expensive and time-consuming exercise.
- **High cost to passengers and of air cargo:** This is due to upgradation of infrastructure, expensive aviation turbine fuel, high GST incidence on aircraft engine and spare parts etc.
- **Aviation safety:** Although, the number of aviation safety violations in 2017 (337) has declined in comparison to 2016 (442), the absolute number still remains high.

## 5.2. Government Initiatives

Student Notes:

### 5.2.1. RCS – UDAN (*Regional Connectivity Scheme – Ude Desh ka Aam Nagrik*)

The Ministry of Civil Aviation (MoCA), Government of India released the National Civil Aviation Policy 2016 (NCAP 2016). One of the objectives of NCAP 2016 is to “enhance regional connectivity through fiscal support and infrastructure development”. In line with this, government launched UDAN scheme.

The primary objective of RCS is to facilitate / stimulate regional air connectivity by making it affordable. Promoting affordability of regional air connectivity is envisioned under RCS by supporting airline operators through

(1) concessions by Central Government, State Governments (reference deemed to include Union Territories as well, unless explicitly specified otherwise) and airport operators to reduce the cost of airline operations on regional routes / other support measures

(2) financial (viability gap funding or VGF) support to meet the gap, if any, between the cost of airline operations and expected revenues

#### Key features of the scheme

- UDAN will be applicable on flights which cover between 200 km and 800 km with no lower limit set for hilly, remote, island and security sensitive regions.
- The scheme seeks to reserve a minimum number of UDAN seats i.e. seats at subsidized rates and also cap the fare for short distance flights.
- A Regional Connectivity Fund would be created to meet the VGF requirements under the scheme. The RCF levy per departure will be applied to certain domestic flights along with 20% contribution from states.
- For balanced regional growth, the allocations under the scheme would be equitably spread across the five geographical regions of the country viz. North, West, South, East and North-east.
- The scheme UDAN envisages providing connectivity to un-served and under-served airports of the country through revival of existing air-strips and airports.
- The scheme would be in operation for a period of 10 years.

Recently, Civil Aviation Ministry has approved 78 new routes under 4th round of Regional Connectivity Scheme (UDAN 4.0) to further enhance the connectivity to remote & regional areas of the country.

- For the first time, helipads were also connected under phase 2 of UDAN scheme.
- Key Features of UDAN 3 included - Inclusion of Tourism Routes under UDAN 3 in coordination with the Ministry of Tourism; Inclusion of Seaplanes for connecting Water Aerodromes, and, Bringing in a number of routes in the North-East Region under the ambit of UDAN.

#### Significance

- The scheme would ensure affordability, connectivity, growth and development.
- This would help in generating employment.
- It provides an additional business opportunity by increasing the potential for moving existing perishable cargo, fragile goods and high-value export-oriented products by air.
- The state governments would reap the benefit of development of remote areas, enhance trade and commerce and more tourism expansion through the introduction of small aircrafts and helicopters.

- Airlines represent luxury. In a poor country like India it seems a case of misplaced priorities when governments and passengers have to bear the cost of additional subsidies to connect regional air routes.
- India is the fastest growing aviation market in terms of passenger traffic. State subsidies, therefore, are best used elsewhere.
- The assumption that three years would be enough to make a route sustainable might be misplaced. It does not take into account a scenario of fuel cost increase that would significantly change the air cost dynamics.

### **5.2.2. National Civil Aviation Policy (NCAP 2016)**

The Union Cabinet recently cleared the Civil Aviation Policy in order to boost the domestic aviation sector and provide passenger-friendly fares. This new policy aims at providing various benefits to domestic airline passengers.

#### **Aim of the Policy**

- India to become 3rd largest civil aviation market by 2022 from 9th.
- Domestic ticketing to grow from 8 crore in 2015 to 30 crore by 2022. To grow domestic passenger traffic nearly four-fold to 300 million by 2022.
- Airports having scheduled commercial flights to increase from 77 in 2016 to 127 by 2019.
- Cargo volumes to increase by 4 times to 10 million tonnes by 2027.
- Enhancing ease of doing business through deregulation, simplified procedures and e-governance.
- Promoting 'Make In India' in the Civil Aviation Sector.
- Ensuring availability of quality certified 3.3 lakh skilled personnel by 2025.

#### **Highlights of NCAP**

- **Regional Connectivity Scheme**
  - Capping of fare: Rs 1,200 for 30 minutes and Rs 2,500 for hour-long flights.
  - Revival of airstrips/airports as No-Frills Airports at an indicative cost of Rs. 50 crore to Rs. 100 crore.
- **Route Dispersal Guidelines (RDG):** MoCA will categorize the air traffic routes into 3 categories.
- **5/20 rule scrapped**
  - Replaced with a scheme which provides a level playing field.
  - All airlines can now commence international operations provided that they deploy 20 aircraft or 20% of total capacity, whichever is higher for domestic operations.
- **Bilateral Traffic Rights:** Government of India will enter into 'Open Sky' ASA on a reciprocal basis with SAARC countries and countries located beyond 5,000 km from Delhi. i.e. these countries will have unlimited access, in terms of number of flights and seats, to Indian airports, leading to increased flight frequencies.
- **Ease of Doing Business**
  - A single window for all aviation related transactions, complaints, etc.
  - More focus on ease-of-doing business as government plans to liberalize regime of regional flights.
- **Infrastructure Development**
  - Restoration of air strips at a maximum cost of Rs. 50 crore through Airports Authority of India (AAI).
  - Four Heli-hubs to be developed. Helicopter Emergency Medical Services to be facilitated.
  - Development of Greenfield and Brownfield airports by State governments, private sector or in PPP mode to be encouraged.

- Future tariffs at all airports will be calculated on a 'hybrid till' basis. Under 'hybrid till', only up to 30 per cent of the non-aeronautical revenues, which include segments like retail, food & beverages and parking, would be used for cross-subsidisation of aeronautical charges.

Student Notes:

### 5.3. Way Ahead

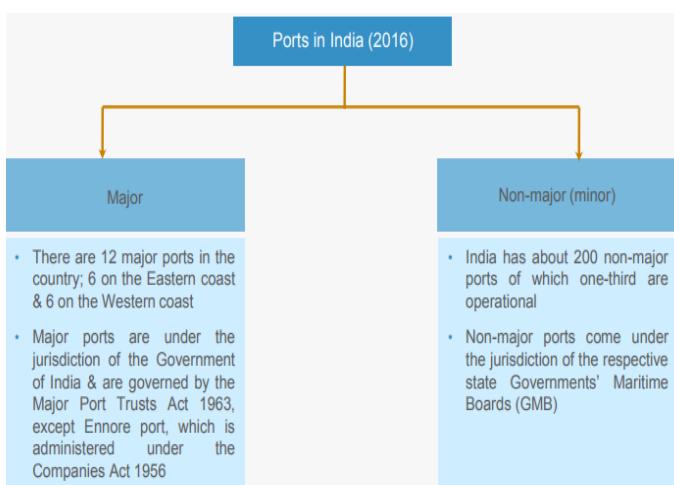
- **Enhance aviation infrastructure:** Complete the planned airports under the UDAN initiative in a time-bound manner. Revival of 50 un-served and under-served airports/airstrips should be completed. In addition to completing two new airports for Delhi and Mumbai by 2022, the infrastructure capacity in the 10 biggest airports (in terms of traffic) should be significantly augmented.
- **Increase investment in the sector through financial and infrastructure support:** Create additional parking hubs at suitable locations, accessible through short haul flights, to accommodate additional aircraft. Monetize vacant real estate near AAI airports in all major centres of traffic to increase non-aeronautical revenues.
- **Address shortage of skilled manpower:** Promote collaboration between original equipment manufacturers (OEMs), industry and educational institutes to teach the latest concepts in the aviation industry including management principles, IT in aviation, etc.
  - Expedite commencement of courses by the National Aviation University after due consultation with stakeholders.
  - Facilitate greater involvement of the private sector in sponsoring aviation institutions, industrial training and R&D projects.
  - A further reduction in GST rates on Avgas will allow flying training organizations to make training more affordable
- **Promote air-cargo growth:** Develop an integrated digital supply chain or e-cargo gateway based on the National Air Cargo Community System (NACCS) platform and promote "Fly-from-India" through the creation of transhipment hubs.
- **Ease the regulatory environment for airports:** Deregulate further and open up the aviation market to help increase passenger and freight traffic in India.
  - Adopt a consistent model for tariff determination so that it reduces passenger cost.
  - Amend the AAI Act to allow commercial usage of land with airports by liberalising end-use restrictions for existing and future airports.
  - Ensure that the DGCA acts as a truly independent regulator, with the Ministry of Civil Aviation focusing on policies.
  - Meet the regulatory and security requirements prescribed by the International Civil Aviation Organization (ICAO) at all times.
- **Prioritize aviation safety:** There should be zero tolerance of safety violations. DGCA should be given autonomy for an effective aviation safety oversight system. It should also be authorized to impose fines and penalties depending upon the nature of violations. DGCA should create a single-window system for all aviation related transactions, queries and complaints
- **State governments** should play a much more active role in the airport sector since aviation is a key enabler of local economic development.
- Conditions should be created that **allow Indian MRO (Maintenance Repairs and Overhaul/Operations) industry to grow rapidly**. India has strong comparative advantages to become a world-leading centre of MRO.

## 6. Ports and Shipping

Shipping is essential to both commodity and services trade of any country. India has a coastline spanning about 7,500 km. Around 95 per cent of India's trade by volume and 68 per cent in terms of value is transported by sea.

As on 30th September, 2019, India had a fleet strength of 1,419 ships (Figure 21). Despite one of the largest merchant shipping fleet among developing countries, India's share in total world dead weight tonnage (DWT) is only 0.9 per cent as on January 1, 2019 according to Institute of Shipping Economics and Logistics. The existing Indian fleet is also aging, with the average age increasing from 15 years in 1999 to 19.71 years as on October 1, 2019.

#### Ports in India (2016)



Student Notes:

Ministry of Shipping has been striving to improve the operational efficiencies through mechanization, digitization and process simplification. As a result key efficiency parameters have improved considerably.

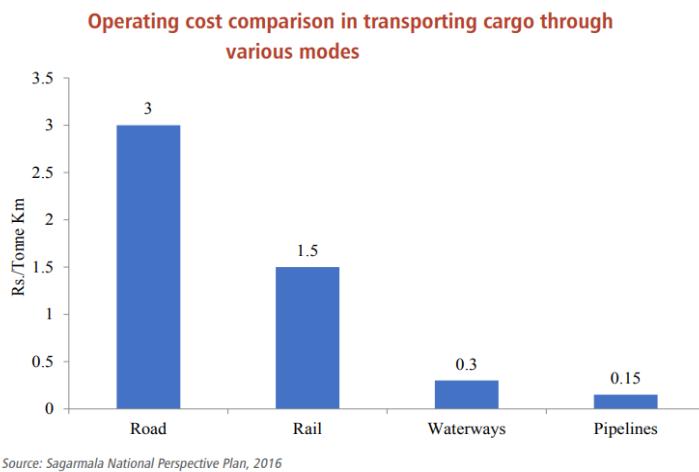
- The Average Turnaround Time in 2018-19 improved to 59.51 Hrs as against 64.43 Hrs in 2017-18.
- The Average Output Per Ship Birthday has increased from 15,333 Tonnes in 2017-18 to 16541 Tonnes in 2018-19



In keeping with general policy of economic liberalisation, the port sector was opened to private sector participation in 1997. Accordingly, a regulatory body known as Tariff Authority for Major Ports (TAMP) was introduced for regulating both vessel-related and cargo-related tariffs. TAMP was also made responsible for regulating rates for lease of properties in respect of major port trusts and private operators. Currently 100% FDI is allowed in the shipping sector in India.

#### ***Inland waterways***

Inland Water Transport (IWT) carries less than 2 per cent of India's organized freight traffic and negligible passenger traffic.



The Inland Waterways Authority of India (IWAI) is mandated to develop and maintain infrastructure for fairway, navigational aids and terminals. The IWAI also provides an enabling environment for private investment in cargo vessels and operational services. Until 2015, there were only five NWs in the country. In April 2016, 106 more waterways spread over 24 states were declared as NWs.

## 6.1. Issues

- **Modal mix:** Roads (54 per cent) continue to be the dominant mode of transporting cargo, followed by rail (33 per cent). Transportation of cargo through waterways – shipping and inland water – accounts for a minuscule modal share (6 per cent) despite it being the most costeffective and efficient mode.
- **Draught levels:** Most Indian container handling ports lack the capability to handle large container vessels due to inadequate depth; a minimum draft depth of 18 metres is needed to enable mother vessels to dock at ports. With international trade leaning towards the more economically viable mother vessels, shallow draft adversely affects a port's potential to become a hub port.
- **Poor performance of Government ports:** It takes up to four times as long to fill or unload a cargo ship at Jawaharlal Nehru Port than at private rival. Most of the major ports are overstaffed with unskilled and untrained labour and the development of such ports may suffer due to frequent labour strikes, inefficiency and low labour productivity.
- **Procedural and policy related challenges:** The presence of a dual institutional structure that has led to the development of major ports (those owned by the central government) and non-major ports (those owned by the state governments) as individual projects. The involvement of multiple agencies in the development of infrastructure to promote industrialization, trade, tourism and transportation across the country is another deterrent.
- **Connectivity to ports:** Weak hinterland connectivity between production centres and gateway ports often leads to higher costs and delays because of sub-optimal mode choices.
- **Transhipment port:** A large percentage of containers in India are currently transshipped through other ports, such as Colombo (just south of India), Singapore (East), Dubai and Salalah (West) due to the absence of a transhipment port in the country. This has led to additional costs and delays due to the feeder voyage from India to the hub port.
- **Less Private participation:** The financial viability of port projects is a major deterrent for private developers as well as financiers. Greenfield port projects are usually in remote locations and considerable government level support is required to create basic infrastructure for site access.
- **Charges by the shipping lines:** The business practices of shipping lines have played a key role in the present negative perception of sea transport. A long pending concern has been the high rate and multiplicity of charges imposed by shipping lines.

- Capital for inland vessels:** At present, the cost of capital is very high and makes IWT freight uncompetitive. It is difficult to attract capital for building inland vessels as it is a significant investment.
- Technical issues in inland waterways:** The varying and limited depths due to the meandering and braiding of alluvial rivers and the erosion of their banks causing excessive siltation, lack of cargo earmarked for IWT, non-mechanized navigation lock systems and insufficient unloading facility at terminals hinder the use of IWT by shippers.
- Regulatory issues for inland waterways:** States' Ferries Acts from various years govern cross ferry movement and this may present a barrier to inland navigation, as the regulations may not take into account safety considerations.
- Severe shortage of MRO (Maintenance, Repair and overhaul) facilities** for inland water transport vessels.

Student Notes:

## 6.2. Government Initiatives

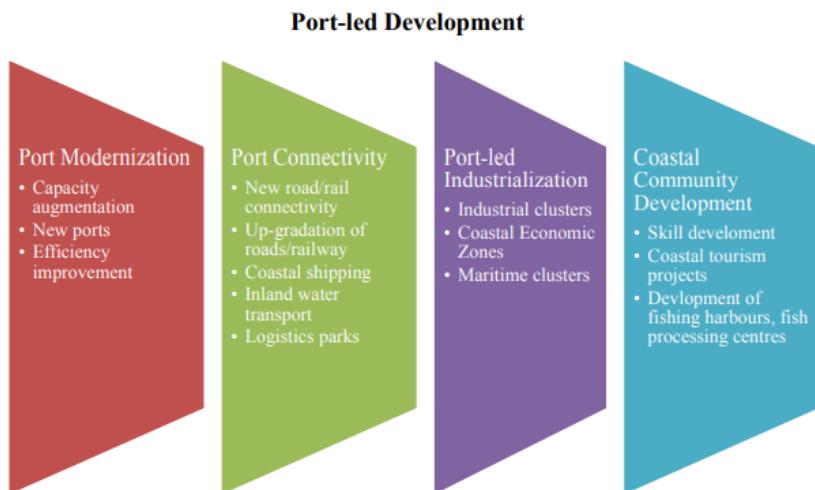
### 6.2.1. Sagar Mala Project

The Ministry of Shipping's Sagarmala programme focuses on modernizing and developing ports, enhancing port connectivity, supporting coastal communities and stimulating port-linked industrialization. It aims to promote port-led direct and indirect development and to provide infrastructure to transport goods to and from ports quickly, efficiently and cost-effectively.

- Sagarmala aims to reduce the logistics costs for foreign and domestic trade, leading to an overall cost savings of INR 35,000 to INR 40,000 crore annually by 2025.
- It also aims to double the share of water transportation in the modal mix.

The government has set up the Sagarmala Development Company Limited (SDCL) to provide funding support to special purpose vehicles (SPVs) set up to implement projects and the Indian Port Rail Corporation Limited (IPRCL) to undertake port-rail connectivity projects under Sagarmala.

#### Pillars of the *Sagarmala* programme



Source: Ministry of Shipping

#### How port led development can help India?

- Development of port infrastructure:** It would enhance port connectivity, modernisation and port-linked industrialisation.
- Benefiting to Coastal communities:** It would lead to development of coastal communities. With 42 per cent of India's population living in the coastal states, it can make a positive impact on the lives of more than 500 million people.

- **Inland waterways:** The programme like Sagarmala for port led development would have large impact on hinterland states also, through the development of 111 inland waterways.
  - Jal Marg Vikas Project is expected to benefit densely populated states of Uttar Pradesh, Bihar, Jharkhand and West Bengal through the development of national waterways-1.
- **Tourism:** Multiple cruise tourism centers have been launched including in Mumbai, Chennai and Cochin. These would provide a significant boost to the tourism industry in India.
- **Export and Import:** Indian ports handle more than 90 per cent of India's total EXIM trade volume. Port led development is critical to boost India's exports and imports.
- **Easy movement of cargo:** By linking major and non-major ports, industrial clusters and evacuation infrastructure into a single system at a larger regional level, it will enable seamless and efficient movement of cargo through gateways, thereby allowing ports to enhance competitiveness and offer multiple freight options to customers.
- **Decreasing Logistics Costs and enabler of 'Make in India':** Logistics costs have a crucial role to play in international trade. By making transport water-based, we can reduce our logistics costs, which in India is between 16-18 per cent, but in the next two-three years, through the successful execution of Sagarmala and Bharatmala programme, it is expected to come down to match the global average.

Student Notes:

#### **6.2.1.1. Coastal Economic Zone**

14 mega CEZs is proposed to be established under the Sagarmala Programme. It is conceptualised as a spatial-economic region which could extend along 300-500 km of coastline and around 200-300 km inland from the coastline. Each CEZ will be an agglomeration of coastal districts within a State. The concept is based in China based Shenzhenstyle Coastal Economic Zone.

- It will provide the geographical boundary within which port led industrialization will be developed by having a uniform policy along the ports and coastal states.
- The CEZs have been envisaged to tap synergies with the planned industrial corridors like Vizag Chennai Industrial Corridor and Delhi Mumbai Industrial Corridor.
- Under CEZ investors will get business friendly ecosystem including ease of doing business, especially ease of exporting and importing, swift decisions for environmental clearances etc.
- It would help in boosting exports, employment and foreign investment.

#### **6.2.1.2. Model Concession Agreement for Port Development**

Union Cabinet approved changes in the model concession agreement (MCA) for public-private partnership projects (PPP) in major ports conceived under Sagarmala programme.

##### **Key Provisions of Revised MCA**

- It provides an **exit route to developers** where they can divest their equity up to 100 per cent after completion of two years from the Commercial Operation Date (COD).
- The **royalty to the developer** will be charged on basis of per million tonne of cargo handled and will be linked to wholesale price index thus reducing discretion of tariff setting by TAMP.
- **Land rent has been reduced** from 200% to 120% for additional land.
- MCA envisage constitution of the **Society for Affordable Redressal of Disputes** - Ports (SAROD-PORTS) as dispute resolution mechanism.
- The concessionaire would be free to deploy **higher capacity equipment**, facilities, technology and carry out value engineering for higher productivity and cost saving.
- **New definition of "Change in Law"** to provide for compensation to concessionaire in case of changes in TAMP guidelines, labour laws or environmental laws.
- **A complaint portal** for port users and a monitoring arrangement has also been introduced for keeping periodical status report of the project.

- The revised Model Concession Agreement will attract investment for port development.
- Easier exit norms will simplify the route for mergers and acquisitions in Port sector.
- It will also result in better utilisation of physical assets by private developers as they can start operations before getting all certifications.
- It will also bring the provisions of MCA in line with Major Ports Authority Bill, 2016 which had provided that concessionaire will be free to fix the actual tariffs based on market conditions.

### **6.2.2. The Major Port Authorities Bill 2020**

Lok Sabha recently passed The Major Port Authorities Bill 2020 that sought to provide autonomy to India's major ports and improve their efficiency and competitiveness. The Bill will replace the Major Port Trusts Act, 1963 and seeks to provide for regulation, operation and planning of Major Ports in India. It shall apply to the Major Ports of Chennai, Cochin, Deendayal (Kandla), Jawaharlal Nehru (Nhava Sheva), Kolkata, Mormugao, Mumbai, New Mangalore, Paradip, V.O. Chidambaranar (Tuticorin) and Visakhapatnam.

#### **Key provisions**

- **Creation of Major Port Authorities Board:** It vests the administration, control and management of such ports upon the Major Port Authorities Board. These Boards will replace the existing Port Trusts.
- **Powers of the Board:** The Boards of Port Authority have been delegated full powers to enter into contracts, planning and development, fixing of tariff except in national interest, security and emergency arising out of inaction and default.
- **Public Private Partnership (PPP) projects:** The Bill defines PPP projects as projects taken up through a concession contract by the Board. For such projects, the Board may fix the tariff for the initial bidding purposes.
- **Landlord model:** It will reorient the governance model in central ports to landlord model, whereby port infrastructure is leased to private operators but ownership of the port remains with port authority.
- **Constitution of Adjudicatory Board by the central government:** This Board will replace the existing Tariff Authority for Major Ports constituted under the 1963 Act. Currently, the Tariff Authority for Major Ports (TAMP), established under the 1963 Act, fixes the scale of rates for assets and services available at ports.
  - The role of TAMP has been redefined in the bill. The port authority has now been given powers to fix tariffs which will act as a reference tariff for purposes of bidding for PPP projects. PPP operators will be free to fix tariffs based on market conditions.

#### **Significance of the bill**

- **Decentralize decision making:** The bill aims at decentralizing decision making and to infuse professionalism in governance of major ports. This will empower the Major Ports to perform with greater efficiency on account of full autonomy in decision making and by modernizing the institutional framework of Major Ports. A compact Board with professional independent Members will strengthen decision making and strategic planning.
- **Transparency:** The bill is expected to help impart faster and transparent decision making benefiting the stakeholders and better project execution capability.
- **Attract private investment:** It would aid the major ports in being more competitive and nimble in the market vis-a-vis non-major ports and also boost their ability to attract more private sector investments in the medium to long term.
- **World class infrastructure:** The bill will help the ports develop world class infrastructure. It can make India's major ports compete with major world class ports.

### **6.2.3. Vadhavan Port**

Student Notes:

The Union Cabinet has given its 'in-principle' approval for setting up a Major Port at Vadhavan, located about 190 km north of JNPT in Maharashtra. An SPV will be formed with Jawaharlal Nehru Port Trust (JNPT) as the lead partner with equity participation equal to or more than 50% to implement the project.

The port site at Vadhavan has an 18m draft naturally available and a 20m navigational channel also naturally available. The two largest container ports of the country, JNPT and Mundra, have drafts of 15m and 16m, respectively, whereas the world's largest container-handling modern deep draft ports require a draft of at least 18-20m.

#### **Significance of the Vadhavan port**

- With development of the Vadhavan port, India will break into countries with top 10 container ports in the world.
- Development of this port will enable cargo container vessels of 16,000-25,000 TEUs capacity, giving advantage of economies of scale and reducing logistics cost.
- It will also cater to the spill over traffic from JNPT port once its planned capacity of 10 million TEUs is fully utilized.

### **6.2.4. For inland waterways**

- The ministry is augmenting the capacity of NW-I under the **Jal Marg Vikas project**. The project will enable the movement of larger vessels of 1,500-2,000 tonnes on inland waterways.
- Based on the outcome of techno-economic feasibility conducted for 106 new NWs, 20 NWs have been found to be technically viable and Detailed Project Reports (DPRs) have been prepared. Development activities have been initiated on 10 viable NWs
- To provide institutional funding, the Government has proposed to allocate **2.5 per cent of the proceeds of Central Road Fund (CRF)** for development and maintenance of National Waterways. The CRF has since been renamed the Central Road and Infrastructure Fund.
- In order to reduce the logistics cost of cargo and facilitate passenger movement between North East and mainland, **MOUs have been signed with Bangladesh**.

### **6.2.5. Other initiatives**

- Project Unnati:** An exercise was undertaken to prepare a Quantitative Benchmarking Module which covered the operational, financial, human resources and efficiency related parameters for benchmarking of efficiency and productivity of Major Ports in India against international standards and define Key Performance Indicators for the ports and terminals.
  - A total number of 116 new initiatives for 12 Major Ports were identified under Project Unnati to increase the volume of traffic significantly and also avoidance of capital expenditure, out of which 95 has already been completed.
- India, one of the world's five major ship recycling countries, has acceded to the **IMO Hong Kong International Convention**, the treaty that will set global standards for safe and environmentally-sound ship recycling.
- India has become the first country in the world to issue a **Biometric Seafarer Identity Document (BSID)**, capturing the facial biometric data of seafarers. The BSID introduces new security features, including an embedded biometric chip.

## **6.3. Way ahead**

- Open up India's dredging market:** The government needs to open up the dredging market to attract more players, particularly international players, in dredging activities to increase and maintain draft depth at ports to attract large vessels and enable them to become hub ports. At present, the Dredging Corporation of India (DCI) and a limited set of private vendors serve the Indian dredging market, limiting competition.

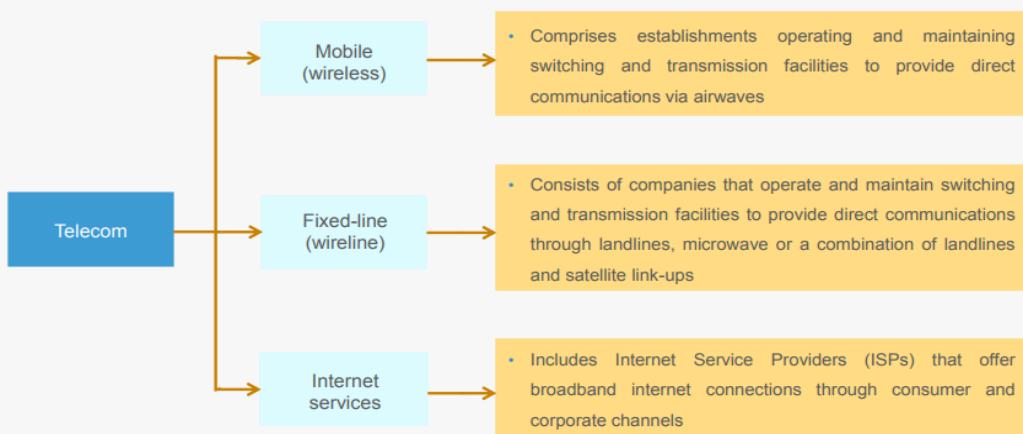
- **Expedite the implementation of Sagarmala:** Expedite the completion of various projects under Sagarmala, especially those aimed at improving port connectivity, setting up coastal economic zones (CEZs) and establishing new ports
- **Ease the business environment around shipping and ports:** The Government of India needs to take a fresh look at its policy of imports on a “Free on Board” basis (FoB policy) as it needs to balance risk between the importer and exporter.
  - Enhance technology use in ports and, wherever feasible, draw lessons from successful global ports such as Rotterdam, Felixstowe and Singapore to improve efficiency.
  - Given the inadequate capacity of the Indian coastal fleet and the need for growth in containerization, we should consider **further relaxing cabotage laws** at least until the coastal shipping sector expands to meet existing demand.
- The **new Merchant Shipping Bill** to replace the Merchant Shipping Act, 1958, needs to be enacted at the earliest to promote the ease of doing business, transparency and effective delivery of services. Opening up of the sector will improve the availability of ships and help reduce costs.
- **For inland waterways**
  - IWT should be integrated to multimodal/ intermodal connectivity. Inland terminals with proper road and/or rail connectivity and seamless transfer of goods from one mode to the other are important for an efficient logistics supply chain.
  - Financing for inland vessels could be made part of priority sector lending by banks. Categorizing inland vessels as infrastructure equipment will further ease access to capital issues for a sector where capital investments and operational costs are high. Initially, viability gap funding can be given at least for 10 years until the infrastructure is fully developed, so that inland water transport is competitive.
  - From a regulatory standpoint, detention of a vessel without a valid reason should not be allowed. Moreover currently, inland waterways are governed by multiple authorities including the Central Inland Water Corporation Limited (CIWTC Ltd), port authorities and state governments. Streamlining the regulatory structure and bringing an overarching body to oversee Inland Water Transport such as the IWAI will bring more consistency in the rules and strategy of the sector.
  - A clear directive needs to be issued for security of inland vessels, crew and cargo.

