Infrastructure

Infrastructure is basic physical and organizational structures needed for the growth of economy-. It represents the goods and services necessary for an economy to function. It includes roads, bridges, water supply, sewers, electrical grids, telecommunications, and so forth.

Viewed functionally, infrastructure facilitates the production of goods and services, and also the distribution of finished products to markets, as well as basic social services such as schools and hospitals; for example, roads enable the transport of raw materials to a factory.

"Hard" infrastructure refers to the large physical networks necessary for the functioning of a modern industrial nation, whereas "soft" infrastructure refers to all the institutions which are required to maintain the economic system , health, and cultural and social standards of a country, such as the financial system, the education system, the health care system, the system of government, and law enforcement.

Various types of Infrastructure

Transport infrastructure

- Road and highway networks, including structures (bridges, tunnels, culverts)
- Mass transit systems (Commuter rail systems, subways, tramways, and bus transportation)
- Railways (rail yards, railway stations), level crossings, signalling and communications systems
- Canals and navigable waterways requiring continuous maintenance (dredging, etc.)
- Seaports
- Airports, including air navigational systems

Energy infrastructure

- Electrical power network, including generation plants, electrical grid, substations, and local distribution.
- Natural gas pipelines, storage and distribution terminals
- Petroleum pipelines
- Specialized coal handling facilities for washing, storing, and transporting coal.

Coal mines, oil wells and natural gas wells may be classified as being part of the mining and industrial sector of the economy, not part of infrastructure.

Water management infrastructure

- Drinking water supply
- Sewage collection, and disposal of waste water
- Drainage systems
- Major irrigation systems (reservoirs, irrigation canals)
- Major flood control systems

Communications infrastructure

- Postal service, including sorting facilities
- Telephone networks (land lines) including telephone exchange systems
- Mobile phone networks

- Television and radio transmission stations
- Cable television physical networks including receiving stations and cable distribution networks
- The Internet, including the internet backbone
- Communications satellites
- Undersea cables
- Major private, government or dedicated telecommunications networks, such as those used for internal communication and monitoring by major infrastructure companies, by governments, by the military or by emergency services, as well as national research and education networks

Solid waste management

- Municipal garbage and recyclables collection
- Solid waste landfills
- Solid waste incinerators and plasma gasification facilities(**Plasma gasification** is a process which converts organic matter into synthetic gas, electricity, and slag using plasma.)
- Materials recovery facilities
- Hazardous waste disposal facilities

Types of soft infrastructure

Soft infrastructure includes both physical assets such as highly specialized buildings and equipment, as well as non-physical assets such as the body of rules and regulations governing the various systems, the financing of these systems, as well as the systems and organizations by which highly skilled and specialized professionals are trained, advance in their careers by acquiring experience, and are disciplined if required by professional associations (professional training, accreditation and discipline).

Unlike hard infrastructure, the essence of soft infrastructure is the delivery of specialized services to people.

Governance infrastructure

Economic infrastructure

- The financial system, including the banking system, financial institutions, the payment system, exchanges, the money supply, financial regulations, as well as accounting standards and regulations
- Major business logistics facilities and systems, including warehouses as well as warehousing and shipping management systems
- Manufacturing infrastructure, including industrial parks and special economic zones, plus the public safety, zoning and environmental laws and regulations that govern and limit industrial activity, and standards organizations
- Agricultural, forestry and fisheries infrastructure, including specialized food and livestock transportation and storage facilities

Social infrastructure

- The health care system, including hospitals, the financing of health care, including health insurance,
- The educational and research system
- Social welfare systems, including both government support and private charity for the poor, for people in distress or victims of abuse
- Sports and recreational infrastructure, such as parks, sports facilities, the system of sports leagues and associations

- Cultural infrastructure, such as concert halls, museums, libraries, theatres, studios, and specialized training facilities
- Business travel and tourism infrastructure

Critical infrastructure

The term critical infrastructure has been widely adopted to distinguish those infrastructure elements that, if significantly damaged or destroyed, would cause serious disruption of the dependent system or organization. Storm, deluge, or earthquake damage leading to loss of certain transportation routes in a city, for example bridges crossing a river, could make it impossible for people to evacuate, and for emergency services to operate; these routes would be deemed critical infrastructure.