Student Notes:

## 7. Telecommunications

Telecommunications has evolved as a basic infrastructure like electricity, roads, water etc. and has also emerged as one of the critical components of economic growth required for overall socio-economic development of the country. The Indian telecom sector has registered a phenomenal growth during the past few years and has become the second largest telephone network in the world, only after China.

### THE TELECOM MARKET SPLIT INTO THREE SEGMENTS



Total telephone connections in India grew by 18.8 per cent from 9,961 lakh in 2014-2015 to 11,834 lakh in 2018-19.

Student Notes:

- The wireless telephony now constitutes 98.27 per cent of all subscriptions whereas share of landline telephones now stands at only 1.73 per cent.
- Tele-density, which shows the number of telephones per 100 people, is an important indicator of telecom penetration in the country.
  - The overall tele-density in India stands at 90.45 per cent, the rural tele-density being 57.35 per cent and urban teledensity being 160.71 per cent at the end of September 2019.
- The private sector dominates with a share of 88.81 per cent (10,606 lakh connections).

Government has taken many initiatives for development of this sector

- Bringing in **transparency in the allocation of spectrum** by adopting an auction process.
- Government is supporting research and study in **5G** through financial assistance to institutions of national importance.
- **Full Mobile Number Portability (MNP)**- One Nation Full Mobile Number Portability (MNP) was allowed recently.
- Government has also decided to **merge the two loss-making telecom PSUs BSNL and MTNL** as part of their revival package. The reasons for losses include high employee costs, Cheap mobile/internet connections to politicians and government employees, Absence of 4G services except in a few circles eroding competitiveness etc.
- Re-designation of the 'Telecom Commission' as the '**Digital Communications Commission'**
- In March 2020, the government approved the **Production Incentive Scheme** for Large- scale Electronics Manufacturing. The scheme proposes production-linked incentive to boost domestic manufacturing and attract large investments in mobile phone manufacturing and specified electronic components including Assembly, Testing, Marking and Packaging (ATMP) units.

#### **Challenges being faced by Indian Telecom sector**

- **Tariff war**- The price of data is at an average of Rs 8 per GB, which is one of the lowest in the world and calling service has also been made virtually free. So, monthly average revenue per user (ARPU) has plunged to Rs 113 in FY19 from Rs 174 in FY15.
- **Low level of capital expenditure** because of cut-throat competition in the sector, the sector is short of around 7 lakh crore investment that is needed to provide qualities as promised by 4G technology.
- **Large debts**- telecom sector is under a debt of around Rs. 4 lakh crores because of various investment related and other activities.
- **Limited Spectrum Availability** - government auction spectrum at an exorbitant cost and hence the available spectrum is less than 40% as compared to European nations and 50% as compared to China.
- **Import dependence**- India imports around 40 billion dollars of telecom equipment including infrastructure to setup 5G technology.
- **Over the top services**- Over the Top (OTT) applications such as WhatsApp hampers the revenue of telecommunication service provider.
- **High regulatory dues**- spectrum liabilities, penalties, interests etc. further add to the burden.
- **High taxes**- taxes and levies in the Indian telecom sector, ranging from 29% to 32%, are one of the highest globally.

#### **Measures needed**

- **Curb on predatory pricing**- government should fix a 'floor tariff' to save the industry from price war.

- **Reduce reserve price for spectrum auction-** government should refrain from putting high hopes of revenue generation from spectrum auction as it affects the sector badly.
- **Self-reliance on technology-** India would do well to spend on import of technology rather than equipment which will improve Make in India and will have a multiplier effect on the sector in long run.
- **Infrastructure sharing between telecoms-** BSNL can share its infrastructure for the use of private sector which will create revenue for BSNL as well as reduce investment load on private sector.
- **Value addition in services-** Internet services can be clubbed with services like entertainment, e-education, telemedicine etc. which can lead to more revenue generation for the sector.
- **Short- and long-term relief measures** in the form of relaxation of interests accrued or longer repayment periods are needed.

Student Notes:

## 7.1. National Telecom Policy 2018

To provide for world-class telecommunications infrastructure for rapid socioeconomic growth of the country, the Government has been announcing its telecom policy statements on a regular interval since the liberalization of early 1990s. There had been four National Telecom Policy statements earlier in 1994, 1999, 2004 and 2012.

### Need for new Telecom Policy in 2018

- To restructure regulatory and licensing frameworks, to account for the transformations in the Telecom sector since the NTP 2012
- To leverage the convergence of voice, video and data services, especially to spur the socioeconomic development up to the bottom of the pyramid
- To account for the Industrial Revolution 4.0 build around the IoT, M2M and AI bringing together digital, biological and physical technologies in powerful combinations
- To provide reliable and secured data connectivity for all with assured quality of service
- To facilitate development of infrastructure and services for new technologies including 5G and IoT
- To encourage innovation and manufacturing
- To develop a large pool of digitally skilled man-power

National Telecom Policy 2018 is also referred to as **National Digital Communications Policy (NDCP), 2018**. The policy would set the mission and objectives to be accomplished by the end of calendar year 2022, when India will be celebrating its 75 years of independence

- The policy has envisaged attracting investments worth US\$ 100 billion in the sector by 2022
- The National Communications Policy aims to accomplish the following Strategic Objectives by 2022:
  - Provisioning of Broadband for All
  - Creating 4 Million additional jobs in the Digital Communications sector
  - Enhancing the contribution of the Digital Communications sector to 8% of India's GDP from ~ 6% in 2017
  - Propelling India to the Top 50 Nations in the ICT Development Index of ITU from 134 in 2017
  - Enhancing India's contribution to Global Value Chains
  - Ensuring Digital Sovereignty
- In pursuit of accomplishing these objectives by year 2022, the National Digital Communications Policy, 2018 envisages three Missions –
  - Connect India – Creating a Robust Digital Communication Infrastructure
  - Propel India – Enabling Next Generation Technologies and Services through Investments, Innovation, Indigenous Manufacturing and IPR Generation
  - Secure India – Ensuring Digital Sovereignty, Safety and Security of Digital Communications

### **7.1.1. Connect India**

Creating Robust Digital Communications Infrastructure to promote Broadband for all as a tool for socio-economic development, while ensuring service quality and environmental sustainability. This mission shall be accomplished by achieving following goals;

- a) Provide Universal broadband connectivity at 50Mbps to every citizen
- b) Provide 1 Gbps connectivity to all Gram Panchayats of India by 2020 and 10 Gbps by 2022
- c) Enable 100 Mbps broadband on demand to all key development institutions including all educational institutions
- d) Enable fixed line broadband access to 50% of households
- e) Achieve ‘unique mobile subscriber density’ of 55 by 2020 and 65 by 2022
- f) Enable deployment of public Wi-Fi Hotspots; to reach 5 million by 2020 and 10 million by 2022
- g) Ensure connectivity to all uncovered areas

### **7.1.2. Propel India**

Enabling Next Generation Technologies and Services through Investments, Innovation and IPR generation, to harness the power of emerging digital technologies, including 5G, AI, IoT, Cloud and Big Data to enable provision of future ready products and services; and to catalyse the fourth industrial revolution (Industry 4.0) by promoting Investments, Innovation and IPR. This mission shall be accomplished by achieving following goals

- a) Attract investments of USD 100 Billion in the Digital Communications Sector
- b) Increase India’s contribution to Global Value Chains
- c) Creation of innovation led Start-ups in Digital Communications sector
- d) Creation of Globally recognized IPRs in India
- e) Development of Standard Essential Patents (SEPs) in the field of digital communication technologies
- f) Train/ Re-skill 1 Million manpower for building New Age Skills
- g) Expand IoT ecosystem to 5 Billion connected devices
- h) Accelerate transition to Industry 4.0

### **7.1.3. Secure India**

Ensuring Sovereignty, Safety and Security of Digital Communications to secure the interests of citizens and safeguard the digital sovereignty of India with a focus on ensuring individual autonomy and choice, data ownership, privacy and security while recognizing data as a crucial economic resource. This mission shall be accomplished by achieving following goals;

- a) Establish a comprehensive data protection regime for digital communications that safeguards the privacy, autonomy and choice of individuals and facilitates India’s effective participation in the global digital economy
- b) Ensure that net neutrality principles are upheld and aligned with service requirements, bandwidth availability and network capabilities including next generation access technologies
- c) Develop and deploy robust digital communication network security frameworks
- d) Build capacity for security testing and establish appropriate security standards
- e) Address security issues relating to encryption and security clearances
- f) Enforce accountability through appropriate institutional mechanisms to assure citizens of safe and secure digital communications infrastructure and services.

## **7.2. Broadband**

Increase in Broadband connectivity is seen as an integral driver of improved socioeconomic performance. Broadband services empower masses and allow individuals to access new career and educational opportunities, help businesses reach new markets and improve efficiency and

enhance the Government's capacity to deliver critical services like health, banking and commerce to all of its citizens.

Student Notes:

The number of internet subscribers (both broadband and narrowband put together) stood at 6,653 lakh at the end of June 2019 as compared to 2,516 lakh in 2014.

- Total broadband connections increased by about ten times, from 610 lakh in 2014 to 5,946 lakh in June 2019.
- The number of mobile internet subscribers was 6,436 lakh at the end of June 2019 while the number of wireline internet subscribers was 217 lakh.

India is now the global leader in monthly data consumption, with average consumption per subscriber per month increasing 157 times from 62 MB in 2014 to 9.8 GB in June 2019. The cost of data has also reduced substantially, enabling affordable internet access for millions of citizens.

With the increasing role of technology in our daily lives and the growing significance of Industry 4.0, India can only unlock its true potential once digital connectivity, the basic building block for most technological solutions, reaches the last mile.

### **7.2.1. Constraints**

- **Broadband connectivity:** Internet access is plagued by issues related to quality and reliability, outages, call drops and weak signals. The current definition of broadband of 512 kbps speed is inadequate and not in line with the expected rise in demand in the future.
- **Digital access and literacy:** A significant portion of our population does not have access to devices such as laptops, computers, smartphones, etc. Further, Digital literacy in India is estimated to be less than 10 per cent of the population.
- **Content in Indian languages:** Currently, most digital content is in English. However, a KPMG11 report suggested that “9 out of every 10 new internet users in India over the next 5 years are likely to be Indian language users”
- **Availability of e-services:** A large number of e-services are not available on the digital platform and there is wide variation across states in the availability of citizen e-services. Currently, citizens have to physically visit government offices to access most government-to-citizen (G2C) services, as municipalities and other government bodies have been slow to digitize their processes.
- **Cyber security:** The regulatory framework for cyber security is inadequate. Hacking and denial-of-service attacks have led to disruption of services, both in the government and the private sector – banks and governments increasingly face security breaches.

### **7.2.2. Some developments**

- **BharatNet-** Government is implementing the flagship BharatNet Programme in a phased manner for providing broadband connectivity to all the 2.5 lakh Gram Panchayats (GPs) in the country. The project envisages an optimal mix of optical fibre, radio and satellite media
  - As of February 4, 2018, under BharatNet, work had started in 1.24 lakh GPs of which 1.08 lakh GPs were service ready.
- Furthermore, the **National Information Infrastructure (NII)** will ensure the integration of the networks and cloud infrastructure to provide high-speed connectivity to various government departments up to the panchayat level. The components of NII include networks such as the State Wide Area Network (SWAN), National Knowledge Network (NKN), BharatNet, Government User Network (GUN) and the MeghRaj Cloud.
- The government also launched **the Public Internet Access Programme** to make 2,50,000 common service centres (CSCs) operational at the gram panchayat level to deliver government services online.
  - Under this programme, 1,50,000 post offices will be converted into multi-service centres.

- The last mile connectivity, through Wi-Fi or any other suitable broadband technology, is to be provided at all GPs in the country, funded by the Universal Service Obligation Fund (USOF).

Student Notes:

#### **Universal Service Obligation Fund**

- To give impetus to the rural telephony, Government formed a Universal Service Obligation Fund (USOF) by an Act of Parliament (Indian Telegraph (Amendment) Act, 2003). Various schemes have been launched by USOF with a view to improve the penetration of telecom facilities in rural and remote areas of the country.
- The resources for implementation of USOF are raised through a Universal Service Levy (USL) which has presently been fixed at 5% of the Adjusted Gross Revenue (AGR) of all Telecom Service Providers except the pure value added service providers like Internet, Voice Mail, E-Mail service providers etc.
- In addition, the Central Govt. may also give grants and loans.
- The Fund is to be utilized exclusively for meeting the Universal Service Obligation. The latter has been defined in the Act as the obligation to provide access to telegraph services to people in rural and remote areas at affordable and reasonable prices.

#### **7.2.2.1. National Broadband Mission**

National Broadband Mission(NBM) was launched on 17th December 2019 with a vision to fast track growth of digital communications infrastructure, bridge the digital divide, facilitate digital empowerment and inclusion, and provide affordable and universal access of broadband for all. Some of the objectives of the Mission which is structured with strong emphasis on the three principles of universality, affordability and quality are:

- Broadband access to all villages by 2022
- Facilitate universal and equitable access to broadband services for across the country and especially in rural and remote areas
- Laying of incremental 30 lakhs route km of Optical Fibre Cable and increase in tower density from 0.42 to 1.0 tower per thousands of population by 2024
- Significantly improve quality of services for mobile and internet
- Develop innovative implementation models for Right of Way (RoW) and to work with States/ UTs for having consistent policies pertaining to expansion of digital infrastructure including for RoW approvals required for laying of OFC
- Develop a Broadband Readiness Index (BRI) to measure the availability of digital communications infrastructure and conducive policy ecosystem within a State/UT.
- Creation of a digital fibre map of the Digital Communications network and infrastructure, including Optical Fibre Cables and Towers, across the country
- Investment from stakeholders of USD 100 billion (Rs 7 Lakh Crore) including Rs 70,000 crore from Universal Service Obligation Fund (USOF)
- Address policy and regulatory changes required to accelerate the expansion and creation of digital infrastructure and services
- Work with all stakeholders including the concerned Ministries / Departments/ Agencies, and Ministry of Finance, for enabling investments for the Mission

#### **7.2.2.2. Net Neutrality**

Net neutrality is the principle that individuals should be free to access all content and applications equally, regardless of the source, without Internet service providers discriminating against specific online services or websites.

Without net neutrality rules in place, ISPs can prevent users from visiting some websites, provide slower speeds for services like Netflix, or even redirect users from one website to a competing website. Net neutrality rules prevent this by requiring ISPs to connect users to all lawful content on the internet equally, without giving preferential treatment to certain sites or services.

In the absence of net neutrality, companies can buy priority access to ISP customers. Larger, wealthier companies like Google or Facebook can pay ISPs to provide faster, more reliable access to their websites than to potential competitors. This could deter innovative start-up services that are unable to purchase priority access from the ISPs. Also, if ISPs can charge online services to connect to consumers, consumers would ultimately bear these additional costs

The telecom regulator TRAI struck down differential pricing for internet services offered by telecom players to mobile users, in a bid to uphold the principles of net neutrality—serving a big blow to Facebook's Free Basics and other zero-rated platforms such as Airtel Zero.

### **7.2.3. Way ahead**

- **Broadband connectivity:** As the sector regulator, TRAI should consider putting in place a credible system to track call drops, weak signals and outages to ensure the quality and reliability of telecom services. The results may be put in the public domain. Government should also put in place telecom ombudsman for complaint redressal.
- **Quality of service:** Adequate spectrum availability is critical to ensure service quality. Efficient spectrum allocation in large contiguous blocks should be explored. We should also explore migration to new technologies which would resolve some of the bandwidth challenges.
- **Access and digital literacy:** Digital literacy needs special focus at the school/college levels. The National Digital Literacy Mission should focus on introducing digital literacy at the primary school level in all government schools for basic content and in higher classes and colleges for advanced content. The multiplier effects of this mission will be realized when these students in turn educate their family members. Higher digital literacy will also increase the adoption of computer hardware across the country.
- **Content in Indian languages:** State governments should pay special attention to creating content, particularly those relating to government e-services, in Indian regional languages. To fulfil the vision of making all government's online services available in all 22 official languages, there needs to be focused collaboration between the centre, states and researchers to promote Natural Language Processing (NLP) in Indian languages. Focus could be laid on the automatic translation of content into regional languages from Hindi or English by exploring case studies of the European Union
- **Availability of e-services:** Individual ministries and states have to play a pivotal role in ensuring that all their services are available and easily accessible by citizens over digital platforms. Digital platforms, that enable real-time data updates, would increase accountability, and facilitate monitoring, quality checks and timely intervention by the higher administrative authorities.
- **Cyber security:** MeitY will need to evolve a comprehensive cyber security framework for data security, safe digital transactions and complaint redressal. The National e-governance Division of MeitY should periodically audit compliance of e-services offered by state governments. It should bring out a performance report of e-services with a view to improve service delivery.

## **8. Logistics Sector**

This sector involves material handling, warehousing, packaging, transportation, shipping security, inventory management, and supply chain management, procurement, and customs service.

As per the Economic Survey 2017-18, India's logistics industry which is worth around USD 160 billion is likely to touch USD 215 billion in the next two years.

Finance Ministry had granted infrastructure status to logistic sector by widening the category of infrastructure subsectors to "transport and logistics" to ensure Infrastructure lending at easier

## 8.1. Importance of Logistic Sector

- **Employment:** Industry employs over 45 million people and is growing at the rate of 15% with certain subsectors growing at even 30-40% per annum.
- **GDP:** India spends around 14.4% of its GDP on logistics and transportation.
- **Manufacturing Sector:** Logistics sector provides efficient and cost effective flow of goods on which other commercial sectors depend

Moreover, an effective multi-modal logistics and transport sector will make our economy more competitive due to the following reasons:

- **Reduces cost:** Efficient transportation and logistics reduce transport time and costs. Moreover, they reduce cost of production by minimizing the need for large inventories. This means less capital required for warehouses, insurance and the like.
- **Creates markets for other goods:** The conventional view of demand in the logistics sector states that it is derived demand. However, growth in transport and logistics enterprises can create markets for other goods.
- **Enhances Inter-state trade:** Reducing friction via improved logistics could boost inter-state trade flows in India that already stand at a healthy 54% of GDP.
- **Keeps pace with demand for transport:** The demand for transport has accelerated manifold since the 1990's. It is important to keep pace with it. Otherwise, it could thwart the manufacturing push and attempts to boost farmer earnings to the benefits of urban agglomeration economies.
- **Complements GST:** A robust multi modal logistics network will allow companies to restructure their supply chains once the domestic market is truly integrated. This would complement GST implementation.
- Lastly, efficient logistics networks can **reduce divergence in regional growth.**

## 8.2. Constraints

- **Cost of logistics:** The cost of logistics remains high due to challenges in accessing finance, underdeveloped infrastructure, poor connectivity and an unfavourable modal mix.
  - Logistics costs in India are 13-15 per cent of the product cost, while the global average is six per cent.
- **Coordination due to multiple stakeholders' involvement:** Logistics has four key components that account for the majority of the sector: transport, warehousing, freight forwarding and value added logistics. Each of these falls under different segments of regulatory oversight, which adds complexity to the system. The presence of multiple agencies often leads to duplicate processes.
  - Further, non-uniform documentation across states adds to transaction costs. While the recently implemented Goods and Services Tax (GST) has simplified documentation requirements across states to some extent, there still remains further room for improvement.
- **Warehousing capacity and fragmented structure:** India's current reported warehousing capacity is 108.75 million metric tonnes (MMT) of which the private sector makes up less than 20 per cent. There is low value addition in the warehouse sector. Handling and warehousing facilities are still largely un-mechanized with manual loading, unloading and handling in the case of many commodities.
- **Seamless movement of goods across modes and high dwell time:** In addition to lack of interoperable technology, the movement of goods across modes suffers from the absence of last mile connectivity and infrastructure. For example, poor road and rail connectivity to most non-major ports leads to delays in travel time. The share of cargo moving through

- coastal shipping is small, primarily due to the lack of infrastructure and connectivity for feeder ships that operate between smaller container ports.
- **Competition and underutilized capacity:** There is no level playing field as the public sector is provided benefits that are not available to private players such as container train operators or foreign vessel owners, leading to limited competition, capacity underutilization and other inefficiencies.
  - **Interoperable technology across modes:** The lack of interoperability of software systems used by the authorities governing different modes of transport leads to inefficiencies as it increases transit time and the need for manual intervention when switching modes.
  - **Border compliance and document processing time:** India's average border compliance time (including customs regulations and mandatory inspections) for exports is 106 hours and for imports 264 hours. India's document processing time (including documentary compliance for various agencies including regulators) is an average of 38 hours for exports and 61 hours for imports.

### 8.3. Government Initiatives

- **Diesel de-regulation:** logistics costs have become more accurate, with diesel prices moving in tandem with international fuel prices. This forces us to be competitive globally.
- **Logistic enhance efficiency programme:** was launched for management and development of logistic parks and reduce the cost of logistics.
- **Technology initiative:** Automated storage and retrieval systems (ASRS) in warehouse and transportation, radio frequency identification (RFID) in place of bar codes, and global positioning system (GPS) for real-time tracking.
- **GST:** intended to solve the complex tax structure for logistics which would lead to efficient decision making by logistic firms about of logistics - demand, supply, near-to-customer, sourcing, transportation costs and inventory costs.
- The government is working on a '**National Logistics Policy**', which aims to promote seamless movement of goods across the country

### 8.4. Way forward

- **Rationalize tariffs and determine prices in an efficient manner across different modes:** Tariff policies need to be rationalized. The Railways chapter provides details on rail freight while the Civil Aviation chapter highlights the need to determine air cargo tariffs in a consistent manner across airports.
- **Create an overarching body that maintains a repository of all transport data:** Such a body or institute will be responsible for acquiring, managing and disseminating data to internal stakeholders. The proposed institute can also conduct robust analysis of the data, which it should make publicly available. This body can be a part of the logistics portal that is under development.
- **Enhance efficiency of warehouses and their operation, especially to optimize food storage:** Create vertical silos for food storage and transport food grains by specialized wagons. We could operate smaller silos at the mandi level connected to mother silos that have bulk handling and rail connectivity.
  - Further, specialized wagons with top loading and bottom discharge functions should be made available for handling grains.
  - Existing warehouses can be converted into multistoreyed ones to store multiple commodities at the same time. This will greatly increase warehousing space.
- **Increase emphasis on multimodal solutions:** Setting up multimodal logistics parks will help address issues related to underdeveloped infrastructure, an unfavourable modal mix and connectivity. The government has already approved 24 logistics parks under the Bharatmala programme and seven have been identified under the Sagarmala programme. These may

be completed by 2022-23. They should reflect best practices from global logistics parks with respect to comprehensive development and synergies across modes of transport.

- **Increase technology use to enhance logistics:** Integrate technologies across modes of transport by developing an integrated information technology (IT) platform. Increasing the interoperability of technology across modes by implementing container tracking systems, radio frequency identification (RFID), etc., will reduce delays and enhance efficiency. The integrated IT platform should be a single window for all logistics related matters.
- **Shift towards international standards for transport equipment and software:** To increase efficiency and ensure compatibility, we should gradually adopt international standards, especially in operations, and adopt global benchmarking on unit load devices such as containers and pallets. While this will require changes in the overall infrastructure of ships, ports and railways, it will help realize savings in cost, time and accounting.
  - Associated handling equipment such as forklifts, cranes, tractors, scanning and inspection technologies, and flatbed rail wagons should also be standardized and become ubiquitous.

## 9. Energy

Energy is a key driver of economic growth. Sustainable, stable and reasonably priced energy is essential for the fruits of economic development to reach the bottom of the pyramid.

India is the third largest energy consumer in the world after USA and China. However, in 2017, its per capita energy consumption was about 625.6 kilogram of oil equivalent (kgoe) against the world average of 1860 kgoe. The US and China's per capita energy consumption in 2015 was 6800 kgoe and 2170 kgoe, respectively.

With a share of 5.8 per cent of the world's primary energy consumption, India's energy requirement is fulfilled primarily by Coal, Crude Oil, Renewable Energy and Natural Gas. India's energy mix is dominated by coal with a 49.6 per cent share, followed by oil (28 per cent), biomass (11.6 per cent), gas (7.3 per cent), renewable and clean energy (2.2 per cent) and nuclear energy (1.2 per cent).

India is looking at using renewable energy to meet multiple objectives: energy security, energy efficiency, de-carbonization, and sustainability, among others. India's fossil fuel requirements, which comprise nearly 90% of primary energy supply, are increasingly being met by imports. India is also committed to meeting its commitments stated in the Paris Agreement. Renewable energy is an element in achieving these objectives.

### 9.1. Current Status

#### 9.1.1. Oil and Gas

India's oil production is one of the lowest among the major economies of the world and has been declining over a period of time. During 2019-20, the domestic crude oil production is estimated to be 32.6 MMT. The reduction in crude oil production may be attributed to natural decline in ageing and matured fields and no major discoveries.

India with a refining capacity of 249.4 MMTPA is the fourth largest in the world after the United States, China and Russia.

- Refinery capacity increased from 234.0 MMT in 2017- 18 to 247.6 MMT in 2018-19
- However, refinery capacity utilisation fell to 103.9 per cent in 2018-19, compared to 107.7 per cent in 2017-18

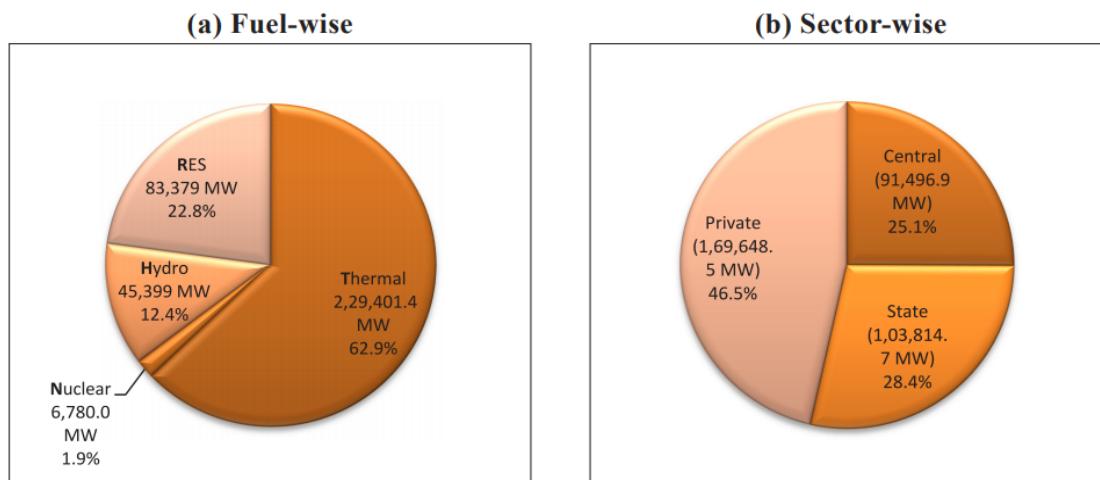
During 2019-20, the domestic production of natural gas is estimated to be 31.8 billion cubic metres (BCM).

- **Upstream Sector:** They identify oil and natural gas deposits and engage in the extraction of these resources from underground. Eg: ONGC, Oil India Ltd.
- **Midstream sector:** This sector involves transportation of oil and gas from blocks to refineries and from refineries to distribution centers. It also includes storage infrastructure.
- **Downstream sector:** They include refineries and marketing. eg Indian Oil Corporation Ltd – It is largest company in India by sales and second largest refiner ( 31% share).

### 9.1.2. Power

Power sector in India has witnessed a paradigm shift over the years due to the constant efforts of Government to foster investment in the sector. Along with universal electrification, commendable progress has been made in generation and transmission of electricity. The installed capacity has increased from 3,56,100 MW in March 2019 to 3,64,960 MW as on 31.10.2019. The break-up fuel-wise and sector-wise is given in the figure below:

**Total Power Generation Capacity as on October 2019  
(Fuel-wise and Sector-wise)**



Source: Ministry of Power.

Note: RES- Renewable Energy Sources.

### Structure of the power sector in India

Power generation, transmission, and distribution are the three main processes involved in the power sector.