Critical infrastructure is a term used by governments to describe assets that are essential for the functioning of a society and economy. Most commonly associated with the term are facilities for:

- electricity generation, transmission and distribution;
- gas production, transport and distribution;
- oil and oil products production, transport and distribution;
- telecommunication;
- water supply (drinking water, waste water/sewage, stemming of surface water (e.g. dikes and sluices));
- agriculture, food production and distribution;
- public health (hospitals, ambulances);
- transportation systems (fuel supply, railway network, airports, harbours, inland shipping);
- financial services (banking, clearing);
- Security services (police, military).

Recently(2013), in the cyber field, central government has decided to establish five-year project for strengthening the overall **cyber security structure of critical sectors of India**. This move has come following increase in the number of incidents of cyber attacks as well as security threats. In 2011, India faced around 13000 cyber incidents.

Who will implement the Project?

It will be realized by **National Critical Information Infrastructure Protection Centre (NCIPC)**. NCIIPC functions under the guidance of National Technical Research Organization (NTRO).NCIPC is the nodal agency which coordinates the cyber security operations related to critical infrastructures in India.NCIPC will set up sectoral Computer Emergency Response Teams (CERTs) and will also install sensors on critical systems for getting real-time information regarding cyber attack of any kind for preparing a quick response.

NCIPC of India has been proposed. NCIPC will ensure critical infrastructure protection and critical ICT infrastructure protection in India.

Sectors whose cyber security falls under NCIPC are:

- Energy (natural gas, coal, oil and power)
- Finance and banking
- Transportation (civil aviation and railways)

- Space
- Law enforcement
- Security
- Telecom
- Defense

Critical infrastructure protection (CIP) is a concept that relates to the preparedness and response to serious incidents that involve the critical infrastructure of a region or nation

Urban infrastructure

Urban or municipal infrastructure refers to hard infrastructure systems generally owned and operated by municipalities, such as streets, water distribution, and sewers. It may also include some of the facilities associated with soft infrastructure, such as parks, public pools and libraries.

Green infrastructure

Green infrastructure is a concept that highlights the importance of the natural environment in decisions about land use planning. In particular there is an emphasis on the "life support" functions provided by a network of natural ecosystems, with an emphasis on interconnectivity to support long-term sustainability. Examples include green belts, wild life sanctuaries; eco sensitive regions, Tiger, lion, and elephant reserves; bird sanctuaries; western ghats being conserved etc.

Hard infrastructure generally has the following attributes.

- Capital assets that provide services
- Large networks
- Interdependence: system components are interdependent
- In public economics theory, infrastructure assets such as highways and railways tend to be public goods, in that they carry a high degree of non-excludability, where no household can be excluded from using it, and non-rivalry, where no household can reduce another from enjoying it.

Ownership and financing: Infrastructure may be owned and managed by governments or by private companies, such as sole public utility or railway companies. Generally, most roads, major ports and airports, water distribution systems and sewage networks are publicly owned, whereas most energy and telecommunications networks are privately owned.

Impact on economic development

Investment in infrastructure is part of the capital accumulation required for economic development and has an impact on socioeconomic measures of welfare. In developing nations, expansions in electric grids, roadways, and railways show marked growth in economic development.

Adequate transportation infrastructure is an essential ingredient for economic development and growth. Beyond simply facilitating cheaper and more efficient movements of goods, people, and ideas across places, transportation infrastructure impacts the distribution of economic activity and development across regions; helps business to multiply; consumer welfare; productivity enhancement; balanced regional development; employment; demand; and makes the government access higher levels of fiscal resources to direct and indirect taxes. It is proved in the case of Golden Quadrilateral and PMGSY- the latter accounting for benefits for agriculture too.

During the Great Depression of the 1930s, many governments undertook public works projects in order to create jobs and stimulate the economy. The economist John Maynard Keynes provided a theoretical justification for this policy. It is called Keynsian stimulus that increases public spending on infrastructure. Following the global financial crisis of 2008–2009, some again proposed investing in infrastructure as a means of stimulating the economy.

Infrastructure in the developing world

Lack of infrastructure in many developing countries represents one of the most significant limitations to economic growth and achievement of the Millennium Development Goals (MDGs). Infrastructure investments and maintenance contributed to significantly improved growth performance in India and increased investment is necessary to maintain growth and tackle poverty. The returns to investment in infrastructure are very significant, with on average thirty to forty percent returns for telecommunications (ICT) investments, over forty percent for electricity generation, and eighty percent for roads.

Sources of funding

Currently, the source of financing varies significantly across sectors. In India, some are monopoly: railways and nuclear power. Some sectors are dominated by government spending, others by overseas development aid (ODA), and yet others by private investors.PPP is emerging as the dominant model. Debt and equity are, like anywhere else, the ways of raising resources. Read ahead.