- **Power generation:** India's installed capacity for power generation recorded a compounded annual growth rate (CAGR) of 8.9%, an increase from 124 GW to 344 GW between 2006 and 2018. India is now the third largest electricity generator in the world. Also, India is at 106th position in terms of per capita consumption in 2017, according to world energy statistics published by the IEA.
- **Transmission:** The generated electricity is then transported over hundreds of kilometres to load centers using transmission lines and transmission towers to supply power to consumers. This stage connects electricity producers and end-consumers. Transmission has taken rapid strides in India, with a CAGR of 7.2% between fiscals 2012 and 2018, raising India's transmission line capacity to 3.9 lakh ckm (circuit kilometre).
- **Distribution:** The third stage which involves the distribution of power to all the consumers across the nook and corner of the country is where the DISCOMs come into the picture. DISCOMs in UTs are administered directly by the central government while the respective state governments govern those in the states. o Private DISCOMs are also operational in India but are limited to a few cities such as Tata Power Delhi Distribution Ltd and Reliance Energy Ltd in Mumbai.

### 9.1.3. Renewable energy

Student Notes:

Across the world, many of the developed and developing countries have started giving primacy to rapidly increase the percentage of renewable energy in the overall energy mix of their economies. Renewable Energy has become one of the most important factors and hope for the world to preserve the pristine environment and the planet's resources for future generations.

India's INDC builds on its goal of installing 175 gigawatts (GW) of renewable power capacity by 2022 by setting a new target to increase the country's share of non-fossil-based installed electric capacity to 40 percent by 2030. In this, 100 GW would come from solar power installed capacity in the country, of which 40 GW is targeted through solar rooftop.

The INDC also commits to reduce India's GHG emissions intensity per unit GDP by 33 to 35 percent below 2005 levels by 2030 and to create an additional carbon sink of 2.5 to 3 billion tonnes of carbon dioxide through additional tree cover.

India's wind energy sector is led by indigenous wind power industry and has shown consistent progress. The expansion of the wind industry has resulted in a strong ecosystem, project operation capabilities and manufacturing base of about 10,000 MW per annum. The country currently has the fourth highest wind installed capacity in the world with total installed capacity of 37.50 GW (as on 31st December, 2019)

Break up of RES all India as on 30.06.2020 is given below (in MW) :

Small Hydro Power	Wind Power	Bio-Power		Solar Power	Total Capacity
		BM Power/Cogen.	Waste to Energy		
4688.16	37829.55	9880.31	148.84	35122.33	87669.19

## 9.2. Issues

### 9.2.1. Oil, Gas and Coal

#### Oil & gas

- Non-discriminatory access for private and public sector companies to the gas pipeline network does not exist.
- Lack of market-driven gas prices for old fields disincentivizes further production.
- The gas pipeline infrastructure is also inadequate.

#### Coal

- **Unfavourable socio-economic environment in East India-** There is a tendency to expand opencast mining and discourage underground operation even for better quality coal reserves. The damage from open-cast mining is irreparable, rendering the land useless.
  - Deforestation has become rampant, hampering ecology in these areas.
  - People displacement has also increased due to infertile land and non-availability of water.
- **Civil unrest** is another important reason for not mining efficiently. Coal reserves are most highly concentrated in areas where Maoist guerrillas operate, making the area hostile for mining.
- **Increasing illegal mining and exporting of coal** is also an issue. Litigation against them often goes on for years, so illegal mining hasn't been controlled yet.
- **Rising imports-** imports of the coal have surged to a record over the same period. The reasons include higher landed costs of domestic coal at distant locations (exacerbated by high railways transportation costs), better quality of imported coal and lower ash content, selected power plant boilers being designed to a particular quality of imported coal, and a lack of domestic coking coal production (for the steel sector).
- **Infrastructure-** e.g. an overworked railway network has hampered transport of the fuel; Land for coal mining is becoming a major issue etc.

- **Issues with coal india:** Coal India produced a record 607 million metric tons but falling short by 22% of a target proposed in 2017. Till date, CIL's 54 coal-mining projects are facing delays due to various reasons such as contractual issues and delays in securing green clearances, among other factors.

Student Notes:

### **9.2.2. Power**

- **Old inefficient plants** continue to operate whereas more efficient plants are underutilized.
- Thermal capacity addition is plagued by the growing **fuel availability concerns** faced by the Industry.
  - While a significant gas based capacity of more than 20,000 MW is idle due to non-availability of gas. Coal supplies by CIL is restricted to around 65% of actual coal requirement by coal based thermal plants, leading to increased dependence on imported coal with the cascading result of high power generation costs.
- Increasing power generation costs due to limited fuel availability, poor financial health of State Discoms, high AT&C losses have contributed in **suppressed demand projections** by State Discoms.
  - Transmission and Distribution (T&D) or Aggregate Technical & Commercial (AT&C) losses are around 20% in 2015-16 with huge disparity in T&D losses across the states mainly due to poor grid connectivity.
- **Vague Definitions of Electrification** create a false sense of achievement, While all inhabited villages out of them have now been electrified, only 1,321 have access to power for all their households.
- Although legally independent, Regulatory Commissions are **unable to fully regulate discoms** and fix rational tariffs.
- **Unmetered power supply to agriculture** provides no incentive to farmers to use electricity efficiently.
- There is a lot of **hidden demand** because of unreliable supply and load shedding.
- State power utilities are not able to invest in system improvements due to their **poor financial health**.
- High industrial/commercial tariff and the cross-subsidy regime have affected the **competitiveness** of the industrial and commercial sectors.

### **9.2.3. Renewable energy**

- High energy costs result in renegeing on old power purchase agreements (PPAs) and erode their sanctity. This leads to uncertainty regarding power offtake and consequently endangers further investments.
- Flexibility in generation and balance requirements for the integration of renewable energy are emerging as major issues. With the increasing role of renewable in energy mix, there is a need for expanding grid connectivity infrastructure for last man connectivity.
- There are supply chain issues in biomass power generation.
- The hydro power industry has been clamouring for long-tenure financing, with softer loan terms, easing of CERC/SERC norms to reflect reduction in tariff in initial years, all of which would help in unlocking benefits of hydro power.

### **9.2.4. Energy efficiency**

- Limited technical capabilities, high initial capital expenditure, limited market and policy issues have adversely affected efforts to achieve energy efficiency.
- High transaction costs (which involves appointing suitable consultants and vendors for execution) relative to project size, especially in MSME sector, makes energy efficiency investments unattractive for investors.

- The non-availability of sufficient credit facilities and difficulties in obtaining required finances for energy saving projects are strong deterrents to investments in energy efficiency in India.

Student Notes:

**Other issues:** A variety of subsidies and taxes distort the energy market and promote the use of inefficient over efficient fuels. They also make Indian exports and domestic production uncompetitive as energy taxes are not under GST and hence, no input credit is given. This is a serious lacuna.

## 9.3. Key developments

### 9.3.1 Oil, Coal and Gas

#### 9.3.1.1 Commercial coal mining

Recently, government has allowed all private entities to enter into commercial mining without end use or price restrictions. Since nationalization of the sector in 1970s, Coal India Ltd (CIL) and its associates had monopoly over mining and selling of coal. However, due to its inability to keep up with the demand and low quality & high prices of coal to the companies reducing their competitiveness has led to opening up of the sector recently.

##### Expected benefits

- Increased production and energy security:** It will help the country come closer to its vision of producing 1.5 billion tonne of coal annually by 2022.
- Reduced imports:** It has potential to save on import bill by Rs 30,000 crore as currently about 22% of domestic demand is being met through imports despite India being the 3rd largest coal producing country in the world. Cheap domestic supply will also keep import prices in check.
- Benefit to power sector:** Coal accounts for around 70% of the country's power generation. Thus, it would help stressed power plants to attempt a turnaround through better fuel management.
- Improved efficiency:** as coal sector would shift from monopoly to competition. This would attract investments from private and foreign players and bring best possible technology in the sector.

However, it needs to ensure that the sector does not get dominated by few private players now since it is a capital intensive sector. Moreover, it also goes against clean energy targets since in recent times there is pressure on cutting back on coal usage.

#### 9.3.1.2. Hydrocarbon Exploration and Licensing Policy (HELP)

The Union Cabinet approved the Hydrocarbon Exploration and Licensing Policy (HELP) in 2016. HELP replaced the erstwhile policy regime for exploration and production of oil and gas, known as New Exploration Licensing Policy (NELP), which had been in existence for 18 years.

##### Features of HELP

- Uniform License:** It will enable the contractor to explore conventional as well as unconventional oil and gas resources including CBM, shale gas/oil, tight gas and gas hydrates under a single license, instead of the present system of issuing separate licenses for each kind of hydrocarbons.
- Open Acreages:** It gives the option to a hydrocarbon company to select the exploration blocks throughout the year without waiting for the formal bid round from the Government.
- Revenue Sharing Model:** Present fiscal system of production sharing contract (PSC) is replaced by an easy to administer “revenue sharing model”.

- Marketing and Pricing:** This policy also provides for marketing freedom for crude oil and natural gas produced from these blocks. This is in tune with Government's policy of "Minimum Government – Maximum Governance".

#### 9.3.1.3. Pradhan Mantri Ujjwala Yojana (PMUY)

It aims to provide 8 crore deposit free LPG connections to women from BPL households by 2020. The LPG Connection is released in the name of adult woman of the BPL Family, with a financial support of RS 1600/- subject to the condition that no LPG connection exists in the name of any family member of the household. Consumers will have the option to purchase gas stove and refills on EMI (zero interest), recovered through LPG subsidy received by the beneficiary.

Policy category	Help	Pre-Help
 TYPE OF HYDROCARBON	Covers all conventional and unconventional oil and gas	NELP covered only conventional oil and gas; Coal Bed Methane Policy covered coal bed methane
 LICENSE	A single license for exploration and extraction of all types of oil and gas	Separate license required for conventional oil and gas, coal bed methane, shale oil and gas, and gas hydrates
 REVENUE MODEL	Revenue-sharing model under which revenue will be shared with the government in the ratio submitted by bidders	Production-sharing model under which government received a share in the profits
 COVERAGE	Open acreage policy under which exploration companies can apply to explore any block not under exploration	Exploration was restricted to blocks opened for bidding by the government
 OIL AND GAS PRICING	Companies have the freedom to sell their production domestically without government intervention	Crude oil price was based on import parity; gas price was fixed by the government
 ROYALTY	Concessional royalty for deep water (5 percent) and ultra-deep water (2 percent) areas, which are difficult to explore, and reduction of royalty in shallow waters (from 10 percent to 7.5 percent)	12.5 percent for the onshore areas and 10 percent for offshore areas; 10 percent for coal bed methane

Student Notes:

Recently, government has extended the scope of beneficiaries to be covered under Pradhan Mantri Ujjwala Yojana (PMUY). Earlier, beneficiaries under the PMUY included all the BPL families who suffer with at least one deprivation under Socio-economic caste census 2011. It has been expanded to cover all SC/ST households, beneficiaries of Antyoday Anna Yojana (AAY), PMAY (Gramin), forest dwellers, most backward classes (MBC), Tea and Ex-Tea Garden Tribes, people residing in Islands or rivers island. Now, the scheme will cover all the poor households of the country. Under this, new beneficiaries will be those, among holders of both ration cards and Aadhaar, who will identify themselves as poor through selfdeclaration.

#### 9.3.1.4. Unified gas price system

Government is planning to cut down the cost of transportation of natural gas by setting a fixed tariff for the transportation of natural gas for longer distances to boost gas consumption. Currently, tariffs for pipeline usage are divided into zones of 300km, with the tariff increasing for zones further away from the point where gas is injected. All of India's imported natural gas arrives at terminals on the west coast leading to costs for buyers increasing, the further east they are located.

##### Expected benefits of unified gas pricing system

- Reduced overall cost:** Currently, transport cost accounts for as much as 10% of the final cost of gas to an industry because of low international prices. Usually, it accounts for around 2-3% of the price of natural gas.
- Reduction in tariffs:** Currently, if a buyer needs multiple pipelines even from the same operator, that transport tariff would increase by adding the tariffs under different zones.
- Single market:** It would facilitate in creating a single gas market by attracting investment to

- complete the Gas Grid as well as ensuring equitable access to natural gas across the country.
- **Gas based economy:** It would enable improving the affordability of gas across the country and attracting investments into the gas infrastructure. This will help achieve government's aim to increase the share of natural gas in the country's energy mix to 15% by 2030, from 6% today.
  - **Development of new gas markets:** Present system causes wide disparity in pipeline tariffs, and thus it hinders the development of new demand centers in far-flung and remote areas.

### 9.3.1.5. Indian gas exchange

India's first gas exchange — the Indian Gas Exchange (IGX) — was launched recently as wholly owned subsidiary of Indian Energy Exchange. It is a digital trading platform that will allow buyers and sellers of natural gas to trade both in the spot market and in the forward market for imported natural gas across three hubs —Dahej and Hazira in Gujarat, and Kakinada in Andhra Pradesh.

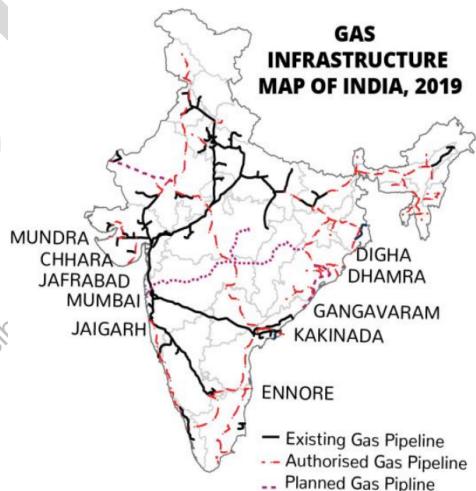
- Imported Liquified Natural Gas (LNG) will be regassified and sold to buyers through the exchange, removing the requirement for buyers and sellers to find each other. The bidding is done in an anonymous manner, where the buyer and seller do not know their counterpart.
- The price of domestically produced natural gas is decided by the government and it will not be sold on the gas exchange. Domestic production of gas has been falling over the past two fiscals as current sources of natural gas have become less productive.
  - Domestically produced natural gas currently accounts for less than half the country's natural gas consumption; imported LNG accounts for the other half. Hence, IGX encourages trading in imported LNG.

### 9.3.1.6. National gas grid

The Cabinet Committee on Economic Affairs has approved a Capital Grant as the Viability Gap Funding to Inradhanush Gas Grid Ltd for setting up the North East Natural Gas Pipeline Grid. At present, there are about 16800 km long Natural Gas pipeline network which is operational in the country. In order to make available natural gas across the country, it has been envisaged to develop additional about 14,300 km pipelines to complete the National Gas Grid and same are at various stages of development.

This would ensure easy availability of natural gas across all regions and also potentially help to achieve uniform economic and social progress.

It aims to remove regional imbalance within the country with regard to access of natural gas and provide clean and green fuel throughout the country; to connect gas sources to major demand centres and ensure availability of gas to consumers in various sectors and development of City Gas Distribution (CGD) Networks in various cities for supply of CNG and PNG.



### 9.3.2. Power

#### 9.3.2.1. Draft Electricity (Amendment) Bill, 2020

Recently, the Draft Electricity (Amendment) Bill, 2020 was made public for feedback from stakeholders. Bill seeks to amend Electricity Act, 2003 and address following critical issues in the Electricity Sector & Act:

- **Poor financial condition of power distribution companies (discoms):** The regulatory Commissions while calculating tariffs often deferred the recovery of revenue for the future. This resulted in weakening of the financial health of the discoms due to under recovery of the prudent cost.
- **Delays in adoption of tariff:** The regulatory commissions adopt the tariff that has been determined through a transparent process of bidding in accordance with the 'tariff policy issued by the Central Government'. But no time limit has been prescribed for the process.
  - Also, the Act mandates the regulatory Commissions to determine the tariff after receipt of the subsidies. Thus, the tariff contains a subsidy component and is not cost reflective.
- **Enforceability of performance of the contracts:** The 2003 Act recognized the contracts for supply and purchase of electricity but does not specifically deal with the issues related to non-performance of the contract.
  - Non-performance of the contract created uncertainty, upset investment decisions and adversely affect ease of doing business.
- **Existence of multiple committees for selection of the posts of Chairpersons and members of related bodies:** This requires constitution of a different selection committee for every vacancy which causes inordinate delays in appointments.
- **Non Functional State Electricity Regulatory Commissions (SERCS):** due to vacancies and delays in appointments by the states.

#### **Key Provisions of the Draft Electricity (Amendment) Bill, 2020**

- **New contract dispute resolution authority to be formed:** An Electricity Contract Enforcement Authority (ECEA) will be established as a sole authority having original jurisdiction to adjudicate upon matters regarding contracts related to purchase, sale or transmission of electricity between a generating company and a licensee or between licensees.
- **Single Selection Committee** to be established for selection of Chairperson and Members of the APTEL, ECEA, the Central Commission, State Commissions and Joint Commissions. Enabling state as well as central power regulators to specify transmission charges under open access.
- **Cost reflective Tariff and Simplification of Tariff Structure:** The appropriate commissions shall fix tariff for retail sale of electricity without accounting for subsidy. Any subsidy must be provided by the respective governments directly to the consumer.
- **Reduction of Cross Subsidy:** The Tariff policy will specify a manner to gradually reduce cross-subsidies. Any surcharge and cross subsidies charged by SERCs shall also be progressively reduced in the manner provided in the Tariff Policy.
- **Cross Border Trade of Electricity:** The Central Electricity Regulatory Commissions (CERC) has been empowered to oversee and regulate the cross border trade of electricity as per the rules and guidelines prescribed by the central government.
- **Proposes a National Renewable Energy Policy (NREP)** to be prepared and notified by the Central Government in consultation with states. Under it a minimum percentage of purchase of electricity from renewable and hydro sources of energy will also be prescribed.
- **Renewable Purchase Obligations (RPO) to include Hydro energy sources:** The State Commissions are empowered to specify the RPO as per central guidelines.
- Creation of **National Load Dispatch Centre** have been specified.

#### **9.3.2.2. Key developments related to Discoms**

The distribution sector in India continues to be the weakest link in India's electricity value chain due to multiple reasons such as-

- **Indebtedness:** According to the Ministry of Power's (MoP) payment ratification and analysis portal (PRAAPT) power producers' total outstanding dues owed by distribution firms rose over 47 per cent year-on-year to Rs 1.33 lakh crore in June 2020.

- **Financial incompetency:** There have been multiple reports of DISCOMs delaying payments owed to solar and wind energy developers in Andhra Pradesh, Tamil Nadu, Madhya Pradesh, and Telangana. This has made attracting investments into the sector extremely challenging.
- **Operational inefficiencies** due to huge technical and commercial losses (AT&C), which are primarily caused by power theft, poor payment collection procedures, and inadequate tariff hikes.
- **Increasing open access transactions:** A steep fall in prices of power generated by solar and wind energy projects are driving their most resourceful commercial and industrial (C&I) customers to engage in private power purchase through open access.
- **Lack of political will and transparency** in dealing with phasing out of energy subsidies.
- **Decline in demand during lockdown:** Agricultural consumers and domestic consumers pay a lower tariff which is compensated by a higher tariff for commercial & industrial establishments. As a result of lockdown, operations of commercial establishments and industries came to a grinding halt, affecting the revenue for DISCOMs.
- **Lack of progress in earlier initiatives:** The government, under various regimes, has tried to improve the condition of DISCOMs in India through relief packages. For eg- under UDAY programme, state governments took over 75% of DISCOMS' debt, issuing low-interest bonds to service the rest of the debt. DISCOMs were further supposed to reduce instances of operational and financial mismanagement. Although there were some initial signs of progress under UDAY, the program has not been able to help minimize DISCOM losses.

### **Ujwal DISCOM Assurance Yojana (UDAY)**

Ujwal DISCOM Assurance Yojana (UDAY), a scheme for financial and operational turnaround of Power Distribution Companies was formulated and launched by the Government on 20<sup>th</sup> November, 2015 in consultation with the various stakeholders. The scheme aims to provide a permanent solution to legacy debts of approximately Rs.4.3 lakh crores and address potential future losses.

#### **Features:**

- It empowers DISCOMs with the opportunity to break even in the next 2-3 years. This is through four initiatives (i) Improving operational efficiencies of DISCOMs; (ii) Reduction of cost of power; (iii) Reduction in interest cost of DISCOMs; (iv) Enforcing financial discipline on DISCOMs through alignment with State finances.
- It involved a tripartite agreement (Memorandum of Understanding, MoU) between Ministry of Power (MoP), state governments and respective DISCOMs.
- Under UDAY, DISCOMS can convert their debt into state government bonds, but are required to fulfill certain conditions such as AT&C loss reduction, mandatory metering, power purchase planning and performance monitoring. In lieu, state governments took over three-fourths of discom debts, thus reducing the interest burden.
- After UDAY had been implemented, aggregate discom debt had fallen from ₹ 2.7 lakh crore in September 2015 to ₹ 1.9 lakh crore in FY16 and ₹ 1.5 lakh crore in FY17.
- A Multi-Level Monitoring mechanism for Ujwal DISCOM Assurance Yojana (UDAY) has been put in place to ensure a close monitoring of performance of the participating States under UDAY.

A CRISIL report has analyzed the DISCOMS in 15 states that account for 85% of the aggregate losses. As per it, the downward trajectory is now expected to reverse, moving up to ₹ 2.28 lakh crore in FY19 and ₹ 2.64 lakh crore in FY20.

#### **Reasons for reversal**

- **Limited Fiscal space-** it makes continuous financial support to their DISCOMS difficult. In 2016, most states had the fiscal headroom to assume three-fourths of the debt of their

- discoms, but now, because of the deterioration in their finances over the past few years, the space has become limited.
- **Operational Inefficiencies**- e.g. across several states, there is a lack of effective billing procedures, poor measurement of power consumption, and ineffective monitoring of power theft.
  - **Increased Power Purchase Cost**- After the one-time measures under UDAY, the power purchase costs have now increased by 5 per cent in the first nine months of 2018-19. Further the input costs of coal and freight have gone up.
  - **Lack of structural reforms**- such as AT&C losses reduced by only 400 bps by December 2018 from preUDAY levels, against the target of reducing AT&C losses by 900 basis points to about 15% in 2018-19.
  - **Lack of adequate tariff hikes**- The average tariff increases were a paltry 3% per annum against the target of implementing regular tariff hikes of 5-6% per annum and now with the focus on new rural connections, further increases are unlikely. Even if the Discoms have improved their operational efficiency, but state regulators in some cases have not allowed electricity tariffs to keep pace with input costs.

### Privatising Discoms

The government is planning to privatise the electricity distribution companies (discoms) in Union Territories (UTs) by January 2021 as it seems to address many of the above discussed issues.

There are sufficient case studies when private players have been proved to run cash strapped Discoms successfully via more efficiency, increased revenue and improved consumer services. For eg.- The aggregate technical & commercial (AT&C) losses in Delhi after the privatization in 2002 has been brought down from a high of 53% to around 8%.

### 9.3.2.3. Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY)

The big push to rural electrification came in 2005 with the launch of the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) and then accelerated further in 2010-11, when there was a significant increase in budgetary outlay for this. However, the RGGVY programme failed to live up to its motives.

Then the RGGVY was subsumed in the new scheme, **Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY)**, as rural electrification (RE) component. The major components of DDUGJY are:

- (i) Separation of agriculture and non-agriculture feeders facilitating judicious rostering of supply to agricultural & non-agricultural consumers in the rural areas;
- (ii) Strengthening and augmentation of subtransmission & distribution infrastructure in rural area;
- (iii) Metering of distribution transformers/feeders/consumers;
- (iv) Ongoing rural electrification works of erstwhile scheme subsumed in DDUGJY as RE component

### Some features

- complete flexibility to state for selecting scope of works as for their priority
- all villages eligible without any minimum population criteria
- all discoms including private discoms, RE cooperative societies are eligible
- district development coordination and monitoring committee namely DISHA headed by senior most member of Parliament to review and monitor implementation of scheme

### Significance

- **Socio-Economic benefit:** Providing electricity helps in improving education, health, and connectivity apart from having a multiplier effect on increased economic activities and job creation.

- **Gender Empowerment:** It mainly affects women and girls more as they have to bear the primary responsibility for collecting firewood, cooking and other domestic work
- **Improving Discoms Health:** Electricity access to households with meters will create demand which in turn will help in improving the financial health of the respective discoms.
- **Better Policy Formulation:** It will help in appropriately estimating, planning and budgeting for complete household electrification over the next two years.
- **Boost to rural demand:** There is a direct correlation between improving electricity access and business environment in country. Electrification, therefore, would provide a fillip to rural demand.
- **Achieving Climate Commitment:** It will lead to decline in black marketing of kerosene oil and meeting country global climate change commitments as electricity will substitute kerosene for lighting.
- **Sustainable Development Goal:** Access to energy services is critical for advancing human development, furthering social inclusion of the poorest & most vulnerable in society and to meeting many of the SDGs.

#### **9.3.2.4. Saubhagya Yojana**

With an aim to provide electricity to over four crore families in rural and urban areas, Pradhan Mantri Sahaj Bijli Har Ghar Yojana ‘Saubhagya’ scheme was launched. Despite the government’s aggressive village electrification programme, under the Deen Dayal Upadhyay Gram Jyoti Yojana, it was realised that the problem of electricity ‘access’ wasn’t resolved. With a large number of household still remaining without access to electricity, the scheme aims at ensuring the coverage of households as opposed to only villages.

##### **Key features**

- It aims to provide electricity to all families in India.
- Funding Pattern is 60% by central grants, 30% by bank loans and 10% by states.
- The government will use Socio Economic and Caste Census (SECC) 2011 data to identify the beneficiaries for free electricity connections.
- The Rural Electrification Corporation Limited will be the nodal agency for the operationalization of the scheme throughout the country.
- For those household where the national electricity grid can't reach, households will be provided with solar power packs along with battery banks
- SAUBHAGYA PORTAL would disseminate information on household electrification status (state, district, village-wise), and household progress on live basis

All the States have reported electrification of all households on Saubhagya portal, as on 31.03.2019, except few households in LWE affected Bastar region of Chhattisgarh

#### **9.3.3. Renewable energy**

##### **9.3.3.1. Power Purchase Agreements (PPA)**

Recently, various states have been working to renegotiate the Power Purchase Agreements (PPAs) with the renewable energy companies.

A Power Purchase Agreement (PPA) is a contract between two parties, one who generates electricity and one who is looking to purchase electricity. In India, the state governments have entered into such agreements with private renewable energy companies to establish the power plant and sell the power back to the government. With PPAs in place, India can boost renewable energy generation in the country and incentivise the global renewable energy companies to invest by giving them.

In the recent times, some state governments have reviewed/ moved out from their respective agreements. There is a concern of mounting debts and untimely payments by the state power

distribution companies (DISCOMs). The PPAs are signed for longer durations like 15-25 years and the states are feeling the heat of higher tariffs they have agreed in the PPAs.

Student Notes:

Moreover, dynamic nature of tariffs is also one of the reason behind revisiting the tariff agreements. E.g. Andhra Pradesh's signed PPAs with various wind power generators around Rs 4.76 per unit in 2015, which appeared competitive at that time. Now, the Solar Energy Corporation of India (SECI) managed to get bids as low as Rs 3.46 per unit.

However, renegotiation might affect investor sentiments & discourage new investments. Also, the banks have lent heavily to these developers, so with shutting down of projects, the loans may not be serviced. It could start a new cycle where the banks will be apprehensive in advancing loan to such generators.

### **9.3.3.2. Bundling Scheme for round-the-clock power supply**

Recently, Ministry of power issued guidelines for supply of RTC power to distributors through a Bundling Scheme, which is first of its kind scheme in world. It is a plan to sell renewable energy (RE) and thermal power in a bundle so that end users can get uninterrupted supply of power.

Currently, renewable energy has intermittency issues and hence, to meet large-scale power requirements, the government has sought to blend renewables with thermal power.

Earlier, Government also declared large hydro power (above 25 MW projects) as renewable energy sources that were eligible for various incentives like financial assistance and cheaper credit. With the government's decision, hydro projects above 25 MW can also avail the benefits of bundling.

### **9.3.3.3. Pradhan Mantri Kisan Urja Suraksha Evam Utthaan Mahabhiyaan (Pmkusum) Scheme**

The scheme consists of 3 components Component-A: Setting up of 10,000 MW of Decentralized Grid Connected Solar or other Renewable Energy Power Plants on barren/fallow land; Component-B: Installation of 17.50 Lakh stand-alone solar agriculture pumps; and Component-C: Solarisation of 10 Lakh Grid Connected Agriculture Pumps.

All three components combined, the scheme aims to add a solar capacity of 25,750 MW by 2022.

### **9.3.3.4. National Wind-Solar Hybrid Policy**

The Ministry issued National Wind-Solar Hybrid Policy in 2018. The main objective of the policy is to provide a framework for promotion of large grid connected wind-solar PV hybrid system for optimal and efficient utilization of wind and solar resources, transmission infrastructure and land. The wind - solar PV hybrid systems will help in reducing the variability in renewable power generation and achieving better grid stability. The policy also aims to encourage new technologies, methods and layouts involving combined operation of wind and solar PV plants.

The major highlights of this policy are as under:

- a. A wind-solar plant will be recognized as hybrid plant if the rated power capacity of one resource is at least 25% of the rated power capacity of other resource.
- b. Both AC and DC integration of wind solar hybrid project are allowed.
- c. The power procured from the hybrid project may be used for fulfilment of solar RPO and non-solar RPO in the proportion of rated capacity of solar and wind power in the hybrid plant respectively.
- d. Existing wind or solar power projects, willing to install solar PV plant or WTGs respectively to avail benefit of hybrid project, may be allowed.
- e. All fiscal and financial incentives available to wind and solar power projects will also be made available to hybrid projects.

- f. The Central Electricity Authority (CEA) and Central Electricity Regulatory Commission (CERC) shall formulate necessary standards and regulations including metering methodology and standards, forecasting and scheduling regulations, REC mechanism, grant of connectivity and sharing of transmission lines, etc., for wind-solar hybrid systems.
- g. Storage may be added to the hybrid project to ensure availability of firm power for a particular period.

Student Notes:

### **9.3.3.5. Green Energy Corridor**

In order to facilitate integration of large scale renewable generation capacity addition, the Cabinet Committee of Economic Affairs (CCEA) in FY 2015-16, approved the creation of Intra-state Transmission System in the states of Andhra Pradesh, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Tamil Nadu, rich in renewable resource potential and where large capacity renewable power projects are planned. The creation of the Intra-State Transmission System will facilitate the evacuation of over 20 GW of power from renewable energy generation stations to load centres.

The project is anticipated to be completed by 2021 with funding mechanism consisting of 40% Central Grant, 40% KfW loan (Euro 500 million) and the remaining 20 percent as State contribution.

### **9.3.4. Energy Efficiency**

- **Unnat Jyoti by Affordable LED for All (UJALA) programme:** Under UJALA scheme, LED bulbs, LED Tube lights and Energy efficient fans are being provided to domestic consumers for replacement of conventional and inefficient variant
  - Till date, over 36.46 crore LED bulbs, 72.01 lakh LED Tube lights and 23.34 lakh Energy efficient fans distributed by EESL across India. This has resulted in estimated energy savings of 47.87 billion kWh per year with avoided peak demand of 9,683 MW, GHG emission reduction of 39 million t CO<sub>2</sub> per year and estimated annual monetary savings of INR 19,100 crore in consumer electricity bills.
  - The programme has been able to engage with common man in a significant scale and so far, more than 9 crore consumers have taken the benefit of using these LED bulbs thus making it the largest non-subsidy based LED lighting programme in the world
- **Street Lighting National Programme (SLNP):** It aims to replace conventional street lights with smart and energy efficient LED street lights across India.
  - EESL replaces the conventional street lights with LEDs at its own costs (without any need for municipalities to invest) and the consequent reduction in energy and maintenance cost of the municipality is used to repay EESL over a period of time. The contracts that EESL enters into with municipalities are typically of 7 years duration where it not only guarantees a minimum energy saving (of typically 50%) but also provides free replacements and maintenance of lights at no additional cost to the municipality.
  - Till date, EESL has installed over 1.09 crore LED street lights in ULBs and Gram Panchayats across India.
- **National E-Mobility Programme:** It was launched to provide an impetus for Indian vehicle manufacturers, charging infrastructure companies, fleet operators, service providers, etc. to gain efficiencies of scale and drive down costs, create local manufacturing facilities, grow technical competencies for the long-term growth of the electric vehicle (EV) industry in India and to enable Indian EV manufacturers to emerge as major global players
  - Under National E-Mobility Programme, EESL has completed the procurement process of 10,000 e-cars.
  - Till date, 1,514 e-cars have been deployed/under deployment for Government organizations. These e-cars are being given on lease/outright purchase basis to replace the existing petrol and diesel vehicles taken on lease by Government organizations.

- **Smart Meter National Programme:** It aims to replace 25 crore conventional meters with smart meters in India. Smart meters are connected through a web-based monitoring system which will help to reduce commercial losses of utilities, enhance revenues and serve as an important tool in power sector reforms. EESL business model to roll out smart meters is revamping the current manual system of revenue collection which leads to low billing and poor collection efficiencies.
  - Under this programme, EESL has completed the procurement process of 1.5 crore smart meters. As on date, EESL has installed over 13.2 lakh smart meters in Uttar Pradesh, New Delhi, Haryana and Bihar under this programme.

Student Notes:

## 9.4. Way ahead

### Overall energy

- Oil, natural gas, electricity and coal may be brought under GST to enable input tax credit.
- Have the same GST rate for all forms of energy to enable a level playing field.
- All form of subsidies should be provided as functional subsidies to end-consumers to empower them to choose the energy form most suitable and economical to them.
- According to NITI AAYOG, the energy demand in India is likely to go up by 2.7-3.2 times between 2012 and 2040. Thus, there is a need to augment generation capacity.

### 9.4.1. Power

- Promote smart grid and smart meters.
- All PPAs including those with state generation companies (gencos) should be based on competitive bidding.
- Introduce a capacity market to encourage flexible capacity for peak demand and intermittency.
- Privatizing state distribution utilities and/or the use of a franchisee model will reduce AT&C losses.
- Discoms may adopt a franchisee model for its retail business in rural areas and stipulate a minimum level of performance parameters, including the use of decentralized generation sources and storage systems for local reliability and resilience.
- Regulatory bodies need to be further strengthened and made truly independent.
- For agriculture, an upfront subsidy per acre of land through Direct Benefit Transfer (DBT) may be considered instead of providing separate subsidies for fertilizers, electricity, crop insurance etc.
- Promote the use of solar pumps for agriculture. Local discoms should buy surplus power from the farmer.
- Discoms may be fined for load shedding.

#### About Smart Grid

- Smart Grid envisages providing choices to each and every customer for deciding the timing and amount of power consumption based upon the price of the power at a particular moment of time
- Apart from providing choices to the consumer and motivating them to participate in the operations of the grid, causing energy efficiency and accommodating all generation and storage options, Smart Grid also envisages various properties for the Grid like self-healing and adaptive islanding. This all will enable electricity markets to flourish.
- Smart grids are sophisticated, digitally enhanced power systems where the use of modern communications and control technologies allows much greater robustness, efficiency and flexibility than today's power systems.
- Power utilities around the world are adopting smart grid technologies to make the power infrastructure robust, self-healing, adaptive, interactive and cost effective
- It will save around 15-20% of electricity in the country
- By reducing the peak demand, a Smart Grid can reduce the need for additional transmission lines.
- Lower operating and maintenance costs thereby meaning lower peak demand
- Would result in reduction in carbon emissions.

- Ensure effective enforcement of a cap on cross-subsidy and open access. It is also necessary to remove high open access charges.
- Actively promote cross-border electricity trade to utilize existing/upcoming generation assets.
- Introduce time-of-day tariff to promote the use of renewable energy.
- Introduce performance-based incentives in the tariff structure.
- To manage the demand for power, it is necessary to introduce 100 per cent metering, net metering, smart meters, and metering of electricity supplied to agriculture.

Student Notes:

#### **9.4.2. Oil & gas**

- Provide for a common carrier and open access to gas pipelines.
- Separate the developmental and regulatory functions of the PNGRB.
- Expedite establishing the National Gas Grid.
- Promote city gas distribution to provide piped natural gas (PNG).
- Review and provide the required flexibility in contract terms to make stranded oil and gas assets functional.
- Enhance production from the existing fields of ONGC and OIL using cutting-edge technology through a framework of production enhancement contracts.
- Consider market pricing for blocks that are not viable because of low gas pricing.
- Provide for shared infrastructure for evacuation of oil and gas from small and scattered onshore and offshore fields.
- Provide “priority sector” status for 2G bioethanol projects. The concept of ‘solar parks’ can be applied to bio-fuels; land can be leased by the government to oil marketing companies (OMCs) for energy crops.
- The government should provide viability gap funding/financial assistance for 2G ethanol project developers/technology partners.
- Declare regasified liquefied natural gas (R-LNG) as transportation fuel and promote PNG in rural areas.
- Create strategic reserves through various policy options.

#### **9.4.3. Coal**

- Expediently complete detailed exploration through exploration-cum-mining leases based on production/revenue sharing model.
- Put the onus on concerned state governments to make the land required for mining available.
- The government should employ more Coal-Handling and Preparation Plants (CHPP) that wash coal before shipping. This process removes ash and debris, thereby increasing the energy content per tonne by 10-20%. Also, steps need to be taken to adopt clean-coal technologies including coal gasification.

#### **9.4.4. Renewable energy**

- Provide a mechanism for cost-effective power grid balancing (gas-based, hydro or storage).
- Renewable purchase obligations (RPO) should be strictly enforced and inter-state sale of renewable energy should be facilitated.
- It is necessary to have national level markets and regulations for balancing of power. Central level agencies like Central Electricity Regulatory Commission or National Load Despatch Centre should socialize the costs of balancing interstate transmission systems (ISTS) connected power plants, over the entire system, on the lines of the point of connection (PoC) or a similar mechanism.
- Decentralized renewable energy in rural areas in conjunction with the discoms’ grid can offer reliability.
- Hybrid renewable energy systems such as solar PV + biomass should be explored.

- Commercial biogas needs to be promoted by providing subsidy to consumers.

Student Notes:

#### **9.4.5. Energy efficiency**

- The Bureau of Energy Efficiency (BEE) should come out with a white paper on its 5-year strategy on energy efficiency in various sectors and specify energy consumption norms.
- State designated agencies (SDAs) need to be more empowered and provided with adequate resources to implement EE related programmes. There is a need to ensure greater participation of energy service companies (ESCOs) using appropriate financing models with a risk sharing mechanism, particularly by public sector banks.
- States should adopt the second version of the Energy Conservation Building Code (ECBC) in their building by-laws and ensure faster implementation.
- Promote the mandatory use of LED and the replacement of old appliances in government buildings with five-star appliances. Focus the UJALA (Unnat Jyoti by Affordable LEDs for All) programme on lower-income households and small commercial establishments. The number of appliances covered under the Standards and Labelling (S&L) programme should be increased.
- Widen and deepen the perform, achieve and trade (PAT) programme; make Energy Saving Certificate (ESCert) trading under the PAT scheme effective by ensuring strict penalties against defaulters.
- For the MSME sector, BEE should develop cluster-specific programmes for energy intensive industries to introduce energy efficient technologies.
- The Forum of Regulators and State Electricity Regulatory Commissions (SERCs) should provide for lower heat rate requirements for new power stations. Old and inefficient plants consuming more than the threshold energy should be retired in a phased manner.
- Promote the use of the public transport system. Public transport systems may be converted to electric in a time bound manner. Expand the corporate average fuel efficiency standards (CAFE) beyond passenger cars to other vehicle segments.

#### **Oil**

- a need to augment refining capacity to meet growing demand for petroleum fuels and petrochemicals.

#### **Coal**

Coal companies should take possession of the entire area of land required for the life of the project at one instance to avoid delays in land acquisition.

- Special task force to grant necessary clearances such as mining lease, forest and environment clearances, and land acquisition. The number of levels and stages in the processes should be reduced.
- Opening up the sector for more private participation, especially with regard to captive mining. Setting up a regulatory authority, which would have powers to comprehensively handle coal resource development and regulation of its extraction and use.

Steps taken by India in improving energy access

- Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY): DDUGJY is one of the flagship programmes of the Ministry of Power. It focuses on feeder separation (rural households & agricultural) and strengthening of subtransmission & distribution infrastructure including metering at all levels in rural areas.
- UDAY (Ujwal DISCOM Assurance Yojana) for improvement in financial and operational efficiencies of State Power Distribution Companies (DISCOMs)
- Pradhan Mantri Sahaj Bijli Har Ghar Yojna (Saubhagya Scheme): To supply electricity to all households by December 2018. It aims to improve the environment, public health, education and connectivity with the help of last-mile power connections across India. (discussed later)

- UJALA (Unnat Jyoti by Affordable LEDs for All) Yojana: Under it subsidised LED bulbs were distributed to public. It is implemented by Energy Efficiency Services Limited (EESL)
- Pradhan Mantri Ujjwala Yojana - Scheme for Providing Free LPG connections to Women from BPL Households.
- National Biogas and Manure Management Programme (NBMMMP) for setting up of family type biogas plants in rural and semi-urban areas of the country.
- National Biomass Cookstoves Initiative (NBCI) launched by Government of India aims to enhance the use of improved biomass cookstoves.
- Integrated Power Distribution Scheme: It was launched in 2014 to revamp urban power supply through strengthening of sub-transmission and distribution networks

A number of initiatives have been taken up by the Government to ensure promotion of energy efficiency in the country like Standards & Labelling programme for appliances by the Bureau of Energy Efficiency (BEE), Perform Achieve and Trade (PAT) Scheme, Energy Conservation Building Codes (ECBC), Unnat Jyoti by Affordable LEDs for All (UJALA) & Street Lighting National Programme (SLNP), Promotion of Energy Efficient Fans and Agriculture pump sets, among others.

## 10. Infrastructure and North East Region (NER)

The region has immense unexploited potential for development. The region is the natural gateway (with 98% international borderlines) for India to the East Asian, South East Asian and South Asian economies.

- The region is rich in natural resources like water, petroleum and natural gas. 52% of the NER is covered with forests and is endowed with exotic flora, fauna and a rich mineral resource base.
- The region has a huge potential for generation of hydropower, solar power and wind energy.

However it is grappling with following issues in infrastructure and energy sector that needs to be addressed to help realize the potential of the region:

- Lack of connectivity and infrastructure has also led to low trade activity in the region. 95% of India's exports to neighboring states of Bangladesh, Bhutan and Myanmar are from regions other than North East India.
- The region lacks in energy self-sufficiency. The main factors contributing to this are low capacity utilization of power generation units, weak connectivity with the eastern grid and a limited carrying and distribution capacity.

### **Way forward for NER with respect to infrastructure development**

- Ironing out the transit treaties and the development of physical infrastructure between the NER and neighboring countries. We must forge digital connectivity, distribution of power and transport links with the latter.
- On-going transport connectivity projects including the East West Corridor, Special Accelerated Road Development Project (SARDP-NE) and Trans Arunachal Highway should be closely monitored. The following measures should be taken to stimulate the progress.
  - Enabling expedited approvals.
  - Setting up dedicated Project Implementation Units (PIUs)
- The government should ensure that key regional connectivity projects are either cleared for execution or are tweaked to accommodate the concerns of the related parties. These projects include:
  - Kaladan Multi-Modal Transit Transport Project
  - India-Myanmar-Thailand Trilateral Highway
  - Bangladesh China India Myanmar Corridor

- Up gradation of Guwahati to an inter-regional aviation hub will be an important milestone for the region, which should be expedited.
- North Eastern states, should be encouraged to liberalise as many tree species as possible from the felling and transit rules to generate employment
- Public-Private Partnerships (PPPs) and Private Projects should be used as a near term tools to boost power generation capacities.
- In addition, a Shale Oil and Gas Authority can be set-up to exploit the shale oil and gas reserves in Assam and Arunachal Pradesh.

Student Notes:

## 11. Previous Years UPSC Mains Questions

- "Access to affordable, reliable, sustainable and modern energy is the sine qua non to achieve Sustainable Development Goals (SDGs)". Comment on the progress made in India in this regard.
- To what factors can the recent dramatic fall in equipment costs and tariff of solar energy be attributed? What implications does the trend have for the thermal power producers and the related industry?
- Write a note on India's green energy corridor to alleviate the problems of conventional energy.
- What do you understand by Run-of-river hydroelectricity project? How is it different from any other hydroelectricity project? (2013)
- Give an account of the current status and the targets to be achieved pertaining to renewable energy sources in the country. Discuss in brief the importance of National Programme on Light Emitting Diodes (LEDs).

## 12. Previous Years Vision IAS GS Mains Questions

- Rational energy prices provide the right signal to both producers and consumers and also lead to a demand-supply match. Highlight the steps taken by the government for rationalizing the energy prices in different sectors.***

### Approach:

Answer should deal with the importance of rational energy prices. Besides, the pricing formula or mechanism of various sectors viz. coal, petroleum, gas industry should be dealt in the answer. Besides, problems in current formula should be also highlighted.

### Answer:

Rational energy Prices play significant economic role. It provides the right signals to both the producers and consumers and lead to a demand-supply match, providing incentives for reducing consumption on the one hand and stimulating production on the other. Aligning domestic energy prices with the global prices, especially when large imports are involved, may be ideal option as misalignment could pose both micro- and macroeconomic problems. At microeconomic level, underpricing of energy to the consumer not only reduces the incentive for being energy efficient, it also creates fiscal imbalances. Leakages and inappropriate use may be the other implications. Underpricing to the producer reduces both his incentive and ability to invest in the sector and increases reliance on imports.

Over the years, India's energy prices have become misaligned and are now much lower than global prices for many products. The extent of misalignment is substantial, leading to large untargeted subsidies.

The government has taken several initiatives for rationalizing the energy prices in different sectors. The Integrated Energy Policy has outlined the broad contours of the pricing system for coal. The pricing of coal is done now on gross calorific value (GCV)

basis with effect from 31 January 2012, replacing the earlier system of pricing on the basis of useful heat value (UHV) which takes into account the heat trapped in ash content also, besides the heat value of carbon content. The revision in the GCV is likely to increase the prices of domestic coal to some extent, but this is a desirable adjustment because domestic thermal coal, adjusted for quality differences, continues to be underpriced.

In case of petroleum products pricing, the government dismantled the Administered Pricing Mechanism in 2002. This decision, however, was not fully implemented and domestic pass through of global price increases remained low for petrol, diesel, kerosene, and LPG. On 25 June 2010, the government announced that the price of petrol was fully deregulated and the oil companies were free to fix it periodically. However, diesel price deregulation was deferred. In January 2013, the government announced the new roadmap providing for a gradual price increase for reducing diesel under-recoveries. Admissibility of subsidized number of liquefied petroleum gas (LPG) cylinders and prices of LPG have also recently been revised.

Pricing of gas is presently done under the New Exploration Licensing Policy (NELP). The government provides the operator freedom to sell the gas produced from the NELP blocks at a market-determined price, subject to the approval of pricing formula. The government is reviewing pricing under the price sharing contract (PSC) to clarify the extent to which producers will have the freedom to market the gas.

- 2. Differentiate between production sharing and production linked revenue sharing regimes in the context of oil exploration. Also discuss their suitability w.r.t. promoting exploration activity in India.**

#### **Approach:**

Discuss about NELP in brief. Straight forward tabulate the difference. Write the views of different stakeholders. Express your own views.

#### **Answer:**

##### **Production sharing:**

- 1. Basis of revenue:** Companies recover all the cost of capital expenditure and then share the profit with government on a percentage basis.
- 2. Government share:** Government's share depends upon the investment of the private company and varies inversely with it.
- 3. Surprise geological find:** Government's share does not increase heavily in case of a surprise geological find since investment needs to be recovered first.
- 4. Price surge:** In case of price surge, private companies earn more if they are still recovering cost but both the company and the government will earn more if cost recovered.
- 5. Risk:** It is attractive for companies since it is less risky.
- 6. Cost recovery limit:** A maximum limit of cost recovery is set and if company invest more than this limit accidentally then conflict arises.

##### **Production linked revenue sharing:**

- 1. Basis of revenue:** Companies are required to state upfront the quantum of oil or gas they will share with the government from the very first day of production.
- 2. Government share:** Government's share depend upon the level of output of the field.
- 3. Surprise geological find:** Government's share increases in proportion in case of a surprise geological find since investment need not to be recovered first.

4. **Price surge:** In case of price surge, both the company and govt get proportionate increment in profit.
5. **Risk:** It is not attractive for companies since it is risky as no output at some site may cause operational loss.
6. **Cost recovery limit:** No such limit exists in this regime.

Student Notes:

Various committees and departments have stated different preferences with relevant arguments. Rangarajan committee appointed by GOI suggested Production linked revenue sharing regime since it is free from complexities related to revenue sharing. CAG has also supported this regime. Since auditing at every step can be done and company have to cooperate this.

However private companies prefer production sharing regime. Vijay Kelkar committee also suggested this regime for deep sea exploration so as to attract the investors because of greater uncertainty.

3. ***What are the special features of the infrastructure sector that make its financing a challenge? What measures have been taken to facilitate adequate amount of finance to this sector?***

#### **Approach:**

- Give a brief overview of the current status and the need for enhancing infrastructure financing in the near future.
- Delineate few economic characteristics which signify the distinct nature of infrastructure assets from other asset classes.
- Mention some of the important measures undertaken by RBI to improve flow of funds.
- Suggest some meaningful reforms for ironing out the current issues in the infrastructure sector.

#### **Answer:**

Infrastructure plays a crucial role in economic development by acting as a catalyst for accelerating growth. However, India ranks a dismal 66 amongst 137 countries on Global Competitiveness Index for infrastructure, 2017 conducted by World Economic Forum.

As per industry estimates, the investment into networked economic infrastructure would need to double up to \$ 6 Trillion in the period 2016-2030 vis-a-vis last 15 years to meet the growing demands of the Indian economy; however, infrastructure financing is a challenge because of the following factors:

- **Complex arrangements:** Infrastructure projects are often complex and involve a large number of parties which lead to diffused accountability.
- **Legal hurdles:** Such projects require multiple legal arrangements to ensure proper distribution of payoffs and risk-sharing to align the incentives of all parties involved.
- **High gestation period:** Long term nature of the projects subjects them to various risks including those due to changes in policies, delays in clearances, etc.
- **Asset-liability mismatch:** Due to perceived assurance of government backing for maintaining regular financial flows, debt financing is dominated by Public sector banks in India who are already facing severe financial crunch due to mounting Non-Performing Assets (NPAs).
- **Public-private Partnership (PPP):** PPP models like BOT haven't been successful and hence not desirable by private sector.

- **Policy and regulation:** Uncertain policies related to applicability of Minimum Alternate Tax (MAT), introduction of GAAR, land acquisition etc. have increased the perceived risk in the infrastructure sector.
- **Cross-cutting issues:** Inefficient transport and energy infrastructure leads to cost and time overruns that in turn have a bearing on the techno-economic viability of the projects.

#### **Steps taken to improve flow of funds to infrastructure sector**

- Limited cost overrun financing and extension of time for completion of projects has been allowed subject to certain conditions without change in classification of the loan.
- Banks can raise funds from the market by way of infrastructure bonds and the assets financed by such funds are exempted from the Priority Sector Lending (PSL) requirements.
- RBI has allowed setting up of Infrastructure Debt Funds (IDFs), both as NBFCs and Mutual Funds, to take over the post construction assets from banks.
- Efficient bond markets for de-risking the banks' balance sheets for providing credit enhancement for bond issuances.

To solve the problem of infrastructure financing various steps such as encouraging alternate sources of infrastructure financing such as Masala Bonds, Infrastructure Investment Trusts (InvIT), Infrastructure Development Funds (IDF), sovereign funds, flexibility for accessing External Commercial Bonds (ECB) etc are required. Deepak Parekh Committee recommended mobilizing infrastructure financing by tapping additional avenue from international markets and enriching the financing in terms of better risk recognition, longer tenure and lower cost of debt. Similarly, recommendations of Kelkar Committee for fast forwarding the PPP model by focusing on service delivery, capacity building and fair allocation of risks and returns is required.

4. ***Nuclear power has a great potential in India to supplement and in the longer term even substitute coal based power as base load. Discuss. Also, mention the steps taken by the Government of India in order to achieve nuclear energy self-sufficiency.***

#### **Approach:**

- Explain, in brief, the concept of base load.
- Mention the potential of nuclear power vis-a-vis renewable resources & fossils and how it can supplement and substitute coal as base load.
- Briefly mention a few areas of concern.
- Steps taken to achieve nuclear self-sufficiency.

#### **Answer:**

Base load is the minimum amount of power that a distribution company must make available to its customers to meet their minimum reasonable demands. Base load may vary at different points of time. An economy cannot operate effectively and grow without a stable source of power. In this context, potential of nuclear energy as a base load has emerged as a pertinent point of discussion.

#### **Potential of Nuclear Power to supplement coal:**

- **Depleting fossil fuels:** More than 70% of petroleum products, 40% of gas and 20% of coal consumption are based on imports. India's known extractable coal reserves will run out in about 40 years if our coal consumption keeps growing as it has over the past 25 years.

- **Climate change & environmental pollution** are likely to constrain the development of coal-based plants. Installation of electrostatic precipitators and carbon capture technologies to reduce local air pollution will increase the cost of coal power.

**Nuclear vis a vis other sources which can replace coal:**

- **Disadvantage of using renewable energy:** Sun and wind may not be available at all times. Thus, to achieve base load, it needs to be balanced using other reliable sources of energy such as coal, hydro, nuclear, gas etc.
- **Limitation of Hydropower:** It is estimated that by 2050, even when we have fully developed our hydro potential, we will still need balancing power.
- **Limitation of gas based power** is that it has to be imported and India can't achieve self-sufficiency. Although India imports uranium but in future, thorium based reactors will make India self-reliant.
- Indigenous expertise is available to operate Pressurized Heavy Water Reactors (PHWRs) built in India.

However, there are certain areas of concerns such as safety of operations including disposal of nuclear waste, fixing nuclear liability in case of disaster, high cost of operations, time and cost overruns during commissioning of plant, public protests etc. which should be addressed by government for wider acceptability of nuclear energy in India.

Overall, nuclear power is an economically attractive proposition and can bring energy self-sufficiency but it has to be materialized without delays and within budget. At present, the total installed capacity of Indian nuclear reactors is 6,780 MW—a little over 2% of power generated from all sources in the country. The nuclear power holds enormous potential for energy security and government has also taken following steps to ensure the same:

- The Government has approved construction of 10 units of India's indigenous Pressurized Heavy Water Reactors (PHWR) with total capacity of 7000 MW. The project will help transform domestic nuclear industry.
- **Civil nuclear agreements** with USA, Australia, Japan etc. for technology transfer and enriched fuel availability.
- Adoption of a three stage nuclear power programme in order to utilize thorium which is abundantly available in India.
- Setting up **India Nuclear Insurance Pool (INIP)** with a capacity of Rs.1500 crore to provide insurance cover as prescribed under Civil Liability for Nuclear Damage (CLND) Act 2010.
- Amendment of Atomic Energy Act, 1962 to enable Nuclear Power Corporation of India (NPCIL) to form joint venture companies with other Indian PSUs.

**5. A number of far-reaching developments have taken place in the local and global energy space which have to be reflected in our own energy policy framework. Discuss.**

**Approach:**

- Give a brief introduction about the major areas around which far reaching changes in the local and global energy space are being witnessed.
- Focus on the impact of these changes and corresponding response required to leverage them for increased efficiency and sustainable development in India.

**Answer:**

The changes in energy sector are largely around energy consumption pattern, demand & supply and climate change concerns, which call for policy clarity. These are:

- **Changes in the energy mix:** The world is moving away from fossil fuels and even within the fossil fuels, away from coal and oil in favour of gas. The share of fossil fuels globally in the primary energy mix fell from 88% to 86%, while that of natural gas has increased from 23% to 24% between 2005 & 2015. India has set the target of producing 175 GW of energy from renewable resources by 2022 and increasing the share of non-fossil fuel to 40% by 2030.
- **Abundance in supply of natural gas:** The production of natural gas in the world has increased to about 1.5 times between 2005 and 2015. It is largely on account of the success of horizontal drilling combined with the technology of hydraulic fracture. This trend is likely to continue in the foreseeable future, as the price of gas is lower than that of oil, and is also one-third lesser as carbon emitting than oil. India has adopted reforms in its natural gas policy under Hydrocarbon Exploration and Licensing Policy, where focus is given to develop the capacity natural gas production.
- **Over supplied oil and gas markets:** The prices of oil and gas have fallen by 50% & 70% respectively and this is triggering energy policy reforms across the world. India has reformed its petroleum subsidy regime by deregulating the prices of diesel, rationalizing the excise duty on petroleum products to discourage their irresponsible usage and improving finances.
- **Maturity of renewable energy technologies:** The prices of wind and solar energy have witnessed a sharp decline. Tropical countries, including India, are richly endowed with these resources, and can harness them in an innovative manner to meet energy requirements at decentralised locations. India is fourth largest producer of Wind energy in the world and is planning to generate 100 GW of solar energy - to achieve this target India has conceptualized the International Solar Alliance.
- **Nuclear energy:** In the Indian context, its importance is increasing as a base load power to replace unclean coal based thermal power. The Indian government is investing in indigenous nuclear reactors as well as collaborating with other countries to augment nuclear power in the total energy mix.
- **Climate change concerns:** The effects of climate change are more visible today. The need to fix poor air quality standards in Indian cities is being felt strongly than ever before.

India has taken some measures to combat the adverse impacts of climate change like monitoring of air quality standards and follow-up measures, etc.

As per India Energy Security Scenarios (IESS), 2047, the energy demand of India is likely to go up by 2.7-3.2 times between 2012 and 2040. As such, all the above developments offer both a challenge to the existing energy pathways, and an opportunity to respond by building in sustainability in the new energy infrastructure.

India has an opportunity to incorporate emerging technologies in the new infrastructure, to be able to exploit these technologies as they mature and costs falls. Having a pro-active policy is necessary to support the trends which bring in efficiency.

**6. Special Purpose Vehicles (SPVs) are fast becoming an important avenue for channelising funds for projects in infrastructure sector. Explaining the concept of SPVs, highlight some of the benefits and risks associated with them. Also, suggest measures to manage the risks identified.**

**Approach:**

- Explain the concept of Special Purpose Vehicles (SPVs) along with example.
- Mention some of the benefits and risks associated with SPVs.
- Suggest some measures so as to overcome the risks.

Special Purpose Vehicle (SPV) is a legal entity which is formed for a single, well-defined lawful purpose. It is a hybrid of a government-controlled body along with the efficiency of the private sector. Technically, an SPV is limited company which is setup in accordance to the provisions under Companies Act, 2013. Its ownership can be public, private or joint. There is generally a sponsoring company of the SPV which provides initial capital and assets and helps the SPV in raising funds. SPVs are mostly formed for raising and lending funds, especially debt funds of longer maturity, directly to eligible projects to supplement loans from banks and financial institutions. For instance, SPV has been named as National High Speed Rail Corporation Limited to implement the project of Mumbai-Ahmedabad High Speed Bullet Train.

### Benefits

- **Professional management-** SPV will plan, appraise, approve, release funds, implement, manage, operate, monitor and evaluate the development projects. Example: The creation of SPVs for each smart city
- **Minimal red tape-** For instance, Invest India's remit is not to make money for the shareholders, but to facilitate investments into India, hand-hold investors through the bureaucratic maze.
- **Increased financial resilience-** It helps in separating the risk and freeing up the capital. As a result, the SPV and the sponsoring company are protected against risks like insolvency, which may arise during the course of operation.
- **Greater operational independence-** Infrastructure projects are streamlined as they derive benefit from inter-linkages of academic institutions and organizations.
- **Securitization of assets** - SPVs allows securitization without disturbing the managerial relationship. Under the arrangement, any predictable income stream generated by secure assets can be securitized.

### Risks associated

- Poor risk management and a misunderstanding of the risks of SPV usage has been a factor in a number of high profile failures. There are reputational risks for the financing firm as well as risks for the investors in an SPV because of lack of transparency.
  - Further, poor performance of SPV can affect the sponsoring firm's access to capital markets. For example, if the SPV to implement a highways project fails, it may inhibit the capacity of the private partner as well as the government to raise funds from market.
  - Generating dedicated and substantial revenue stream so as to make it self-sustainable remains a pertaining question.
- Overlapping jurisdictional mandates with the existing companies and institutions.

### Management of risks

- There should be **regular oversight and monitoring** of the use of SPV activity in order to identify developments that could lead to systematic weakness.
- **Tightening reporting requirements and consolidation of account requirements** for the use of SPVs.
- **Governance structures** of SPVs should be **simplified** by putting an end to layers upon layers of multi-tiered securitization.
- Through adequate awareness generation, market participants should be able to **assess and risk manage factors** that increase transaction capability.

7. *Discussing the opportunities presented by decentralised energy systems, enumerate their environmental, economic and social benefits along with institutional, technical and financial challenges that they present.*

Student Notes:

**Approach:**

- Briefly explain the concept of decentralised energy systems and opportunities offered by them.
- Elaborate on the environmental, economic & social benefits related to them and mention the institutional, technical & financial challenges.

**Answer:**

A decentralized energy system is characterised by the location of energy production facilities closer to the site of energy consumption. It refers to the wide range of technologies that do not rely on the high-voltage electricity transmission network or the gas grid. This may include:

- Small-scale plants that supply electricity to a building, industrial site or community.
- 'Microgeneration' from non-gas heat sources, i.e. small installations of solar panels, wind turbines or biomass/waste burners.
- 'Micro-combined Heat and Power (CHP) plants that effectively replace domestic boilers, generating both electricity and heat for the home etc.

**Opportunities**

- It can be used as a supplementary measure to the existing centralized energy system.
- It can be used for deploying renewable energy sources locally available as well as expanding access to clean energy services to remote communities.
- It can aid distributed generation for rural electrification – either through off-grid or mini-grid systems.

**Benefits**

- Environmental
  - Optimal use of renewable energy
  - Promotion of carbon neutral and low carbon fuels
- Economic
  - Increased conversion efficiency (capture and use of heat generated, reduced transmission losses) increases eco-efficiency.
  - Increased competition leading to reduction in prices as seen in solar energy.
  - Off-grid distributed generation can reduce the need for expensive transmission and distribution network expansion.
  - Creation of new jobs in energy sector
- Social
  - It provides more flexibility for generation to match local demand patterns for electricity and heat.
  - Greater awareness of energy issues through community-based energy systems, driving a change in social attitudes and more efficient use of energy resources.
  - Security of supply is increased nationally as customers don't have to share a supply or rely on relatively few, large and remote power stations.
  - Providing energy to off-grid locations promotes inclusive development.

**Challenges**

- Institutional
  - Since decentralised energy systems encourage myriad actors to become power producers, it may hamper the state-controlled electricity markets.

- Instituting ownership schemes and pricing systems for off-grid and mini-grid services remains a challenge.
- Technical
  - Large-scale deployment in distributed generation may result in the instability of the voltage profile.
  - Emerging technologies, such as smart grid, renewable energy and energy storage, will require the operation criteria of the whole power system to be redesigned and modified.
  - Lack of experienced workforce in installing, managing and synchronizing these systems with main grid.
- Financial
  - Distributed generation sources often have higher capital cost per kW, compared to large central plants.

Student Notes:

Given that around 300 million people in India still lack electricity, decentralised-generation technologies can play an important role in ensuring uninterrupted energy supply. Recognizing this fact, draft policy on Renewable Energy-based Microgrids has been formulated, which aims to establish at least 10,000 renewable-based micro- and mini-grid projects across the country.

- 8. If the economic as well as social costs of energy production are accounted for, clean coal offers itself as a better alternative than renewable sources in terms of carbon emission reduction. Discuss the statement in context of India's growing energy demands.**

**Approach:**

- Briefly mention the energy demands of India and its sources.
- Explain clean coal technologies with a few examples.
- Citing a few advantages of renewable energy, discuss the advantage of clean coal over renewable vis-a-vis its social and economic costs.

**Answer:**

According to BP Energy Outlook, India's energy consumption is set to grow 4.2% a year by 2035, faster than that of all major economies in the world.

As per the **IEA India Energy Outlook, 2015**, over 40% of the primary energy demand in India is met by coal and less than 2% by renewable sources. The renewable sources are non-polluting and cheaper alternatives to coal in the long run but in the short and medium-term, the focus should be on clean coal technologies or **high efficiency low emission (HELE) technologies** such as supercritical and ultra-supercritical combustion technologies because of involved social and economic costs.

**Economic costs**

- There's an **abundance of coal availability** in India.
- Shift to renewables would leave conventional power plants underutilised. The investments made in these plants would be deemed "sunk" and would result in loss of revenue. These **stranded assets** will impact the banking sector.
- It costs Rs. 875 to reduce a tonne of CO<sub>2</sub> emission when power is generated by ultra-supercritical power plants instead of subcritical plants while it costs Rs. 2,624 to reduce a tonne of CO<sub>2</sub> emission when power is generated by SPV (solar photovoltaic) plants instead of subcritical plants.
- To reduce CO<sub>2</sub> emissions substantially, 50% of existing subcritical plants can be replaced by highly efficient ultra-supercritical plants. By doing this, the government

can save up to Rs. 25,000 crores as compared to the equivalent reduction of CO<sub>2</sub> emission by SPV power plants

Student Notes:

### Social Costs

- Low tariffs seen in the renewable sector do not include several **implicit costs** that are so far being subsidized such as cost of intermittent supply of power from solar and wind sources, land acquisition costs etc.
- Investing in renewable energy attributes a social cost (such as opportunity cost of land required for solar) of Rs 11 per unit of electricity, three times to that of coal.
- It will impact **employment**, and regional economies where coal mines are located.
- Other sources such as wind and hydro-power have socio-economic costs. For example, it takes 4 to 5 years for a coal thermal project to fructify, unless it is held up. It would take 8 to 10 years for a hydro project to be commissioned.
- This posturing of renewable alternatives such as run-of-the-river small hydropower as environmentally benign obscures the threat they pose to aquatic life, agriculture, irrigation, land, and traditional livelihoods.

India must progressively increase her share of the burden to combat climate change, compared with other countries who should shoulder a higher burden from the outset. The social costs of coal should include its domestic externalities, but at least for some time, not the international externalities.

India has a world class indigenous manufacturing capability of super critical coal based thermal power with a substantial portion of this capacity lying idle at present. This asset cannot be wasted. The imperative is to generate thermal power efficiently and in an environmentally safe manner.

### 9. *There are many challenges in sustainably scaling up renewable energy in India. Analyse. Also, discuss what can be done to address these challenges.*

#### Approach:

- Briefly write about the existing renewable energy scenario and intended targets related to it.
- Bring out the challenges in making renewable energy sustainably in India.
- Discuss some of the measures taken by government in this direction.
- Finally bring out some measures that can be taken to address these challenges.

#### Answer:

The government of India has set up a target of installing 175 GW capacity of renewable energy by 2022. Out of 175 GW, 100 GW is to come from solar capacity and 60 GW from wind. As of Feb, 2018, a total capacity of 65 GW has been installed in the country. However, India faces many challenges in scaling up renewable energies such as:

- **Transmission infrastructure:** It is far from prepared to handle the kind of solar power being injected.
- **Less demand from consumers:** Renewable energy in India is driven more by targets, governmental supports and simple economics than a consumer push for being green.
- **Inability to meet peak demand:** Variabilities in sun rays and blowing wind may not help meet the peak demand by contributing capacity at the right time. Also, fluctuation in output due to climatic conditions leads to instability of the power grid infrastructure and may lead to its failure.
- **Low prices:** Falling solar prices is also a problem and DISCOMS don't want to be locked into a bad deal.

- **Technological barriers:** Concerns related to panel quality and lifespan especially in the hot tropical Indian conditions.
- **Low investments:** Need of more investment is stifled by inability to attract private players as well as high interest rates.

Student Notes:

Government has taken a number of measures to promote renewable energy like provisions of Renewable Purchase Obligations, development of solar parks and Ultra Mega solar power projects, development of power transmission through Green Energy Corridor projects, permitting 100 percent FDI through automatic route etc.

To tackle the challenges more measures are required such as:

- **Transparency in pricing:** There is need to address the system level costs of Renewable energy in a more transparent manner.
- **Enhance grid capacity:** More focus on the smart grids and demand response system for robust transmission system as well as quick digitization of grids in all states should be a priority.
- **Improve transmission:** Green Energy Corridor needs to be significantly widened so as to accommodate 50 more ultra-mega solar parks. Also, cross-state Renewable energy power flows should be made easier since it would be concentrated in handful of windy and sunny states.
- **Better regulation:** By developing expertise among decision-makers, increasing coordination between relevant authorities as well as developing holistic regulatory and infrastructural strategy using resource assessment and mapping.
- **Skill development:** Lack of technical skills for grid operation and management should be tackled by creating a comprehensive capacity-building plan.

Thus, an ecosystem is needed to be created through partnerships between government, utilities and developers to ensure significant scaling up of renewables.

#### **10. What is Intelligent Transportation System (ITS)? Explaining the need of ITS in India, identify the challenges in deploying it.**

**Approach:**

- Explain Intelligent Transportation Systems (ITS) and how it improves the quality of life.
- Highlight the need for deploying ITS.
- Issues being faced in deploying ITS in developing countries like India.
- Suggest a way forward in the conclusion.

**Answer:**

Intelligent Transport Systems (ITS) provide transport solutions by utilizing state-of-the-art information and telecommunications technologies. It applies sensing, analysis, control and communications technologies to ground transportation. It is an integrated system of people, roads and vehicles, designed to significantly contribute to improve road safety, efficiency and comfort as well as environmental conservation through realization of smoother traffic by relieving traffic congestion.

The rapidly increasing vehicle population in India, spurred by population boom and economic upturn lays a critical burden on traffic management in urban areas. Thus, there is a need to deploy ITS in order to:

- **Improve road safety and security** for all users. For ex- Video Traffic Management using CCTV to provide information for traffic and incident management

- **Address increasing congestion**, which is raising travel times and industry costs. For ex-Traffic Signal Priority for Buses and Automatic Vehicle Tracking System focuses on analysis of data for adjusting transit schedules
- **Make available real-time information** to commuters and agencies, helping in better travel planning and traffic management, saving man-hours and energy, thus providing a sustainable solution
- **Enhance the attractiveness of public transport**
- **Reduce the environmental impacts of transport**
- **Improve the competitiveness and performance** of freight logistics systems

**Issues being faced in deploying ITS in developing countries like India are following:**

- **Technology:** electronic equipment such as sensors, detectors and communication devices etc. need to be developed; also developing a comprehensive data collection system would be a challenge..
- **Modelling of Indian traffic** – a proper understanding of the traffic system for building a reliable ITS systems.
- **Supply Chain:** seamless interconnectivity of the various branches of the transportation sector for effective, efficient and secure movement of goods and services.
- **Energy and Sustainability:** It should closely work with the energy sector in the promotion of fuel efficient transport policies and practices.
- **Human Capital Development:** a work force that can develop, manage and safely implement existing and emerging technologies
- **Standards:** establishing ITS standards applicable throughout the urban and rural sections of India
- **Managing heterogeneity:** designing an ITS that encompasses the heterogeneous vehicle population
- **Collaboration:** Setting up active interaction between academia, industries and governmental agencies
- **Regulation:** setting up rules and regulations of traffic that will aid in ITS implementation

While India has already made a foray into intelligent transport systems in organizing traffic, more extensive and urgent integration of advanced technology and concepts into mainstream traffic management is the need of the hour. This requires establishing aggressive, yet achievable, near and long-term performance goals for transportation systems.

**11. *National Infrastructure Pipeline is an ambitious step in the direction of achieving multiple development goals. In this context, discuss its features and significance.***

**Approach:**

- Introduce by giving a brief account on the National Infrastructure Pipeline.
- Discuss how this project helps in achieving multiple development goals.
- Discuss in brief the features and significance of this step in the context of projected trends in Indian economy and demography.
- Give an appropriate conclusion.

**Answer:**

It is estimated that India would need to spend \$4.5 trillion on infrastructure by 2030 to sustain its growth rate. Therefore, in this regard the government has launched the National Infrastructure Pipeline.

The National Infrastructure Pipeline (NIP) consists of the projects and programmes with a total allocation of INR 102 lakh crore for infrastructure development in the next five years.

Student Notes:

#### Features of NIP:

- It includes economic and social infrastructure projects in sectors such as Energy (24%), Roads (19%), Urban (16%), and Railways (13%), amounting to around 70% of the projected capital expenditure in infrastructure in India. Investment in different sectors will help in focused development of each sector under the umbrella of this programme.
- The Centre (39%) and states (39%) are expected to have equal share of the capital expenditure to be undertaken in the infrastructure sector, followed by the private sector (22%).
- Each Ministry/ Department would be responsible for the monitoring of projects so as to ensure their timely and within-cost implementation.
- It has also suggested important reforms such as improving project preparation processes, enhancing execution capacity of private sector participants, financial sector reforms etc.

India's infrastructure bottleneck is a primary constraint to improving its global competitiveness, as measured by the **World Economic Forum's Global Competitiveness Index**. In the same index, India is currently ranked 70 out of 140 countries for its infrastructure quality. And in order to improve the living standards and fulfill SDG 9, India needs to develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure. The National Infrastructure Pipeline , therefore, holds crucial importance.

#### Significance of NIP in the context of projected trends in Indian economy and demography:

- **Trends in Indian Economy**
  - **Shift to services-based economy:** It is estimated that the share of services in total employment in India will grow from 27% in 2012 to 48% in 2030. NIP will play a critical role in boosting the service sector by providing it with adequate and efficient infrastructure.
  - **Increasing unemployment:** Infrastructure creation is labour absorbing, which boosts employment and income generation in the economy and further spurs domestic demand.
  - **Logistics and Road connectivity:** Improved infrastructure capacities also create efficiency gains through improved logistics and networks, which would improve the competitiveness of the economy. This can help kick in a virtuous cycle of higher investments, growth and employment generation in the economy.
  - **Impact on other programs:** Creating new and upgrading existing infrastructure can specially be critical for the success of other programs like 'Make in India' program as manufacturing competitiveness critically depends on infrastructure.
- **Demographic trends**
  - **Growing working-age population:** It is expected that the working-age population of India will grow 1.2 times during 2015-2030. India is expected to have the world's largest working-age population of 1.03 billion by 2030 compared with 0.97 billion in China and 0.22 billion in the US. Employment generated due to NIP will be crucial in this scenario.
  - **Increasing urbanization:** By 2030, it is estimated that around 42% of India's population would be urbanised from the current 31%.

- **Ease of living:** Plugging the deficiency in infrastructure will smoothen the process of urbanisation by promoting ease of living and will help in realizing the full potential of growing urban economy and raise its contribution to GDP.

The changing trends in the economy and demographics will need the converged development of a host of infrastructure facilities. So, the NIP will help in delivering the full spectrum of required infrastructure, which will ensure economic growth, ease of living as well as improved competitiveness across sectors.

**12. In a power-deficit country like India, energy efficiency can be a new kind of power, with savings from energy efficiency driving the economic growth. Discuss.**

**Approach:**

- Substantiate the power deficiency in India and energy efficiency is a solution to it.
- Describe/analyze various steps/schemes/initiatives taken by government/industries for energy conservation/efficiency.

**Answer:** [Student Note: Answer has been kept long to provide details of various schemes and facets of energy efficiency dimension.]

India suffers from a major shortage of electricity generation capacity currently. She faced a **power deficit of 12,000 MW** during peak hours in the 2012-13 financial year. Barring very few states, all states are affected by the power shortage. India imports natural gas, coal for its power generation. High economic growth along with increasing urbanization, industrialization and an emerging consumer society are putting pressure on power generation. Each of these challenges can be addressed effectively by making energy efficiency a central plank in the country's long-term growth planning.

Almost every sector of the economy – industrial, agricultural, commercial and domestic – has potential of energy efficiency. India's National Mission for Enhanced Energy Efficiency (**NMEEE**) targets to replace new electricity capacity addition of **19000 MW by 2014-15** using enhancing energy efficiency measures.

There are various industries which are energy intensive such as steel plants, paper manufacturing factories, cement units etc. Government of India along with private sector has initiated various schemes, programmes to design energy saving norms, generating human resource and using state of the art technology for maximizing energy efficiency. Under **Perform Achieve Trade (PAT) scheme**, eight energy intensive sectors are obliged to reduce their energy consumption. They have to buy energy saving certificates (**EScerts**) to jump over the assigned emission targets. Energy-intensive SMEs (small and Medium Enterprises) in India are still having old machinery. With proper technological and managerial intervention, energy consumption can be reduced by more than 25 per cent in most of these SMEs. **Bureau of Energy Efficiency (BEE)** in consultation with state agencies has prepared action plan to enhance energy efficiency.

Energy audit studies conducted in several **office building**, hotels & hospitals indicate **energy saving potential of 23% to 46%** in end uses like lighting, HVAC etc.

The government of India launched **Energy Conservation Building Code (ECBC)** on 27th May , 2007 to set minimum energy standards for commercial buildings having a threshold load (500 kW). Mandatory compliance of the ECBC is expected to yield annual saving of approximately 1.7 billion units.

Central and state governments have come up with various schemes to replace inefficient appliances from houses. **Bachat Lamp Yojana (BLY)**, under the supervision of

BEE, targets replacement of about 400-million incandescent bulbs in use in the country , leading to a possible reduction of about 6,000 MW of electricity demand. Cost of BLY is achieved by utilizing the Clean Development Mechanism (CDM) of the Kyoto Protocol. **Standards and labeling scheme** is to provide the consumer an informed choice about energy saving, and thereby the cost saving potential of the marketed household and other equipment. Star rating scheme for refrigerators, Air Conditioners (ACs) is a win-win situation for consumers and government as extra price of an appliance is compensated by electricity saved.

There is an immense opportunity in reducing the overall power consumption, improving efficiencies of ground water extraction and reducing the subsidy burden of the states without sacrificing the service obligation to agricultural sector. Studies project potential savings of 45-50% by mere replacement of **inefficient pumps** from fields, the overall electricity savings (from 20 million pumps) is estimated at 62.1 billion units annually. In addition to that, there is a need to incentivize farmers to run irrigation pump for only require time period to save extra energy that gets wasted.

Government has started **National Campaign on Energy Conservation in 2005** to make people aware about the need of energy conservation and benefits to the individual, society and nation as a whole. Campaign is targeting the domestic, commercial, agricultural, industrial and educational sector. Government is also promoting energy conservation through **National Energy Conservation Awards scheme**. These Awards are a means to institutionalize the energy efficiency movement in the country by identifying and giving recognition to the energy conservation efforts undertaken by different firms and industries.

In conclusion, power-deficit India has to work at multi-platforms to meet the growing demand of energy. Conserving power through enhanced efficiency is a long-term solution where people, industry and government sectors become more sensitive towards energy efficiency. Without such drive, India would be under immense pressure to meet the growing energy demand.

- 13.** *"In India, tertiary roads are given tertiary treatment". In this context, elaborate on the importance of developing rural roads in the country. Also highlight the success of PMGSY in ushering the much-needed bottom-up reforms.*

**Approach:**

The statement tries to give a negative connotation but students need to highlight the existing poor state of rural roads in the country in brief. In the later part they should elaborate on importance of rural roads and successes of PMGSY. There is no need to cite the provision of PMGSY

**Answer:**

- Even after a decade, a large number of villages and habitations in rural areas remain unconnected due to lack of good quality roads. Around 44% of the rural population is not covered by the rural road network.
- The lack of roads means that an estimated 20-30 percent of the agricultural, horticultural and forest produce gets wasted because of inability to timely transport the produce to marketing and processing centres
- Rural roads comprise over 85 % of the road network and their being kept in serviceable condition is crucial to the rural / agricultural growth and affording means of access to millions of rural people to social facilities viz. medical, education

as well as to market. Lack of maintenance affects the poor people badly as the time for access to markets and other social infrastructure is increased.

- Rural roads have been proved to be catalytic for economic development and poverty alleviation in rural areas

Student Notes:

#### Success of PMGSY:

- Pradhan Mantri Gram Sadak Yojana (PMGSY) roads have resulted in significant benefits to rural households in form of easier access to health and educational facilities.
- It has enhanced school enrolment of students, and attendance of students and teachers. The road connectivity has increased the mobility of women as they can now travel alone in buses and cycles.
- One of the major benefits is access to markets, which increases employment and business opportunities, and encourages small-scale and cottage industry activities, roadside stalls, and shops in the villages. It has created employment opportunities to local people of around 460 million man days per year.
- Better roads have meant availability of irrigation facilities like bore pumps and use of tractors, enabling multiple cropping and efficient farming. Dairy and poultry farmers have also benefited. Roads have enhanced rural employment—both on-and off farm and encouraged setting up of small enterprises, including those by women.
- Rural infrastructure investments have benefitted the rural poor through increased incomes and improved consumption patterns.

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# INVESTMENT MODELS

Student Notes:

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# 1. Models Used in the Planning Process

Student Notes:

Growth in GDP is not the only determinant of economic development, which in order to be measured effectively must account for human welfare determinants such as life expectancy, literacy rates, child mortality rates, distribution of income, and so on. However, it has been shown throughout history that economic growth, or the increase in real output and income, correlates directly with improvements in development factors like those above. And to achieve fast paced economic growth we need appropriate growth models, some of which are discussed below:

## 1.1. Harrod - Domar Growth Model

Harrod and Domar analyzed the dynamic nature of investment and demand and showed how variations in capital and in demand were responsible for instability in economic growth. Therefore, this model suggests that the economy's growth rate depends on two factors:

- Level of savings; and
- Productivity of investment i.e. Capital to Output ratio.

### Incremental Capital-Output Ratio

The incremental capital output ratio (ICOR) is a metric that assesses the marginal amount of investment capital necessary for an entity to generate the next unit of production. For example, suppose that Country X has an incremental capital output ratio (ICOR) of 10. This implies that \$10 worth of capital investment is necessary to generate \$1 of extra production.

Hence the rate of economic growth in a country depends on the rate of investment and capital-output ratio. Harrod and Domar arrived at the following relation:

$$\text{Growth Rate} = \text{Investment} * (1/\text{Capital-Output Ratio})$$

### Relevance of Harrod-Domar Model for Developing Countries

Harrod-Domar model was formulated primarily to protect the developed countries from chronic unemployment and they were not meant to provide guidelines to the developing economies in their economic development. Since they were formulated primarily for the developed countries they were based on high propensity to save and a correct estimate of the capital-output ratio, which should remain fixed over time. On the other hand, the main problem of the under-developed countries is to raise their propensity to save because it is generally low in these countries. Nor is it possible to assume a fixed value of the capital-output ratio. This ratio happens to be very high in these countries. Thus the two important bases of the Harrod-Domar model are non-existent in the case of developing economies.

Thus the peculiar conditions prevailing in the developing countries e.g. disguised unemployment, low propensity to save and low productive capacity makes the Harrod-Domar model inapplicable to them. Also, this model assumes no government intervention, fixed prices and no institutional changes. All these assumptions too make it inappropriate.

However, we should not reject this model wholesale and emphasize their inapplicability to developing economies. With slight modifications and reinterpretation they can be made to furnish suitable guidelines even for the developing economies. In some cases, it is only a question of changing the emphasis. For instance, Domar's model recognizes the capacity creating role of investment. But it is intended to increase effective demand in developed countries, while in developing countries, the capacity creating role of investment is to be seen as a means of overcoming the problem of unemployment. Hence, to make the model applicable to the developing countries, it has to be suitably reinterpreted.



The Harrod Domar Model suggests that the rate of economic growth depends on two things:

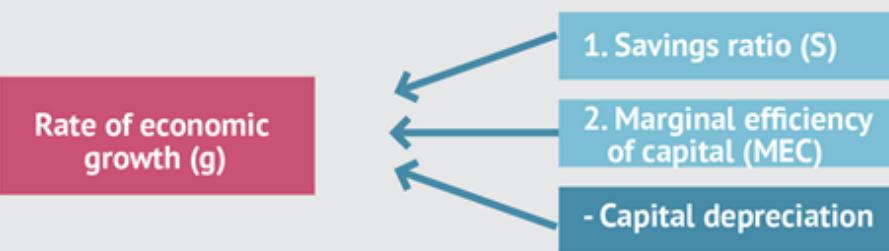


**Level of Savings-** A higher savings enable higher investment.

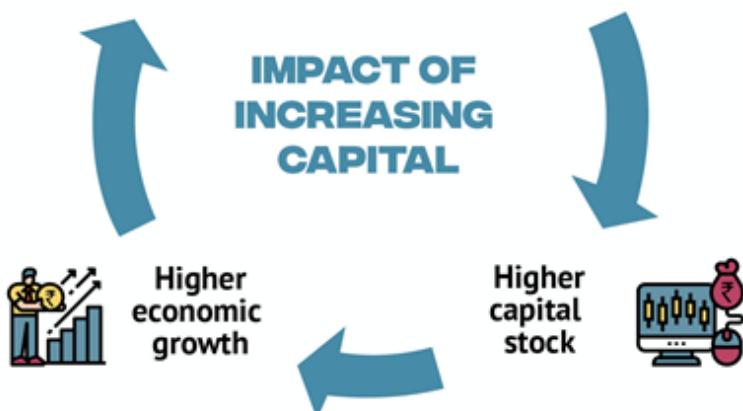


**Capital-Output Ratio-** A lower capital-output ratio means investment is more efficient & the growth rate will be higher.

## MAIN FACTORS AFFECTING ECONOMIC GROWTH



### IMPACT OF INCREASING CAPITAL



## 1.2. Mahalanobis Strategy of Economic Growth

There has been a lot of controversy in our country on the appropriate strategy to be adopted for planned economic development. There was no clear strategy in the First Five-Year Plan. But when the second plan was being formulated Prof. P.C Mahalanobis prepared a growth model in which he showed that to achieve a self-sustained growth quickly in the country, it would be

essential to devote a major part of the development outlay to building basic heavy industry, e.g. of capital goods industry like steel and the engineering industry for making different types of machines, the multipurpose river valley projects for irrigation and power.

Student Notes:

According to Prof. Mahalanobis, the rate of real capital formation in a country like India did not depend merely on savings in the form of money but it depends on the capacity for making capital goods. He argued that even if the rate of savings was substantially raised and it was desired to accelerate economic growth and capital formation by investing it in the consumer goods industries, it would be futile. The reason is that the capital goods required for the consumer goods industries are not produced in the country in sufficient quantities.

Thus, Prof. Mahalanobis was of the view that if large investment is not made in the heavy basic and capital goods industry, the country will forever remain dependent on foreign countries for the imports of steel and capital goods like machinery for economic development and real capital formation. Since it is not possible for India to earn sufficient foreign exchange for the purpose by increasing exports, the capital goods cannot be imported in sufficient owing to foreign exchange constraints. The result will be that the rate of economic growth and the rate of real capital formation in the country will be slow indeed. Thus according to him, to achieve rapid economic growth and self-reliance, it would be necessary to give a high priority to basic and capital goods industries in the development strategy of a plan.

### 1.3. Planning Model Adopted in India

The second five year plan was based on the Nehru-Mahalanobis strategy of development, which guided the planning practice for more than three decades until the end of the Seventh Five Year Plan. The draft outline of this plan was based on the Mahalanobis Model which was viewed as a variant of the Soviet Planning model. The basic elements of this strategy can be summed up as:

- Raising the **rate of investment** since the rate of development is dependent on the rate of investment. It involved stepping up domestic and foreign savings also
- Rapid growth of the **productive capacity** of the economy by directing public investment toward development of industries. E.g. Five steel plants were setup in remote places like Bhilai, Durgapur, and Rourkela in the second plan.
- Simultaneously, promotion of **labor-intensive**, small and cottage industries.
- **Import substitution** for self-reliance. E.g. Green revolution was brought up in to advance the agricultural production.
- An elaborate system of controls and **industrial licensing**. E.g. Legislations such as MRTP and FERA were used to regulate the economic activity.
- Predominance of **public sector** in capital goods industries

## 2. Infrastructure Investment Models

### 2.1. Financing of Infrastructure: Need, Issue and Challenges

The relationship between infrastructure development and economic growth is well established in the literature. While infrastructure development facilitates economic growth; economic growth increases demand for more infrastructure. Thus, development of adequate and quality infrastructure is a necessary if not sufficient condition to maintain growth momentum in any economy. However, infrastructure development is an arduous job for any country as it involves huge investments, long gestation periods, procedural delays and returns spread over a long period of time. These unique features of infrastructure development raise some issues which are specific to the financing of infrastructure.

To revert back to the high economic growth rate (8-9%) in next five years, the rate of investment has to increase substantially (We need 1 Trillion Dollars of investment in infrastructure in next two to three years- National Investment and Infrastructure Fund). This is

evidenced by the decline of growth rate and investment rate in last couple of years. Let us look at the broad pattern of financing of infrastructure in our country before highlighting some of the issues involved in it.

Student Notes:

## 2.2. Issues in Infrastructure Financing

- **Funding Gap** - Funding Gap is the most important issue that we face on this front. The slowdown in the economy has further aggravated this funding gap in the infrastructure sector.
- **Fiscal Burden** - Almost half of the total investment in the infrastructure sector was done by the Government through budget allocations. But the Government funds have competing demands, such as, education, health, employment generation, among others.
- **Asset-Liability Mismatch of Commercial Banks** - After the budgetary support, next in line for financing infrastructure were funds from the commercial banking sector. However, it is a well-known fact that these are institutions that primarily leverage on short-term liabilities and, as such, their ability to extend long-term loans to the infrastructure sector is limited. This is because, by doing so they get into serious asset-liability mismatches.
- **Investment Obligations of Insurance and Pension Funds** - From the point of view of asset-liability mismatches, insurance and pension funds are one of the best suited institutions to invest in the infrastructure sector. This is because, in contrast to the commercial banking sector, these institutions leverage on long-term liabilities. However, they are constrained by their obligation to invest a substantial portion of their funds in Government securities. Of course, in a way, this facilitates the financing of gross fiscal deficit of the Central Government and hence enables the Central Government to make more investments. However, this limits the direct investment of these institutions in the infrastructure sector.
- **Need for an Efficient and Vibrant Corporate Bond Market** - An active corporate bond market can facilitate long-term funding for the infrastructure sector. However, despite the various initiatives taken by the Reserve Bank, Securities & Exchange Board of India and Government of India, the corporate bond market is still a long way to go in providing adequate financing to the infrastructure sector in India.
- **Developing Municipal Bond Market for Financing Urban Infrastructure** - For large scale financing urban infrastructure which is assuming critical importance in the context of rapid urbanization, conventional fiscal transfers to the urban local bodies or municipals from governments are no longer considered sufficient.  
As a result, there have been some earnest experimentations by these bodies to tap unconventional methods of financing such as public private partnerships (PPPs), utilizing urban assets more productively, accessing carbon credits, etc. but then these do not address the financing needs. One possible way of addressing the problem is developing a municipal bond market.
- **Insufficiency of User Charges** - It is a well-known fact that a large part of the infrastructure sector in India (especially irrigation, water supply, urban sanitation, and state road transport) is not amenable to commercialization for various reasons, such as, regulatory, political and legal constraints in the real sector. Due to this, Government is not in a position to levy sufficient user charges on these services. The insufficiency of user charges on infrastructure projects negatively affect the servicing of the infrastructure loans. Generally, such loans are taken on a non-recourse basis and are highly dependent on cash flows. Hence, levy and collection of appropriate user charges becomes essential for financial viability of the projects.
- **Legal and Procedural Issues** - Infrastructure development involves long gestation periods, and also many legal and procedural issues. The problems related to infrastructure development range from those relating to land acquisition for the infrastructure project to environmental clearances for the project. Many a times there are legal issues involved in it and these increase procedural delays.

## 2.3. Measures Taken by the Government

Student Notes:

- **Public-Private Partnership Projects in Infrastructure** - As Government faces a tight budget constraint in the context of a rule based fiscal policy framework, it was important to encourage the private sector to invest more in the infrastructure sector. Resultantly, the Government started encouraging Public-Private Partnership (PPP) projects in the infrastructure sector. PPP mechanism provides built in credit enhancement for improving project viability by way of buyback guarantee, escrow arrangement, substitution rights for the lenders, etc. Government has taken several initiatives, especially to standardize the documents and process for structuring and award of PPP projects. This has improved transparency in relation to the issues involved in setting up PPP projects.
- **Viability Gap Funding** Viability gap funding was introduced in 2006, which provides Central Government grants up to 20 per cent of the total capital cost to PPP projects undertaken by any central ministry, state government, statutory entity, or local body. The scheme aimed at providing upfront capital grant to PPP projects to enable financing of commercially unviable projects. The level of grant is the net present value of the gap between the project cost and estimated revenue generation over the concession period based on a user fee that was to be levied in a pre-determined manner.
- **Foreign Direct Investment and Infrastructure Development** - To facilitate infrastructure financing 100 per cent FDI is allowed under the automatic route in some of the sectors such as mining, power, civil aviation sector, construction and development projects, industrial parks, petroleum and natural gas sector, telecommunications and special economic zones. Further, FDI is also allowed through the Government approval route in some sectors such as civil aviation sector, Petroleum and Natural Gas sector – refining PSU companies; Telecommunications etc.
- **Setting up of India Infrastructure Finance Company Limited (IIFCL)** - Another major development was the setting up of IIFCL by the Central Government for providing long-term loans to the infrastructure projects. IIFCL is involved both in direct lending to project companies and refinancing of banks and other financial institutions. IIFCL can provide funds to the infrastructure project up to 20 per cent of the total project cost as long-term debt
- **Setting up of Infrastructure Debt Funds** - Reserve Bank of India and the Securities and Exchange Board of India (SEBI) notified detailed guidelines for setting up of IDFs which can either be a mutual fund (trusts) (IDF-MF) or an NBFC (companies) (IDF-NBFC). The Scheduled commercial banks are allowed to act as sponsors to IDF-MFs and IDF-NBFCs with prior approval from RBI subject to certain terms and conditions.
- **Tapping the retail investor base through Infrastructure Bonds** - To provide further impetus to infrastructure financing, Government of India has permitted IFCI, IDFC, LIC and infrastructure finance firms to issue long-term infrastructure bonds providing for tax benefit.
- **Use of Foreign Exchange Reserves for Infrastructure Development** - Although use of reserves for such purposes does not meet the criterion of reserve management objectives, a special and limited window has been created. Accordingly, IIFC (UK) Ltd. was incorporated in London and was set up in April 2008. Under this scheme, RBI invests, in tranches, up to an aggregate amount of USD 5 billion in fully government guaranteed foreign currency denominated bonds issued by this overseas Special Purpose Vehicles (SPV) of the IIFCL. The funds, thus raised, are to be utilized by the company for on-lending to the Indian companies implementing infrastructure projects in India and/or to co-finance the ECBs of such projects for capital expenditure outside India without creating any monetary impact.
- **Introduction of Credit Default Swaps** - Further, the introduction of Credit Default Swaps (CDS) would help banks to manage exposures while increasing credit penetration, and lending to infrastructure and large firms without being constrained by the extant regulatory prescriptions in respect of single borrower gross exposure limits.

- **Liberalization & Rationalization of ECB policies** - The ECB limit for infrastructure has been raised to promote investment in this sector. The **minimum average maturity requirement** for ECBs in the infrastructure space raised by eligible borrowers has been **reduced to three years from earlier five years**. Also, the **average maturity requirement** for mandatory hedging has been **reduced to five years** from earlier ten years.
- **Establishing National Investment and Infrastructure Fund (NIIF)**- It is India's **first sovereign wealth fund** that seeks to create long-term value for domestic and international investors seeking investment in energy, transportation, housing, water, waste management etc. in greenfield, brownfield and stalled projects. It has been set up as fund of funds and is registered with Securities and Exchange Board of India (SEBI). The **corpus of the fund** is proposed to be around Rs. 40, 000 crore, with the government investing 49% and the rest to be raised from third-party investors such as sovereign wealth funds, insurance and pension funds.

## 2.4. Public-Private Partnership (PPP) in Infrastructure

The partners in a PPP, usually through a legally binding contract or some other mechanism, agree to share responsibilities related to implementation and/or operation and management of an infrastructure project. This collaboration or partnership is built on the expertise of each partner that meets clearly defined public needs through the appropriate allocation of:

- Resources
- Risks
- Responsibilities, and
- Rewards

### 2.4.1. What advantages PPPs may provide?

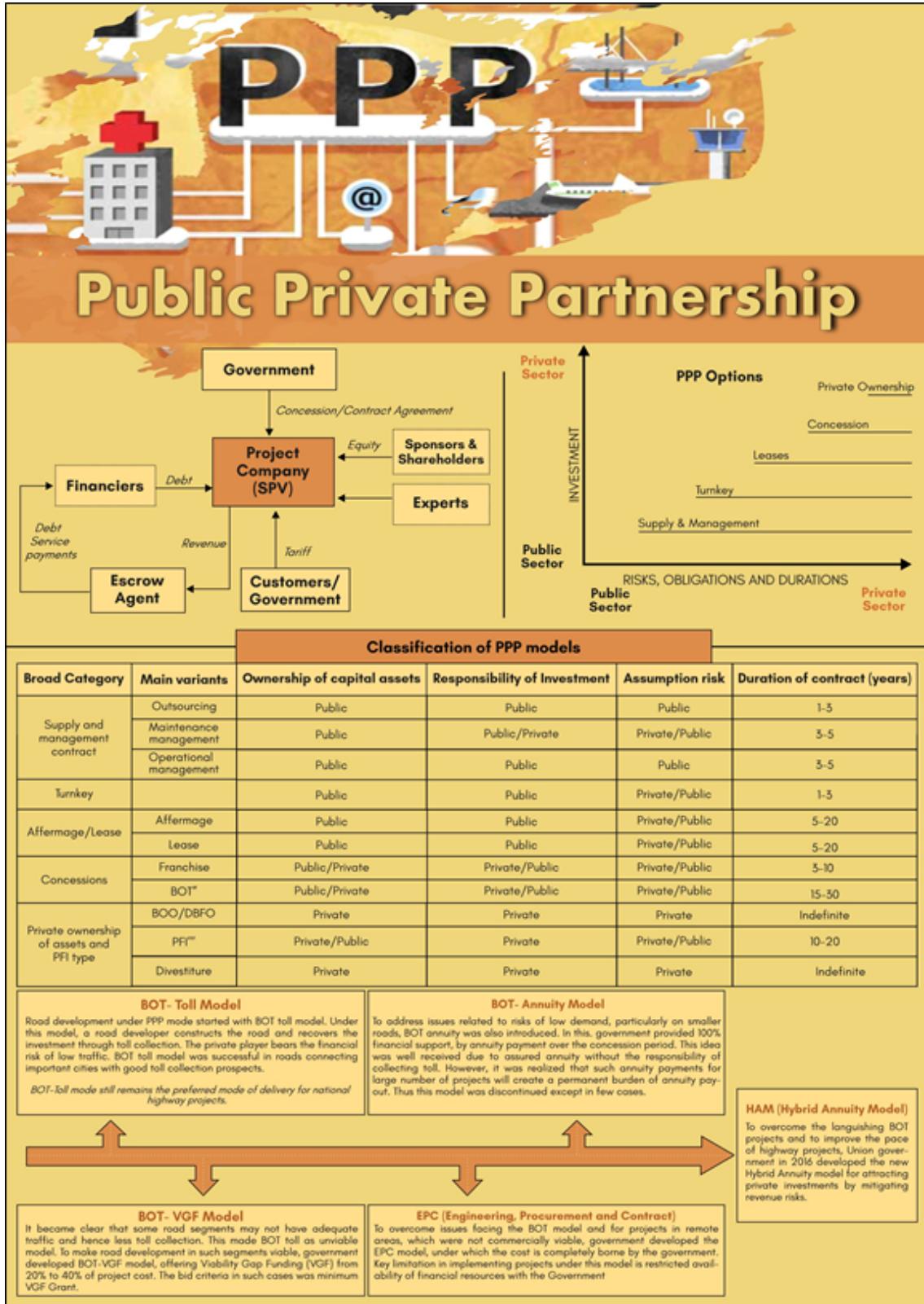
Governments worldwide have increasingly turned to the private sector to provide infrastructure services in energy and power, communication, transport and water sectors that were once delivered by the public sector. There are several reasons for the growing collaboration with the private sector in developing and providing infrastructure services, which include:

- Increased efficiency in project delivery, and operation and management;
- Availability of additional resources to meet the growing needs of investment in the sector; and
- Access to advanced technology (both hardware and software).

### 2.4.2. How a PPP project is different from a conventional project?

There are significant differences between a conventional construction procurement project and a PPP project that need to be clearly understood. The main differences include:

- PPP projects are different from conventional construction projects in terms of project development, implementation, and management. The administrative and approval processes in the case of PPP projects are also different.
- A PPP project is viable essentially when a robust business model can be developed.
- The risk allocation between the partners is at the heart of any PPP contract design and is more complex than that of a conventional construction project. Both partners should clearly understand the various risks involved and agree to an allocation of risks between them.
- A PPP contract generally has a much longer tenure than a construction contract. Managing the relationship between the private company and the implementing agency over the contract tenure is vital for the success of a PPP project.



#### 2.4.3. Understanding the basic structure of a PPP arrangement

A typical PPP structure can be quite complex involving contractual arrangements between a number of parties, including the government, project sponsor, project operator, financiers, suppliers, contractors, engineers, third parties (such as an escrow agents), and customers. The creation of a separate commercial venture called a Special Purpose/Project Vehicle (SPV) is a key feature of most PPPs. The SPV is a legal entity that undertakes a project and negotiates contract agreements with other parties including the government. An SPV is also the preferred

mode of PPP project implementation in limited or non-recourse situations, where the lenders rely on the project's cash flow and security over its assets as the only means to repay debts

Student Notes:

- The actual structure of a PPP, however, depends on the type of partnership model and can be quite complex involving contractual arrangements between a number of parties including the government, project sponsor, project operator, financiers, suppliers, contractors, engineers, third parties (for example, an escrow agent), and customers.
- An SPV is usually set up by the private concessionaire/sponsor(s), who in exchange for shares representing ownership in the SPV contribute the long-term equity capital, and agree to lead the project. The SPV may not always be directly owned by the sponsors. They may use a holding company for this purpose.
- An important characteristic of an SPV as a company is that it cannot undertake any business that is not part of the project. An SPV as a separate legal entity protects the interests of both the lenders and the investors. The formation of an SPV has also many other advantages. A project may be too large and complicated to be undertaken by one single investor considering its investment size, management and operational skills required and risks involved. In such a case, the SPV mechanism allows joining hands with other investors who could invest, bring in technical and management capacity and share risks, as necessary.
- The government may also contribute to the long-term equity capital of the SPV in exchange of shares. In such a case, the SPV is established as a joint venture company between the public and private sectors and the government acquires equal rights and equivalent interests to the assets within the SPV as other private sector shareholders.
- Sometimes, governments want to ensure a continued interest (with or without controlling authority) in the management and operations of infrastructure assets such as a port or an airport particularly those which have strategic importance, or in assets that require significant financial contribution from the government. In such a case, a joint venture may be established. A joint venture is an operating company owned by a government entity and a private company (or multiple companies including foreign companies if permitted by law), or a consortium of private companies.
- Often, an SPV is formed as a joint venture between an experienced construction company and a service operations company capable of operating and maintaining the project.
- Other than its strategic, financial and economic interest, the government may also like to directly participate in a PPP project. The main reasons for such direct involvement may include:
  - To hold interest in strategic assets;
  - To address political sensitivity and fulfil social obligations;
  - To ensure commercial viability of the project;
  - To provide greater confidence to lenders; and
  - To have better insight to protect public interest.

Direct government involvement in a PPP project is usually guided by the legal and regulatory regime of the country and the government policy on PPPs. For example, the government may hold certain defined percentage of the stake in a strategic project such as an airport or a port.

#### **2.4.4. Are there any limitations of PPPs?**

There are many important economic, social, political, legal, and administrative aspects, which need to be carefully assessed before approvals of PPPs are considered by the government. PPPs have various limitations which should also be taken into account while they are being considered. The major limitations include:

- Not all projects are **feasible** (for various reasons: political, legal, commercial viability, etc.).
- The **private sector may not take interest** in a project due to perceived high risks or may lack technical, financial or managerial capacity to implement the project.

- A PPP project may be **more costly unless additional costs** (due to higher transaction and financing costs) can be off-set through efficiency gains.
- **Change in operation and management control** of an infrastructure asset, as has been the traditional BOT model.
- PPP may not be sufficient to improve its economic performance unless other necessary conditions are met. These conditions may include appropriate sector and market reform, and change in operational and management practices of infrastructure operation.
- Often, the success of PPPs depends on regulatory efficiency.

Student Notes:

#### **2.4.5. PPP Initiatives in India**

The Government of India is promoting PPPs as an effective tool for bringing private-sector efficiencies in creation of economic and social infrastructure assets and for delivery of quality public services. India in recent years has emerged as one of the leading PPP markets in the world, because of several policy and institutional initiatives taken by the central government. By end December 2012 there were over 900 PPP projects in the infrastructure sector. These projects are at different stages of implementation, i.e. bidding, construction, and operational.

#### **2.4.6. Models of PPP**

A wide spectrum of PPP models has emerged. These models vary mainly by:

- Ownership of capital assets;
- Responsibility for investment;
- Assumption of risks; and
- Duration of contract.

The PPP models can be classified into following broad categories in order of generally (but not always) increased involvement and assumption of risks by the private sector. These categories are:

- Supply and management contracts
- Turnkey contracts
- Affermage/Lease
- Concessions
- Private Finance Initiative (PFI) and Private ownership.

A categorization of the PPP models together with their main characteristics is shown in table 1. While the spectrum of models shown in the table are possible as individual options, combinations are also possible such as, a lease or (partial) privatization contract for existing facilities which incorporates provisions for expansion through Build-Operate- Transfer.

##### **2.4.6.1. Supply and Management Contracts**

A management contract is a contractual arrangement for the management of a part or whole of a public enterprise (for example, a specialized port terminal for container handling at a port or a utility) by the private sector. Management contracts allow private sector skills to be brought into service design and delivery, operational control, labour management and equipment procurement. However, the public sector retains the ownership of facility and equipment. The private sector is assigned specified responsibilities concerning a service and is generally not asked to assume commercial risk.

The private contractor is paid a fee to manage and operate services. Normally, the payment of such fees is performance-based. Usually, the contract period is short, typically three to five years. But the period may be longer for large and complex operational facilities such as a port or an airport.

- Can be implemented in a short time.
- Least complex of all PPP models.
- In some countries, politically and socially more acceptable for certain projects (such as water projects and strategic projects like ports and airports).

**Cons:**

- Efficiency gains may be limited and little incentive for the private sector to invest.
- Almost all risks are borne by the public sector.
- Applicable mainly to existing infrastructure assets.

**2.4.6.2. Turnkey**

Turnkey is a traditional public sector procurement model for infrastructure facilities. Generally, a private contractor is selected through a bidding process. The private contractor designs and builds a facility for a fixed fee, rate or total cost, which is one of the key criteria in selecting the winning bid. The contractor assumes risks involved in the design and construction phases. The scale of investment by the private sector is generally low and for a short-term. Typically, in this type of arrangement, there is no strong incentive for early completion of the project. This type of private sector participation is also known as Design-Build.

**Pros:**

- Well understood traditional model.
- Contract agreement is not complex.
- Generally, contract enforcement is not a major issue.

**Cons:**

- The private sector has no strong incentive for early completion.
- All risks except those in the construction and installation phases are borne by the public sector.
- Low private investment for a limited period.
- Only limited innovation may be possible.

**2.4.6.3. Affermage/Lease**

In this category of arrangement, the operator (the leaseholder) is responsible for operating and maintaining the infrastructure facility (that already exists) and services, but generally the operator is not required to make any large investment. However, often this model is applied in combination with other models such as build- rehabilitate-operate-transfer. In such a case, the contract period is generally much longer and the private sector is required to make significant investment.

The arrangements in an affermage and a lease are very similar. The difference between them is technical. Under a lease, the operator retains revenue collected from customers/users of the facility and makes a specified lease fee payment to the contracting authority. Under an affermage, the operator and the contracting authority share revenue from customers/users.

In the affermage/lease types of arrangements, the operator takes lease of both infrastructure and equipment from the government for an agreed period of time. Generally, the government undertakes the responsibility for investment and thus bears investment risks. The operational risks are transferred to the operator. However, as part of the lease, some assets also may be transferred on a permanent basis for a period which extends over the economic life of assets. Fixed facilities and land are leased out for a longer period than for mobile assets. Land to be developed by the leaseholder is usually transferred for a period of 15-30 years.

**Pros:**

- Can be implemented in a short time.
- Significant private investment possible under longer term agreements.
- In some countries, legally and politically more acceptable for strategic projects like ports and airports.

Student Notes:

**Cons:**

- Has little incentive for the private sector to invest, particularly if the lease period is short.
- Almost all risks are borne by the public sector.
- Generally used for existing infrastructure assets.
- Considerable regulatory oversight may be required.

#### 2.4.6.4. Concessions: BOT/BTO/BROT/BLT

In this form of PPP, the government defines and grants specific rights to an entity (usually a private company) to build and operate a facility for a fixed period of time. The government may retain the ultimate ownership of the facility and/or right to supply the services. In concessions, payments can take place both ways: concessionaire pays to government for the concession rights and the government may pay the concessionaire, which it provides under the agreement to meet certain specific conditions. Usually, such payments by the government may be necessary to make projects commercially viable and/or reduce the level of commercial risk taken by the private sector, particularly in a developing or untested PPP market. Typical concession periods range between 5 to 50 years.

**Pros:**

- Private sector bears a significant share of the risks.
- High level of private investment.
- Potential for efficiency gains in all phases of project development and implementation and technological innovation is high.

**Cons:**

- Highly complex to implement and administer.
- Difficult to implement in an untested PPP market.
- May have underlying fiscal costs to the government.
- Negotiation between parties and finally making a project deal may require long time.
- May require close regulatory oversight.
- Contingent liabilities on government in the medium and long term

##### 2.4.6.4.1. BOT Model

In a **Build-Operate-Transfer or BOT** type of concession (and its other variants namely, **Build-Transfer-Operate (BTO)**, **Build-Rehabilitate-Operate-Transfer (BROT)**, **Build-Lease-Transfer (BLT) type of arrangement**), the concessionaire makes investments and operates the facility for a fixed period of time after which the ownership reverts back to the public sector. In a BOT model, operational and investment risks can be substantially transferred to the concessionaire. In a BOT model, the government has, however, explicit and implicit contingent liabilities that may arise due to loan guarantees and sub-ordinate loans provided, and default of a sub-sovereign government and public or private entity on non-guaranteed loans.

By retaining ultimate ownership, the government controls the policy and can allocate risks to parties that are best suited to assume or remove them. BOT projects may also require direct government support to make them commercially viable. The concessionaire's revenue in a BOT project comes from managing and marketing of the user facilities (for example, toll revenue in a toll road project) and renting of commercial space where possible. Concessions for BOT projects can be structured on either maximum revenue share for a fixed concession period or minimum

concession period for a fixed revenue share, a combination of both, or only minimum concession period.

Student Notes:

The problem of this model include the appropriate sharing of risks. In general, a project is financially viable for the private entity if the revenues generated by the project cover its cost and provide sufficient return on investment. The private entity is expected to bring the expertise and efficiency as well as the risk transfer. These are some types of the most common risks involved:

- Political risk: especially in the developing countries because of the possibility of dramatic overnight political change.
- Technical risk: construction difficulties, for example unforeseen soil conditions, breakdown of equipment
- Financing risk: foreign exchange rate risk and interest rate fluctuation, market risk (change in the price of raw materials), income risk (over-optimistic cash-flow forecasts), cost overrun risk.

#### **2.4.6.4.2. BOOT (build-own-operate-transfer)**

A BOOT structure differs from BOT in that the private entity owns the works. During the concession period the private company owns and operates the facility with the prime goal to recover the costs of investment and maintenance while trying to achieve higher margin on project. The specific characteristics of BOOT make it suitable for infrastructure projects like highways, roads mass transit, railway transport and power generation and as such they have political importance for the social welfare but are not attractive for other types of private investments. BOOT & BOT are methods which find very extensive application in countries which desire ownership transfer and operations including. Some advantages of BOOT projects are:

- Encourage private investment
- Inject new foreign capital to the country
- Transfer of technology and know-how
- Completing project within time frame and planned budget
- Providing additional financial source for other priority projects
- Releasing the burden on public budget for infrastructure development

#### **2.4.6.4.3. BOO (build-own-operate)**

In a BOO project ownership of the project remains usually with the project company for example a mobile phone network. Therefore, the private company gets the benefits of any residual value of the project. This framework is used when the physical life of the project coincides with the concession period. A BOO scheme involves large amounts of finance and long payback period. Some examples of BOO projects come from the water treatment plants. These facilities run by private companies process raw water, provided by the public sector entity, into filtered water, which is after returned to the public sector utility to deliver to the customers.

#### **2.4.6.4.4. BLT (build-lease-transfer)**

Under BLT a private entity builds a complete project and leases it to the government. On this way the control over the project is transferred from the project owner to a lessee. In other words, the ownership remains by the shareholders but operation purposes are leased. After the expiry of the leasing the ownership of the asset and the operational responsibility are transferred to the government at a previously agreed price. For foreign investors taking into account the country risk BLT provides good conditions because the project company maintains the property rights while avoiding operational risk.

#### **2.4.6.5. Private Finance Initiative (PFI) Model**

Student Notes:

- In the private finance initiative model, the private sector remains responsible for the design, construction and operation of an infrastructure facility. In some cases, the public sector may relinquish the right of ownership of assets to the private sector.
- In this model, the public sector purchases infrastructure services from the private sector through a long-term agreement. PFI projects, therefore, bear direct financial obligations to the government in any event. In addition, explicit and implicit contingent liabilities may also arise due to loan guarantees provided to the lenders and default of a public or private entity on non-guaranteed loans. A PFI project can be structured on minimum payment by the government over a fixed contract tenure, or minimum contract tenure for a fixed annual payment, or a combination of both payment and tenure.
- In the PFI model, asset ownership at the end of the contract period is generally transferred to the public sector. Setting up of a Special Purpose Vehicle (SPV) may not be always necessary. A PFI contract may be awarded to an existing company. For the purpose of financing, the lenders may, however, require the establishment of an SPV. The PFI model also has many variants.
- In a PFI project, as the same entity builds and operates the services, and is paid for the successful supply of services at a pre-defined standard, the SPV / private company has no incentive to reduce the quality or quantity of services. This form of contractual agreement reduces the risks of cost overruns during the design and construction phases or of choosing an inefficient technology, since the operator's future earnings depend on controlling the costs. The public sector's main advantages lie in the relief from bearing the costs of design and construction, the transfer of certain risks to the private sector and the promise of better project design, construction and operation.

**Pros:**

- Private sector may bear a significant share of the risks.
- High level of private investment.
- Potential for efficiency gains and innovation is high.
- Attractive to private investors in an untested or developing PPP market.
- Most suitable for social sector infrastructure projects (schools, dormitories, hospitals, community facilities, etc.).

**Cons:**

- Complex to implement and manage the contractual regimes.
- Government has direct financial liability.
- Negotiation between parties may require long time.
- Regulatory efficiency is very important.
- Contingent liabilities on the government in the medium and long term.

#### **2.4.7. Contemporary developments**

##### **2.4.7.1. Swiss Challenge Model**

A Swiss challenge is a form of public procurement which requires a public authority which has received an unsolicited bid for a public project, to publish the bid and invite third parties to match or exceed it. Some Swiss challenges also allow the entity which submitted the unsolicited bid itself then to match or better the best bid which comes out of the Swiss challenge process. The technique was used for the development of Mega Film City Venture by the Jaipur Development Authority (JDA). In 2017 Indian Railways also adopted Swiss challenge for inviting tenders for renovation of its 23 railway station.

## Advantages

- **Competition:** It allows the project to be put for competitive bidding and counter-bidding so to realize the optimum cost.
- **Transparency:** Since the bidding and counter-bidding are open to challenge in this model, it promotes transparency and thereby helps in fixing the accountability.
- **Creativity:** Since this model allows the prospective bidders to analyse the design submitted by their competitors and come out with better design, it promotes creative designing and project execution.

Student Notes:

## Problems with this Model

Concerns are raised that unsolicited proposals (or the Swiss Challenge) may be actively discouraged as they bring information asymmetries in the procurement process and result in lack of transparency and in the fair and equal treatment of potential bidders. It is because the opponent bidder may unnecessarily submit the counter proposal merely to create confusion.

Governments need to have a strong legal and regulatory framework to award projects under the Swiss Challenge method. It can potentially foster crony capitalism, and allow companies space to employ dubious means to bag projects. Given that governments sometimes lack an understanding of risks involved in a project, direct negotiations with private players can be fraught with downsides.

In general, competitive bidding is the best method to get the most value on public-private partnership projects. The government might also end up granting significant concessions in the nature of viability gap funding, commercial exploitation of real estate, etc., without necessarily deriving durable and long-term social or economic benefits.

## Suitability of Model to Indian situation

As there is no strong legal framework in India, it is suggested that this method may not be adopted for large scale projects where such projects are challenged in case of a lack of transparency or poor disclosures. Smaller projects can be awarded through this method. This method is more suitable to the projects where creativity and design and innovation are key determinants to project success.

### 2.4.7.2. EPC MODEL

Highway sector in India is responsible for job creation for millions of people and has a multiplier effect on the economy. Hence government took immediate measures to boost the sector by adopting EPC Model and the acronym stands for **Engineering, Procurement and Construction**.

Engineering procurement and construction is the new system of private sector participation aimed at overcoming the shortcomings of PPP model. Under EPC model the contractor is legally responsible to complete the project under some fixed predetermined timeline and may also involve scope for penalty in case of time overrun. But the entire cost is borne by the government. In EPC all the clearances, land acquisition and regulatory norms have to be completed by the government itself and the private players do not have to get itself involved in these time taking procedures.

Specifically, in EPC model, 90% land is to be acquired and fund is transferred to the player before the starting of the project. Another set of distinctions are that it is to be completed in a predefined time frame, the risk of the project lies more on the contractors (turnkey project) and unlike PPP, the profit margin is fixed in this case.

In PPP mode of project, operator was liable to build, operate and transfer the project to the government after completion while profit is to be acquired by either annuity paid or by levying toll.

## How is EPC different and better than PPP?

Student Notes:

- Here the government bears the entire financial burden and funds the project. Capital is either raised by issuing bonds like NHAI bonds or by taking steps to secure road toll receivables post construction. Note that the fund here is **not raised through banks, thereby saving banks from the risk of NPAs**. Secondly, it relieves funds for the off take by other players in economy.
- Government now takes care of clearances, acquiring land and estimating the traffic a very huge exercise that had to be done by private parties earlier. This reduces the risk for private player, thereby encouraging them to take up more projects.
- With decreased risk on private builders and increased incentives for early completion, it creates comfortable base to lure investors to carry on the EPC work i.e. the contractor now designs the installation, procures the necessary materials and builds the project, either directly or by subcontracting part of the work.
- Timeline required to construct reduces remarkably and there may even be the clause of penalizing the private player for overshooting the timeline.
- Here the government takes responsibility of raising capital, procuring clearances before the onset of the project.
- EPC model is better than PPP model as the company gets the whole responsibility to complete the project and it is also easy for the government to hold the company accountable for the project. In PPP model various companies are involved in a single project. This creates the opportunity to start blame game if anything goes wrong after completion.

The decision of the Government of India to develop, operate and maintain the wayside amenities alongside National highways across India through EPC model is an example for an EPC project.

### Some issues with EPC model

Under this system the entire project is funded by the government rather than shared by the private player as well. Sometimes it becomes problematic as under:

- **Financial burden on the government:** In contrast to PPP where the private player shares the cost of project, thereby enabling the government to save its resources for other socio-economic projects, in EPC the entire cost is borne by the government. Therefore, this model can't be used always, especially when the government is facing budget deficits.
- **Lack of incentive to private players to reduce cost of project:** It is because, here the nature of project is outsourcing by the government to private entity, which does not have incentive to reduce cost, as it doesn't share the risks involved. In EPC the private entity is entitled to get pre-decided fixed amount akin to service charge, while the government takes all the risk. Therefore, this model is used only when the private players lack adequate financial resources, or investment sentiments are bleak, where the government has to intervene.

This model was used recently when projects under PPP were stuck at different stages of completion and new investment was not coming. For example, due to reduced private sector participation, Govt. has increasingly resorted to EPC in 2013-14 and 2014-15.

But in view of the high fiscal deficit this model is unsustainable. As a result, efforts are being made to adopt a hybrid model, which borrows the advantages of both the PPP Model and EPC Model, called **Hybrid Annuity Model (HAM)**.

#### 2.4.7.3. Hybrid Annuity Model

The new hybrid model is a mix of the EPC (engineering, procurement and construction) and the BOT models. In the annuity mode, the concessionaire gets a fixed and more importantly assured payment from the government.

## Salient Features

- **Assured return:** This assured return frees the concessionaire's dependency on the toll collected on the highway. The government shoulders the responsibility of revenue collection.
- **Land:** The government will provide 90 per cent of land and the related environment and forest clearance (earlier 80 per cent).
- **Operation and Maintenance:** The balance of 60 per cent needs to come from the concessionaire. Operation and maintenance of the toll road also rests with the concessionaire.

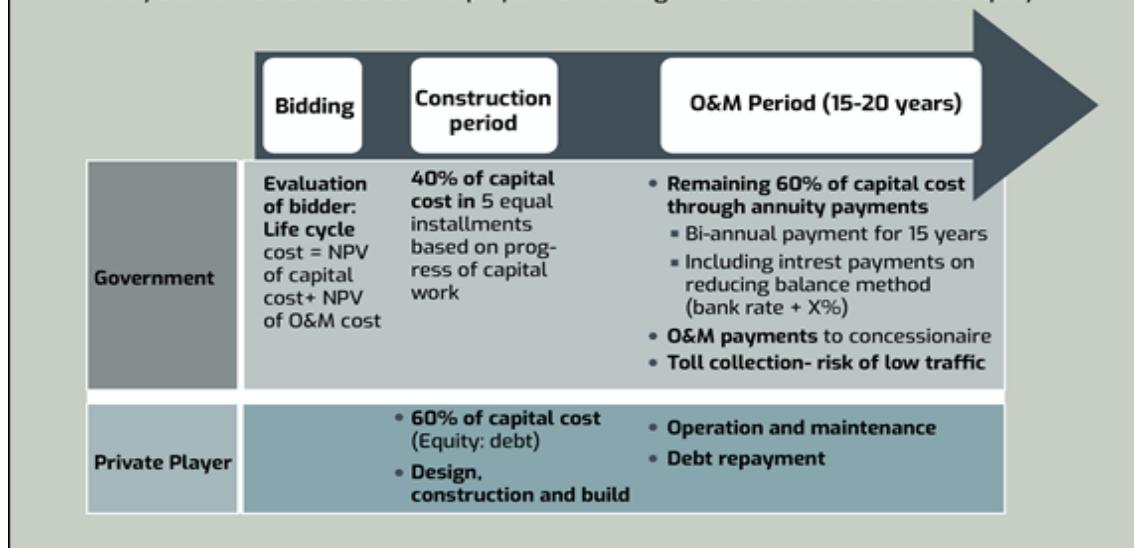
Student Notes:



# Hybrid Annuity Model

## Key features of Hybrid Annuity Model (HAM)

- **Bid Parameter:** Life cycle cost of project = Net Present Value(NPV) of the project cost + NPV of O&M cost for the 15 years concession period
- **Revenue collection and O&M payments:** Toll collection is the responsibility of government and O&M payment will be made to the concessionaire which will be inflation indexed.
- **Secured cash flows in form of annuity payments:** Bi-annual annuity payment is made by government for 15 years including interest payments (@ Bank rate + x%) on reducing balance method and agreed O&M.
- **Land:** The government will provide 90 per cent of land and the related environment and forest clearance (earlier 80 per cent).
- **Risk Allocation:** Private partner bears the construction and maintenance risks as in BOT (Toll) projects. Government bears all the revenue/traffic risk as well as the inflation risk.
- **Sharing of Capital cost:** 40% of the bid project cost shall be payable to the concessionaire by the authority in five equal installments linked to physical progress of the project. Concessionaire has to initially bear the balance 60% of the project cost through a combination of debt and equity.



## Advantages of this Model

- According to industry experts, **hybrid model is viable** and companies see value in bidding for such projects.

- In the hybrid annuity model, one need not bring 100 per cent of finance upfront and since 40 per cent is available during the construction period, only 60 per cent is required to be arranged for the long term.
- Moreover, there is **no risk of tolling** as well as traffic uncertainty.
- The National Highways Authority of India (NHAI) will collect toll and refund the amount in installments over a period of 15-20 years, cutting down on upfront investment required to be made by the government.
- Developers will start participating in this type of projects, otherwise, the enterprise and lenders have practically no appetite for BOT projects and it should also give impetus to active private sector participation.
  - Further, 40 per cent grant in form of capital support would substantially reduce the debt portion and interest thereof. The lenders will have a great comfort in financing the project.
- **Land Acquisition and Environmental clearances:** are major sources of delay and stalling of many projects. In HAM model, the obligation to acquire land and environmental clearances lies with the government.
- **Projects speeded up:** Losses due to time overruns are prevented. As government is itself a stakeholder, it now acts as a real ‘partner’.
- Sensible risk and reward sharing
- **Investment burden shared:** Since corporate bank balance sheets are weak, private players cannot bear full capital investment burden. (HAM has 40% investment from govt.)
- **Higher revenue certainty and reduced risk of developer:** In the BOT model, private partner bears the construction and maintenance risks. As Government is going to collect Highway toll tax in HAM, government also bears the risk.
- **Monitoring mechanism:** as government will invest money in five equal installments based on the targeted completion of the road project.
- **Cost overruns:** tackled due to provisions for inflation adjusted project costs.

#### Need of this Model

Under the existing public private partnership model called build-operate-transfer, the developer absorbs most of the risks—financial, operations and maintenance and revenue. Developers have shied away from the BOT (build operate and transfer) model due to the slowdown in the economy, which not only hampered fund-raising, but also hit toll collection, due to lower traffic flow. The poor cash flows burdened existing projects' ability to service debt.

With this new model, the idea is to provide a transparent, time-bound mechanism to fast-track decision making and anticipating solutions to issues that could arise through a built-in approach.

#### Challenges in this Model

- **HAM is still a new model.** So government should test it, improve it and refine it, before it goes big. (There are 28 projects approved under HAM, worth more than 36,000 cr.)
- **Participation has to be increased** more to start the positive feedback loop, where old contractors return. Then more participation and competition will increase the confidence.

Notwithstanding these issues this model presents a healthy mix of the existing models, taking their positives. Currently, this seems to be the solution for fast track execution of projects amidst the pessimistic business sentiments.

#### **2.4.8. Problems Faced by Private Builders Under PPP Leading to Inefficient Implementation**

- Delay in **land acquisition and institutional clearances** like forest clearance, defense land handovers hampered pace of construction.

- Under PPP, capital completely or partly was to be raised by private player through issuing private equity bonds and borrowing from banks.
- But, due to **delayed implementation**, private players weren't able to pay back loan in time adding to NPA in banks, eventually instigating many banks to stop lending loans
- Delayed implementation also affected **fund raising** through private equities as they couldn't find investors for new ventures
- Another area where private players faced difficulty was in assessing the traffic on roads and subsequent designing of roads.

Above major problems over stretched the balance sheets of builders and led them exiting projects.

#### **2.4.9. Way Forward**

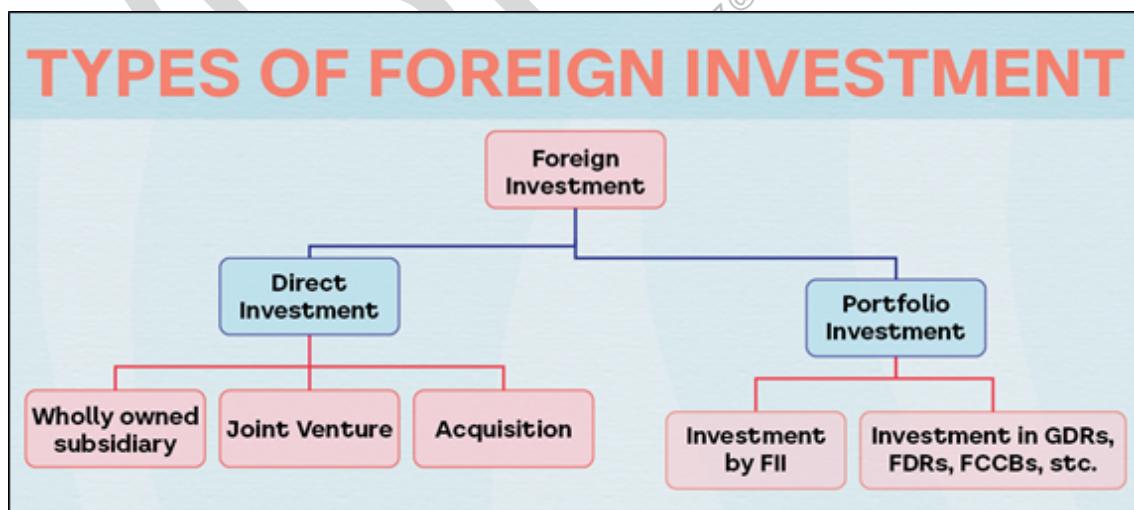
Global experience indicates that PPPs work well when they combine the efficiency and risk assessment of the private sector with the public purpose of the government sector. They work poorly when they rely on the efficiency and risk assessment of the government sector and the public purpose of the private sector.

India should be careful not to undertake PPPs that do not apportion risks and responsibilities sensibly. Moreover flexibility needs to be built into arrangements so that the contract can be withdrawn and put up for rebid when the private party underperforms. The government needs to study the PPP experience and build some central capacity to help ministries, authorities, and states structure contracts and renegotiate troubled ones.

### **3. Models of Foreign Investment**

#### **3.1. Why the Need for Foreign investment?**

- In most developing countries like ours, domestic capital is inadequate to meet the purpose of economic growth.
- The inflow of foreign capital helps in removing the balance of payment over time.
- By taxing the profits of foreign enterprise, the developing countries mobilize funds for development projects.
- Foreign capital contributes to the generation of employment.
- Foreign investment fills the gaps in management, entrepreneurship, technology and skill.



#### **3.2. Foreign Direct Investment**

- Investment in the businesses by foreign citizens usually involving majority stock ownership of the enterprise
- Joint ventures between the foreign and domestic companies

Student Notes:

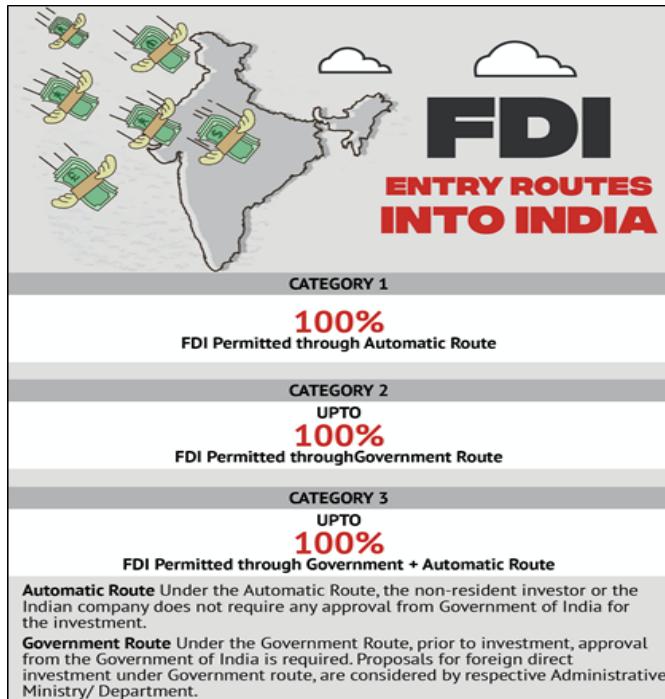
### 3.2.1. Forms of FDI

There are two types of FDI

- Greenfield Investment:** It is the direct investment in new facilities or the expansion of existing facilities. It is the principal mode of investing in developing countries.
- Mergers and Acquisition:** It occurs when a transfer of existing assets from local firms takes place.

### 3.2.2. Why FDI preferred?

- It is of non-debt creating nature.
- It is also less prone to quick reversals. South-east Asian crisis emanated due to the reversals of short-term capital inflows.



Student Notes:



### 3.2.3. Revised FDI Policy

Student Notes:

Recently, India's Department for Promotion of Industry and Internal Trade revised its FDI policy in order to curb the possibility of predatory foreign investment exploiting the financial distress of COVID-19-hit Indian companies.

In the last five years, Chinese investment in India has drastically increased from US \$1.6 billion in 2014 to at least US \$26 billion in 2019 (both current and planned), in particular in technology start-up segment.

In the light of this, it was anticipated that Chinese entities would take advantage of the economic slump caused by the COVID-19 outbreak to raise their stakes in Indian entities and companies, exposing them to hostile and opportunistic takeovers. To avoid such a situation, FDI policy has been revised to curb opportunistic takeovers or acquisitions of Indian companies.

#### Changes in FDI Policy

- The present policy states that a non-resident entity can invest in India, subject to the FDI Policy except in those sectors/activities which are prohibited.
  - **Additional Provision:** A citizen of Bangladesh and Pakistan or an entity registered in both countries can only invest under the government route.
  - Additionally, for Pakistan sectors/activities such as defense, space and atomic energy are prohibited for investment in addition to the sectors/activities already prohibited.
- The amended policy states that an entity of a country, which shares a land border with India or where the beneficial owner of investment into India is situated in or is a citizen of any such country, can invest only under the Government route.
  - This implies that the scope of the above-mentioned additional provision has been expanded to all our neighbours (including China). The government has refrained from explicitly mentioning China.
- Additionally, the amendment also states that the transfer of ownership of an existing or future FDI in an entity in India, directly or indirectly, resulting in the beneficial ownership falling within the restrictions imposed by the above rule will also require government approval.
  - The guideline was created to check multi-layered transactions which traced the beneficial ownership to the seven land border sharing countries.
  - This implies that private equity investors and venture capital funds that have investments from China (or any other land border sharing country) will also need prior approval before they make any investment, even ones that have already been pledged.

#### Rising Chinese Investments and related concerns

Until 2014, the net Chinese investment in India was and bilateral trade relationship was highly transactional i.e. limited to imports and exports, and there was negligible interdependence. However,

2014 marks the entry of the Chinese private sector at a large scale in India and subsequent influx of Chinese capital and investments in infrastructure, automobiles, energy, real estate and consumer goods sectors.

Since then, Chinese investors have invested around \$4 billion into 90 start-ups in India and 18 of the country's 30 unicorn start-ups are funded by Chinese investors. While there are benefits in pursuing investment from China in terms of capital-hungry Indian startups which can benefit from the experience and technological know-how of Chinese companies that have achieved a bigger scale and success in their own home market in similar vertical. But the concerns need to be considered as well:

#### **Concerns associated with these investments**

- Concerns with such penetration: **Data security, propaganda and platform control.**
- China's State-owned enterprises (SOEs), provincial governments were source of around 50% Chinese investments in India. These have become an important tool in China's diplomacy. Also, it is difficult to differentiate between private sector and SOEs as many times they are indirectly related.
- These investments (including the private sector investments) are part of China's "Made in China 2025" plan. This plan is aimed at acquisition of technology. This is evident through investments in Indian technology startups like PayTM by tech giants like Alibaba.
- India's investment scrutiny mechanism may not be as robust as in developed countries. For instance, As of September 2019, the US, Australia, and Japan were among countries that have blocked Huawei, a private sector giant with close state ties, from their 5G plans. India has not taken a final call, although it has allowed Huawei to participate in initial 5G trials.
- Increasing investment in sensitive sectors such as news services, fin-tech services etc. can be detrimental in the context of privacy of user data and data security. For ex. ByteDance, which plays key role in censorship in China, has invested \$25 million in Indian news aggregator Dailyhunt.

#### **Challenges in implementation of the policy**

- **Impact on funding for start-ups:** Funding for unicorns, smaller start-ups may be hit as several investors may get discouraged if asked to go through government route.
  - For example, upcoming fundin grounds of India's top start-up unicorns including Paytm, Zomato, Big Basket and Dream11 may get dampeden.
- **More clarity needed:** Further clarification is required on the reporting mechanism and identification of beneficial ownership structures such as the percentage of holding to ensure full compliance.
- **China alleges flouting of norms:** China states that the barriers created by the policy for investors from specific countries violate WTO's principle of non-discrimination.
  - **India's stand:** India has categorically denied China's allegations regarding its FDI policy. India has given following reasoning-
    - The revised policy neither restricts market access nor national treatment—the two tenets of global trade—and is thus not violative of any rules of the WTO.
    - On the investment front, the measure does not fall within the Illustrative List of the Agreement on Trade-Related Investment Measures (TRIMS), which details the measures that are inconsistent with the obligation of national treatment.
- **Spill over on neighbourhood relations:** Expansion of restrictions to all land border sharing countries may indirectly affect the FDI from countries such as Myanmar.

#### **Way forward**

Chinese investment in India has the potential to rebalance an extremely lopsided trading relationship. Although Chinese stakes are increasing in Indian companies, India has also emerged among the key overseas markets for several Chinese companies which can be better leveraged by India's trade strategy to balance the trading relationship or secure market access for Indian firms in China.

In the light of this, there is a need to strike a better balance between creating a friendly, open and predictable investment environment on one hand, and safeguarding longer-term considerations of security and privacy on the other.

Student Notes:

### 3.3. Foreign Institutional Investors

- Foreign Institutional Investors (FIIs) means an entity established or incorporated outside India which proposes to make investment in India. Positive tidings about the Indian economy combined with a fast-growing market have made India an attractive destination for FIIs.
- FII inflows are called 'hot money' because they can be taken out any time.

According to recently changed guidelines, the investment of up to 10% of the project cost is categorized as FPI and above that limit comes under the category of FDI.

### 3.4. Recent Initiatives to promote Foreign Investment

#### 3.4.1. Expansion of Qualified Foreign Investors (QFIs) Scheme

- In Budget 2011-12, the government, for the first time, permitted Qualified Foreign Investors (QFIs), who meet the know-your-customer (KYC) norms, to invest directly in Indian MFs.
- In June 2012, the definition of QFI was expanded to include residents of the member countries of the Gulf Cooperation Council (GCC) and European Commission (EC) as the GCC and EC are the members of the Financial Action Task Force (FATF).

#### 3.4.2. Categorization of NRI investment as domestic investment

There is proposal to categorize the NRI investment as domestic investment, by giving same benefits as are entitled by the domestic investor. This has the effect of extending the room for foreign investors in Indian economy, as a major part of it would be counted as domestic investment.

#### 3.4.3. What More Needs to be Done to Promote Investment and Increase Efficiency of Investment?

- **Making the Infrastructure Project Commercially Viable** - This is the first and foremost thing we should do for financing infrastructure in a sustainable manner. As mentioned earlier infrastructure projects involve huge financing requirements, most of which are met by banks and other financial institutions directly and indirectly. Thus, it is very important to make the project commercially viable to ensure regular servicing of the loan. This will lead to sustainable development of infrastructure without jeopardizing the soundness of the financial sector. Project appraisal and follow-up capabilities of many banks, particularly public sector banks, also need focused attention and upgradation so that project viability can be properly evaluated and risk mitigants provided where needed.
- **Greater Participation of State Governments** - In a federal country like India, participation and support of the State governments is essential for developing high quality infrastructure. The State governments' support in maintenance of law and order, land acquisition, rehabilitation and settlement of displaced persons, shifting of utilities, and obtaining environmental clearances are necessary for the projects undertaken by the Central Government or the private sector. It is satisfying to know that many State governments have also initiated several PPP projects for improving infrastructure.
- **Improving efficiency of the Corporate Bond Market** - Vibrant corporate bond market will reduce the dependence on the banking sector for funds. Further, coordinated regulatory initiatives could be considered in the areas involving standardization of stamp duties on corporate bonds across the states, encouraging public issuance and bringing in institutional investors in a big way. It is also important to broad base the investor base by bringing in new classes of institutional investors (like insurance companies, pension funds, provident funds, etc.) apart from banks into this market.
- **Credit Enhancement** - One of the major obstacles in attracting foreign debt capital for infrastructure is the sovereign credit rating ceiling. Domestic investors are also inhibited due to high level of credit risk perception, particularly in the absence of sound bankruptcy

framework. A credit enhancement mechanism can possibly bridge the rating gap between the investment norms, risk perceptions and actual ratings

- **Simplification of Procedures – Enabling Single Window Clearance** - It is well recognized that while funding is the major problem for infrastructure financing, there are other issues which aggravate the problems of raising funds. These include legal disputes regarding land acquisition, delay in getting other clearances (leading to time and cost overruns) and linkages (e.g. coal, power, water, etc.) among others. It is felt that in respect of mega-projects, beyond certain cut-off point, single window clearance approach could cut down the implementation period.

## 4. Previous Years UPSC Mains Questions

1. Examine the developments of Airports in India through Joint Ventures under Public-Private Partnership (PPP) model. What are the challenges faced by the authorities in this regard.
2. Justify the need for FDI for the development of the Indian economy. Why there is gap between MOUs signed and actual FDIs? Suggest remedial steps to be taken for increasing actual FDIs in India.
3. Explain how private public partnership agreements, in longer gestation infrastructure projects, can transfer unsuitable liabilities to the future. What arrangements need to be put in place to ensure that successive generations' capacities are not compromised?
4. Adaptation of PPP model for infrastructure development of the country has not been free from criticism. Critically discuss the pros and cons of the model.
5. Explain how Private Public Partnership arrangements, in long gestation infrastructure projects, can transfer unsustainable liabilities to the future. What arrangements need to be put in place to ensure that successive generations' capacities are not compromised?

## 5. Previous Years Vision IAS GS Mains Questions

1. *Revisiting PPP model is key for India's investment led growth. Analyze.*

### Approach:

- Define PPP and briefly discuss the status of PPP in India.
- Discuss the significance of PPP model for investment led growth in India.
- List the various issues plaguing the PPP model in India and explain them briefly.
- Briefly conclude on the basis of aforementioned points.

### Answer:

A Private Public Partnership (PPP) is a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party shares risk & management responsibility and, remuneration is linked to performance.

### Significance of PPPs:

PPPs augment both **delivery and financing** of public projects. The **limited capacity of public resources** for investment in infrastructure coupled with the magnitude of investment required makes PPP a viable alternative for the government to enhance investment in infrastructure in India. The growth in the number of PPP projects during the past decades has made India the leading PPP market in the world.

Besides making up for the shortfall in investment in infrastructure in India, PPPs also bring in **new and cost-effective technology** for creation of infrastructure assets, **managerial efficiency**, and superior competencies in **service standards** for the operation and maintenance of public assets. This results in timely and high-quality infrastructure services to end users.

### **Need for revisiting PPP Model & reforms required:**

Student Notes:

Despite India offering the world's largest market for PPPs, their role in the infrastructure delivery mechanism over the last decade has remained limited. This has been due to various issues, such as disputes in existing contracts, non-availability of capital and regulatory hurdles related to the acquisition of land, inadequate due diligence by project developers, etc. Thus, there is a need to revisit the PPP model and following can be some of the steps that can be taken in this regard:

- **Optimal risk allocation and management:** Inefficient and inequitable allocation of risk is a major factor behind failure of PPPs. Hence, optimal risk allocation must be ensured across all stakeholders by allocating it to the entity that is best suited to manage the risk. A generic risk monitoring and evaluation framework should also be developed.
- **Strengthening policy and governance:** An institution providing guidance for a national PPP policy; mechanism for capturing and collating data for decision making; and capacity building activities shall invigorate private investments in infrastructure.
- **Strengthening institutional capacity:** Lack of capacity within statutory authorities and excessive government oversight hampers PPP in India. Independent regulators must be set up in sectors that are going for PPPs. An Infrastructure PPP Project Review Committee may be set up to evaluate PPP projects.
- **Strengthening legal framework:** A quick, efficient, and enforceable dispute resolution mechanism will address long delays in implementation of projects. PPP contracts should have clearly articulated dispute resolution structures that also provide flexibility to restructure within the commercial and financial boundaries of the project.
- **Strengthening contracts:** Since infrastructure projects are long term, a private developer may lose bargaining power because of abrupt changes in the economic or policy environment. Hence, private sector must be protected against such loss of bargaining power. This could be ensured by amending the terms of the PPP contracts to allow for renegotiations.

PPP's are important for India considering the limited fiscal space and the substantial scale of investments required in meeting the infrastructure gaps and achieving the growth target. In this context, it is pertinent for timely implementation of the recommendations of Vijay Kelkar Committee to eliminate the deterrent factors hampering PPP in India. These include rebalancing of risk sharing; multi-disciplinary expert institutional mechanisms to resolve legacy issues; developing sector specific institutional frameworks & umbrella guidelines for stressed projects; restricting the number of banks in a consortium; reviewing contractual processes & reinvigorating sectors.

## **2. What do you understand by Swiss Challenge method of investment? Mention the benefits and issues associated with this model.**

### **Approach:**

- Explain the Swiss Challenge Method of investment.
- Discuss the benefits of this model.
- Proceed to discuss the issues with this model of investment.
- Conclude appropriately.

The Swiss Challenge method is a form of public procurement wherein a private party identifies a project suo-moto and submits the proposal to the government. Thereafter, the government evaluates whether the party's technical, commercial, managerial and financial capabilities are adequate for undertaking the project and forwards the proposal along with its evaluation to the concerned infrastructure authority for approval. The authority might recommend modifications following which the original proponent may reconsider/modify its proposal and resubmit it.

The government then starts a competitive bidding process for the project wherein it asks other players to put in their bids for the same project. The proponent with the best plan is awarded the contract. However, in some cases, there are provisions where the original proposer is paid for the intellectual property and is also given the '**Right of first refusal**' i.e. only if it refuses to carry out the project, a third party will get the contract.

In India, the method was upheld by the Supreme Court for awarding public projects. The government has also implemented this method in road and railway projects, IT sector, etc.

The benefits of the model are:

- **Allows better price discovery:** It allows the party to mix-and-match the features of an open auction and a closed tender, so as to reach the optimum price.
- **Certainty of success:** As there will always be one willing partner available from beginning of the project, there are fewer chances of default on the project.
- **Initiative in developing a public need:** The private players will work towards resolving the public need through innovative solutions and new technology.
- **Better Project Structuring:** Interested parties will conduct pre-project studies in advance, allowing early identification of risks and timelines and time and cost saving measures.
- **Resolution of stressed assets:** If the model is applied to bankruptcy cases, banks may be able to squeeze out more capital from the auction of stressed assets as observed in the recent bankruptcy cases of some cement companies.
- **Promotes enterprise:** This model cuts red tape and rewards the private sector for its ideas. Further, it not only promotes public-private partnership but also increases competition and efficiency among the private participants.

The issues associated with the model include:

- **Lack of transparency:** The Vijay Kelkar Committee on PPP in India discouraged unsolicited Swiss Challenge proposals as these bring **information asymmetries** into the procurement process due to poor disclosures.
- **Lack of adequate regulatory framework:** There are no adequate regulatory and legal frameworks for awarding projects and for dispute resolution under this method..
- **Crony capitalism:** This method could breed crony capitalism by allowing companies to employ dubious means to bag projects. It can also promote favouritism by allowing a bidder to initiate an idea and give the right of first refusal.
- **Bidding asymmetry:** There is asymmetry among different players due to time given to bidders to prepare counter proposals vis-à-vis time taken by the original proposer for preparation.

However, these inefficiencies can be overcome by instituting a Central Swiss Challenge Policy with remedial provisions. Further, there is a need to clearly demarcate the authority that needs to be approached with the upcoming project plans.

3. **A worrying trend for Indian economy has been the decline in private investment in the past few years. Highlight the reasons behind it. What steps should be taken to revive private investment in the economy?**

Student Notes:

**Approach:**

- Introduce by highlighting the importance of private investment in India and its status.
- Give reasons behind the decline in private investment.
- Enumerate the steps which can be taken to revive private investment in the economy.
- Conclude on the basis of the above points.

**Answer:**

As per the **Economic Survey 2018-19**, private investment is the “key driver” that drives demand, creates capacity, increases labour productivity, introduces new technology, allows creative destruction and generates jobs. It can help India to make use of favourable demographic phase. However, the Gross Fixed Capital Formation (GFCF) in the private sector has declined from around 27 percent in 2011 to around 21 percent in 2018.

**Reasons behind decline in private investment**

- **Twin-Balance Sheet problem:** On the one hand, **companies are overleveraged** and unable to pay interest payments from loans. On the other hand, **banks are stressed** with mounting Non Performing Assets that reached 11.5% of total loans in March 2018. Due to this, the growth in the bank credit to industry has witnessed a sharp fall from around 24% of the GDP in 2010 to around 7% in 2019.
- **Economic policy uncertainty:** A series of decisions like demonetisation, BS VI emission norms, lack of clarity over government statistics has created apprehension in the minds of investors. Further, NBFC crisis, its persistence and continuing defaults have added uncertainty.
- **Vicious cycle of demand and investment:** Low investor confidence has spilled over to consumers as well, as they witness job losses with dried up investments. This drives low spending by consumers which further weakens the demand and impacts investments by the private sector, as consumption is a crucial input for their volume, revenue and cost projections.
- **Lack of key structural reforms** in different sectors have discouraged the private sector to invest vigorously, such as, unresolved problems in the power sector, fresh troubles and insolvencies in aviation and telecom, and fragilities in real estate, housing and infrastructure etc.

**Steps needed to revive private investment-**

- **Financial institutions' reforms:** By strengthening the banking and non-banking sectors, there could be push by increasing purchasing power capacity of people, which can further revive consumption and investment.
- **Development of Corporate Bond Market:** A well-functioning debt market can help reduce the burden on the banking sector for raising investments.
- **Predictable policy actions** by the policymakers, which are consistent with the broad vision of the economy is imperative. Investors can then relate to the logic behind the policy and therefore not get disturbed by the policy changes.
- **Sustained structural reforms** must be continued in the areas of bankruptcy code, labour code consolidation, building infrastructure, suitable tax cuts, enabling foreign direct investment etc.

The recent corporate tax cuts may be a more effective measure to induce bigger investments over the medium term. Yet much more would be required to change the trend in private investment and to sustain India's growth. Given the constraints on public investment due to India's elevated public debt and the government's fiscal consolidation path, there is an urgent need to activate stalled projects and clean up balance sheets of corporate firms and the banking sector to revive the investment cycle. It is important to revive the overall investment, especially in infrastructure, for balanced growth.

- 4. *What is the rationale behind government tapping into private resources for large infrastructure projects? In this context, highlight the various problems that can arise in a PPP contract and list the measures that have been taken to minimise them.***

**Approach:**

- Discuss the rationale behind government tapping into private resources for large infrastructure projects.
- Highlight the various problems that can arise in a PPP contract.
- List the measures that have been taken to minimize them.

**Answer:**

In developing countries, the governments are faced with resource constraints and may lack expertise in planning or executing large projects. So the private sector participation can generate more efficiencies by creating more competition, realization of economies of scale and greater flexibility. Moreover the costs incurred in implementing and running these projects may be recovered from those who use them, rather than putting the burden on everybody by way of tax collections. Thus, the rationale behind government tapping into private resources is to harness the managerial and technical expertise and support it with government's wisdom.

**Problems that can arise in a PPP contract**

- Delayed execution due to problems in land acquisition, utility shifting, poor performance of contractors, delays in environment/ forest/wildlife clearances etc.
- Public agitations for additional facilities, and arbitration/contractual disputes with contractors etc.
- Non-availability of long-term capital, contraction in development finance institutions and too much reliance on banks hamper the economic viability of projects.
- The firms engaging in opportunistic behaviour by bidding low and recover later by demanding the renegotiation of a contract.
- Unpredictability or inability to predict future risk associated with project leads to companies walking out and demanding renegotiation.
- Inability of ill-equipped public sector partners like local or decentralized entity to meet the requirements of designing and supervising the project or handling disputes.

**Measures that can be taken to minimize problems in a PPP contract**

- Bringing out a model PPP contract which is definitive and clear so that there is minimum scope of litigation at later stage.
- Giving flexibility in contracts so that unforeseen circumstances may be factored in at later stage.
- Regular meetings, frequent reviews and constant monitoring to deal with the issues delaying project completion.

- Streamlining of land acquisition and environment clearance procedure.
- Revamping of dispute resolution mechanism to timely resolve disputes to expedite project execution.
- Adoption of Hybrid Annuity Model (HAM) instead of Engineering, Procurement and Construction (EPC) to facilitate speedy implementation of the projects.
- Mandatory norms to explore the bond market to finance long gestation infrastructure project. Also, the norms to enable pension and insurance funds to invest in such projects may be relaxed.
- Adopting the ‘Infrastructure Investment Trusts route, other innovative financing options to attract fresh capital.
- Monetization of projects through the Toll-Operate in Transfer model, securitization of toll revenue.

Student Notes:

Further, implementation of recommendations of **Vijay Kelkar Committee on revisiting and revitalizing the PPP model** can streamline and strengthen PPPs.

**5. By rebalancing project risks between the public and private sectors, the HAM model has encouraged investments in the road infrastructure sector. Discuss.**

**Approach:**

- Explain the HAM model.
- Elaborate how it is different than the previous PPP models in the road sector vis-à-vis the risk sharing.
- Discuss how it has rebalanced the public and private interests.

**Answer:**

The government introduced the Hybrid Annuity Model (HAM) to revive PPP in India. HAM is a mix of EPC (Engineering, Procurement and Construction) and BOT (Build, Operate, Transfer) models.

Under the **EPC model**, NHAI pays private players to lay roads. The private player has no role in the road's ownership, toll collection or maintenance. Under the **BOT model** though, private players have an active role — they build, operate and maintain the road for a specified number of years, before transferring the asset back to the government. Under it, the private player arranges all the finances for the project, while collecting toll revenue or annuity fee from the Government, as agreed. Essentially, the toll revenue risk is taken by the government, while the private player is paid a pre-fixed annuity for construction and maintenance of roads.

Now, HAM combines EPC (40 per cent) and BOT-Annuity (60 per cent). On behalf of the government, NHAI releases 40 per cent of the total project cost. It is given in five tranches linked to milestones. The balance 60 per cent is arranged by the developer. Here, the developer usually invests not more than 20-25 per cent of the project cost (as against 40 percent or more before), while the remaining is raised as debt. There is no toll right for the developer.

**Risk allocation in different contract models:**

Type of Model	Financing Risk	Revenue Risk	O & M Risk
EPC	NHAI	NHAI	NHAI
BOT	Private player	Private player	Private player
HAM	NHAI & Private	NHAI	NHAI or Private( depending upon contract)

**Advantage of HAM** is that it gives enough liquidity to the developer since the financial risk is shared by the government. It takes away a part of the construction risk and the whole traffic risk that makes developers nervous.

Due to above features, HAM has triggered a significant increase in projects awarded, with HAM projects accounting for around 46% of total awards in terms of highway length and 63% in terms of total value in the fiscal year 2017-18.

**6. In view of the growing significance of FinTech innovations, discuss the potential and challenges of mainstreaming FinTech in Indian economy.**

**Approach:**

- Give the definition of fintech.
- Explain the potential of the fintech sector in India.
- Highlight the steps taken by the government and RBI.

**Answer:**

Fintech (financial technology) is the use of new technology to improve and automate the delivery and use of financial services. It includes products such as e-wallets, P2P lending, payment gateways etc.

According to EY's Fintech Adoption Index 2017, India has the **second highest** fintech adoption rate in the world. Fintech in India is advantageous due to the following reasons:

- India has a youth demographic that is rapidly growing.
- Smartphone penetration is witnessing an upsurge - from 53% in 2014 to 64% by 2018.
- The financial services market in India is primarily untapped, with 40% of the population having no association with any bank and more than 80% of the transactions carried out through cash.
- Almost 90 percent of small businesses are not linked to formal financial institutions.
- Innovation-driven startup landscape and availability of investment for fintech sector.

Despite the significant opportunity, there are several challenges to fintech adoption in India:

- Poor infrastructure in terms of Internet Connectivity, unbanked population and low financial literacy.
- High dependence on cash in financial transactions.
- The costs of integrating fintech solutions for MSME's are currently prohibitive.
- Concerns around cyber security and frauds.
- Regulatory uncertainty – RBI and SEBI are yet to come out with comprehensive and separate guidelines.
- From the fintech company's perspective, lack of timely access to capital for risk management and investment, curtail innovation and prevent their operations from scaling up.

The RBI has promoted the Unified Payments Interface and the Bharat Bill Payments System, as well as digital payments, P2P lending, and the use of automated algorithms to offer financial advice. The government's Digital India program, India Stack and National Payments Council of India (NPCI) have provided important enabling platforms for technology innovators.

The government should focus on the creation of a 'regulatory sandbox' - a safe space for businesses and startups to co-create innovative products, services and business models, and also on providing cyber security.

Student Notes:

**7. Why have Special Economic Zones (SEZs) in India not been able to achieve the desired objectives? In this context, suggest some measures to revive SEZs in India.**

**Approach:**

- Briefly discuss the objectives with which SEZs were established in India.
- Highlight the reasons for the failure of SEZs to achieve the desired objectives.
- Suggest measures to revive SEZs.

**Answer:**

Special Economic Zones (SEZs) in India were established to provide simplified procedure and hassle free environment for businesses and boost manufacturing and employment. Special trade and business laws applied to these zones to boost trade.

**Reasons for failure of SEZs**

- Lack of external infrastructural support such as connectivity to the ports, rail and airways.
- Failure of state governments to pursue long term development of the region due to relatively shorter period for which they hold office.
- Due to misuse of tax concessions, government withdrew tax incentives. Ex- Removal of MAT exemptions from 2011-12.
- According to a Princeton research, SEZs sites are selected on real estate speculation rather than the economic potential of a region, thus undermining their potential.
- Often sites are selected to target specific ethnic and caste groups to create vote banks.

**Measures**

- States may be allowed to open their own Export Promotion Zones (EPZs). Competition between states is expected to improve exports and help SEZs flourish.
- There is a need for policy reforms, both at the Union and state level to create pockets of freer markets. Withdrawal of tax exemptions need revisit.
- **Baba Kalyani Committee's** recommendations to revive SEZs
  - Shift focus from export to economic and employment growth.
  - Incentives for the manufacturing SEZs have to be based on specific parameters including demand, investment, employment and technology, value addition and inclusivity.
  - Development of last mile and first mile connectivity infrastructure.
  - The success of services sector like IT and ITES has to be replicated in health care, financial services, legal, repair and design services.
  - Simpler entry and exit processes.

**8. What are the issues that have limited the success of Special Economic Zones (SEZs) in India? Mention some steps that can be taken to address them.**

**Approach:**

- Briefly, write about the Special Economic Zones in India.
- Highlight the issues that have limited the success of Special Economic Zones in India.
- List the steps to address the highlighted issues.

In India, special economic zones are planned as growth engines that can boost manufacturing, augment exports and generate employment. It provides for special fiscal and regulatory measures to ensure hassle-free operations alongside state-of-the-art infrastructure and support services. The units are set up under Special Economic Zones Act, 2005 as duty free regions to be treated as foreign territory for the purpose of trade operations and duties and tariffs.

However, SEZs in India have seen limited success. For instance, presently 351 SEZs are notified out of which only 232 SEZs are operational. The reasons for such a scenario include:

- In many SEZ's, **land procured for industrial units remained unutilized**. Further, lack of flexibility to utilize land for different sectors hinders the developmental process.
- Existence of **multiple models of economic zones** such as SEZ, coastal economic zone, National Investment and Manufacturing Zone etc. has created confusion and ambiguity about fiscal and regulatory regime.
- Disadvantage on domestic sales due to application of **full custom duty**, as compared to the lower rates with other countries due to free-trade agreement (FTA).
- Imposition of **Minimum Alternate Tax (MAT) (2012)** as well as **income tax on new SEZs (2017)** and new units (2020) has made it less attractive for industrial establishment.
- **Lack of support from the state government** when it comes to developing effective single-window system for speedy clearances.
- **Failure to select SEZ sites** that offer maximum development potential. Sites are selected on the basis of real estate speculation rather than the economic potential of a region.

#### **Steps to address them**

- Ensure optimal utilization of vacant land in SEZ. Also, allow flexibility of land use and remove sector-specific constraints.
- Align the policy framework to avoid competition among similar schemes and provide ease of doing business to developers and tenants.
- Simpler entry and exit processes using time-bound online approval and dispute resolution through robust arbitration and commercial courts.
- Development of last mile and first mile connectivity infrastructure by government should be provided for land parcels which are far from highways and urban agglomerations.
- Fast tracking various approvals through online application process.
- Grant infrastructure status to buildings of SEZs and industrial parks in order to ease funding.

Going forward, lessons can also be taken from China where SEZs have produced better results. Recent recommendations of Baba Kalyani Committee, which envisages reincarnation of SEZs as Employment and Economic Enclaves (3Es) also needs to be discussed further.

9. *Private investment is a key driver that catalyses an economy into a self-sustaining cycle of growth. Explaining the statement, highlight the steps that should be taken to revive private investment in India.*

Student Notes:

**Approach:**

- Briefly discuss the need for private investment and explain how it can lead to self sustaining cycle of growth.
- Giving a brief scenario of private investment, highlight few steps that need to be taken to revive private investment in India.
- Conclude briefly.

**Answer:**

To achieve the objective of becoming a USD 5 trillion economy by 2024-25, India needs to sustain a real GDP growth of 8 percent. International experience of fast growing East Asian economies suggest that such high growth can be achieved by a virtuous cycle of savings and investment along with favourable demographic phase. Investments, especially, private investments drive demand, create capacity; increases labor productivity, introduce new technology, allow creative destructions and generate jobs.

Also, in a developing country like India, the Government has greater social obligations and lesser resources. Thus, Gross Fixed Capital Formation (GFCF) through government investment is usually limited and its share as a percentage of GDP remains largely unchanged. It is the private sector that needs to pump investment in the economy in order to usher in a virtuous cycle of investment led growth, employment, increasing incomes and consumption. Thus, as identified by economic survey 2018-19, private investment is a key driver of growth. This has especially to be in capital intensive sectors such as infrastructure.

**Reviving private investment: Reasons for its decline**

Private investment accounts for three quarters of GFCF (Gross Fixed Capital Formation), an indicator of investment which is declining. Private investment continues to face impediments in the forms of Twin Balance Sheet Problems, excess industrial capacity and regulatory and policy challenges, putting downside pressures on India's potential growth.

**Steps taken to revive Private investment:**

Various steps that have been taken by the government to revive private investment include bankruptcy law, tax reforms like GST, higher infrastructural push, efforts to reform banking sectors, introduction of financing models like Hybrid Annuity, rationalizing monetary policy, and recapitalization of banks.

**Further measures required:**

- Structural issues like increasing the extent of formalisation
  - this would increase the savings, so that more funds are available to be lent.
  - make more business units eligible for formal credit through recognition of their income.
  - spur consumption by expected reduction in taxes due to more collections by the government as a result of formalisation.
- Bringing in a coherent and transparent policy and regulatory framework to improve upon ease of doing business along with bringing in desired land and labour reforms like model land lease act and labour codes. This will create an enabling environment for private investment and will minimize risks and uncertainties of returns for investors.

- Faster resolution of pending insolvency cases will give banks more space for credit.
- Checking the crowding out of private investment by the public investment through robust monetary policy.
- Measures to reduce the cost of capital and to rationalize the risk return trade off for private investment.
- Evolving a robust export policy factoring in the ongoing global trade war, WTO challenges and emerging bilateral trading platforms.

Student Notes:

Thus, a large domestic market having the potential of rising demand and an increased private investment coupled with rising exports can create a self sustaining cycle of growth.

- 10. *Highlighting the issues faced in BOT and EPC models of infrastructure investment, explain how HAM can address these.***

**Approach:**

- Explain the two models and discuss their shortcomings.
- Explain about HAM and how it addresses these problems.

**Answer:**

BOT (Build Operate Transfer) and EPC (Engineering Procurement Construction) have been the two frequently used PPP models for infrastructure development in India.

**Under BOT,** private players build, operate and maintain infrastructure for a specified period before transferring the asset back to government. Private players arrange finances while collecting toll revenue or annuity fee from the government. The government may or may not undertake the risk of any shortfall in toll revenue.

#### **Issues with BOT**

- Private players have to fully arrange for finance and NPA-riddled banks are reluctant to lend.
- In cases of non-fixed compensation structure, developers have to take on the entire risk of low passenger traffic.
- Delays and cost overrun due to environmental clearances and land acquisition worsens finances.

**In EPC,** the government finances the project and does land acquisition while the private player procures material and constructs infrastructure. EPC was the preferred mode for highway projects during 2013-15.

#### **Issues with EPC**

- Cost escalation and shrinking margins due to land acquisition issues, delays in approvals etc.
- Unrealistically low estimates and stringent payment terms in most contracts.
- Inherent limitation of financial resources available with the government.

#### **HAM model:**

HAM (Hybrid Annuity Model) tries to overcome these limitations by combining EPC (40%) and BOT-Annuity (60%). Government releases 40% of total project cost, in five tranches that are linked to milestones. Balance 60% is arranged by developer – who usually invests ≤20-25% of project cost and raises the remaining amount as debt.

#### **Benefits of HAM:**

- It spreads the risk between developers and government. Also, the government provides viability-gap funding.

- Regulatory clearances risk, compensation risk, commercial risk and traffic risk are borne by government, thus helping cut overall debt and improving project returns.
- Annuity payment structure saves developers from traffic risk.
- Government gets an opportunity to flag off road projects by investing a portion of project cost.
- While it does take the traffic risk, it also earns better social returns by way of access and convenience to daily commuters.

**11. *Special Purpose Vehicles (SPVs) are fast becoming an important avenue for channelising funds for projects in infrastructure sector. Explaining the concept of SPVs, highlight some of the benefits and risks associated with them. Also, suggest measures to manage the risks identified.***

**Approach:**

- Explain the concept of Special Purpose Vehicles (SPVs) along with example.
- Mention some of the benefits and risks associated with SPVs.
- Suggest some measures so as to overcome the risks.

**Answer:**

Special Purpose Vehicle (SPV) is a legal entity which is formed for a single, well-defined lawful purpose. It is a hybrid of a government-controlled body along with the efficiency of the private sector. Technically, an SPV is limited company which is setup in accordance to the provisions under Companies Act, 2013. Its ownership can be public, private or joint. There is generally a sponsoring company of the SPV which provides initial capital and assets and helps the SPV in raising funds. SPVs are mostly formed for raising and lending funds, especially debt funds of longer maturity, directly to eligible projects to supplement loans from banks and financial institutions. For instance, SPV has been named as National High Speed Rail Corporation Limited to implement the project of Mumbai-Ahmedabad High Speed Bullet Train.

**Benefits**

- **Professional management-** SPV will plan, appraise, approve, release funds, implement, manage, operate, monitor and evaluate the development projects. Example: The creation of SPVs for each smart city
- **Minimal red tape-** For instance, Invest India's remit is not to make money for the shareholders, but to facilitate investments into India, hand-hold investors through the bureaucratic maze.
- **Increased financial resilience-** It helps in separating the risk and freeing up the capital. As a result, the SPV and the sponsoring company are protected against risks like insolvency, which may arise during the course of operation.
- **Greater operational independence-** Infrastructure projects are streamlined as they derive benefit from inter-linkages of academic institutions and organizations.
- **Securitization of assets** - SPVs allows securitization without disturbing the managerial relationship. Under the arrangement, any predictable income stream generated by secure assets can be securitized.

**Risks associated**

- Poor risk management and a misunderstanding of the risks of SPV usage has been a factor in a number of high profile failures. There are reputational risks for the financing firm as well as risks for the investors in an SPV because of lack of transparency.

- Further, poor performance of SPV can affect the sponsoring firm's access to capital markets. For example, if the SPV to implement a highways project fails, it may inhibit the capacity of the private partner as well as the government to raise funds from market.
  - Generating dedicated and substantial revenue stream so as to make it self-sustainable remains a pertaining question.
- Overlapping jurisdictional mandates with the existing companies and institutions.

Student Notes:

#### **Management of risks**

- There should be **regular oversight and monitoring** of the use of SPV activity in order to identify developments that could lead to systematic weakness.
- **Tightening reporting requirements and consolidation of account requirements** for the use of SPVs.
- **Governance structures** of SPVs should be **simplified** by putting an end to layers upon layers of multi-tiered securitization.
- Through adequate awareness generation, market participants should be able to **assess and risk manage factors** that increase transaction capability.

- 12.** *Coastal Employment Zones (CEZs) present opportunities both in terms of boosting export led growth and creation of productive jobs. In this context, discuss the features, challenges & prospects of CEZs in India.*

#### **Approach:**

- Stating the recent NITI Aayog's proposal, mention the main features of Coastal Employment Zones (CEZs).
- Discuss the challenges and prospects of CEZs in India across multiple dimensions.

#### **Answer:**

- NITI Aayog recently pitched for development of two Coastal Employment Zones (one each on the western and eastern coast) on the lines of a Chinese strategy to promote exports and create high productivity & good income jobs.

#### **Features of Coastal Employment Zones (CEZs)**

- Each CEZ will be an agglomeration of multiple coastal districts, spread over a **wide geographical area** of 500 square kilometers or more.
- **Flexible land conversion rules** would help accommodate numerous inter-related economic activities on large scale, thereby generating economies of scale.
- It will provide the geographical boundary within which port led industrialization will be developed by having a **uniform policy** along the ports and coastal states.
- CEZs are expected to have **liberal labour laws and other tax incentives** such as limited period tax holiday etc.
- CEZs would facilitate **ease of doing business**, especially, ease of export and import, faster environmental clearances etc.
- Each CEZ would create **urban spaces** as residential provision for those employed in the zone.

#### **Challenges**

- **Non-availability of land** parcels with the states along with huge acquisition and compensation costs can delay the execution of such projects.
- As per UNCTAD survey, such islands of excellence can create enormous **political risk** by excluding other regions from development.

- Envisaged CEZ's potential may not be realized due to **sub-optimal transport modal mix, lack of scale, low penetration** of coastal and inland shipping etc.
- Due to **subdued global demand**, the supply efficiency from CEZs will take time to grow into full-fledged manner.
- Inclusion of ineligible land for notification, allotment of land far in excess of need and protracted non-use of notified land, may result in the **diversion of CEZ land** for more lucrative commercial exploitation.

Student Notes:

### Prospects

- An export led coastal economy, based on labour intensive sectors such as apparel, footwear, electronic and electrical products etc would help create **high productivity good jobs**.
- Due to **exit of many firms from China**, India is well positioned in the international market to serve as export bases of the migrating firms.
- It would attract large firms which would bring with them **technology, capital, good management and links to the world markets**.
- By capturing agglomeration economies, it would generate an ecosystem around them in which **productive cluster small and medium firms would emerge and flourish**.
- CEZs will help tap **synergies with the planned industrial corridors** like Vizag Chennai Industrial Corridor and Delhi Mumbai Industrial Corridor.
- With the reduction of clearance time and normalization of duties, these zones would help in **frictionless movement of imports and exports** with the creation of bonded free-trade zones in the long term.

Learning lessons from SEZs, initially it would be practical to limit the number of zones to a few, rather than spreading the resources thinly across different geographies. This would help ensure that many sector-specific zones and clusters emerge within each CEZ to fully exploit economies of scale and agglomeration.

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