Infrastructure Investment and GDP

The share of infrastructure as a percentage of GDP has increased from 5.04 per cent in the Tenth Plan to about 7.21 per cent of GDP in the Eleventh Plan. It can also be seen that the share of private sector as percentage of GDP has gone up from 1.12 per cent to 2.64 per cent during the same period. Starting from a base of 5.61 per cent of GDP in 2006–07, infrastructure investment reached an all- time high of 8.41 per cent of GDP in 2010–11.

12th FYP and Infrastructure

The strategy for the Twelfth Plan encourages private sector participation directly as well as through various forms of PPPs, wherever desirable and feasible. The share of private sector in infra- structure investment will have to rise substantially from about 36.61 per cent anticipated in the Eleventh Plan to about 48 per cent in the Twelfth Plan. It is expected that competition and private investment will not only expand capacity, but also improve the quality of service, besides minimising cost and time overruns in implementation of infrastructure projects.

The Central share in the overall infrastructure investment is likely to decline from 35.34 per cent in the Eleventh Plan to 28.72 per cent in the Twelfth Plan, and the States' share is likely to decline to 23.13 per cent compared to 28.05 per cent in the Eleventh Plan. The share of the private sector is expected to increase from 36.61 per cent in the Eleventh Plan to 48.14 per cent in the Twelfth Plan.

Financing Infrastructure Investment in the Twelfth Plan

The total public sector investment in infrastructure envisaged in the Twelfth Plan by the Centre and by the States is about 52%. Investment by the private sector, which includes PPP projects, makes up the balance of about 48 per cent of the required investment during the Twelfth Plan, a much higher share than the anticipated 36.61 per cent during the Eleventh

Plan. Of the projected investment by the Central Government, about 60% is likely to be funded out of IEBR. (Please raise this issue in the class!)

The total requirement of debt by the public and private sectors is likely to be `27,75,641 crore. However, the availability of debt financing for infrastructure during the Twelfth Plan is estimated at `22,65,171 crore. There is a likely funding gap of about `5,00,000 crore for the debt component.

Institutional Framework for PPP

Cabinet Committee on Infrastructure

The approach to PPPs must remain firmly grounded in principles which ensure that PPPs are formulated and executed in public interest with a view to achieving additional capacity and delivery of quality public services at reasonable costs. These partnerships must ensure investment for supplementing scarce public resources while improving efficiencies. The government's current initiatives in the area of PPPs are designed to achieve these objectives. The following steps have been taken to promote private investment in infrastructure sector:

1. Setting up robust institutional structure for appraising and approving PPP projects
2. Developing standardised documents such as model concession agreements across infrastructure sectors
3. Increasing availability of finance by creating dedicated institutions and providing viability gap funding

The Committee on Infrastructure (CoI) was constituted in 2004 under the Chairmanship of the Prime Minister, with the objectives of initiating policies that would ensure time-bound creation of world class infrastructure, delivering services matching international standards, developing structures that maximise the role of PPPs and monitoring the progress of key infrastructure projects to ensure that targets are achieved. In 2009, the CoI was replaced by a Cabinet Committee on Infrastructure (CCI) under the Chairmanship of the Prime Minister. CCI reviews and approves policies and projects across infrastructure sectors. It considers and decides on financial, institutional and legal measures required to enhance investment in infrastructure sectors. In 2013, the CCI was merged in the CCAI when the CC on Investment was formed.

Regulatory Framework

In recent years, independent regulatory authorities have been established in the power, telecom, and civil aviation sectors. Tariffs in the port sector are also fixed by an independent authority. These authorities discharge numerous responsibilities, which were earlier in the domain of the government. For initiating further improvements in the regulatory structures and practices, Regulatory Reforms Bill is under consideration of the Government. Regulators for coal, roads and civil aviation are on the anvil (2013 July)

December 2013

The government gave its go ahead to the proposed Draft Regulatory Reform Bill, 2013 which aims to make regulators across key infrastructure sectors accountable to the Parliament besides giving them power of licensing.

The bill aims to fill a lacuna since India does not have a law to monitor the functioning of a large number of regulatory authorities existing in the country. The draft bill will apply to key sectors such as electricity, oil and gas, coal, telecommunications and internet, broadcasting and cable television, posts, airports, ports, waterways, railways, mass rapid transit system, highways and water supply, and sanitation.

The overall functioning of the regulator will be subject to scrutiny by the Parliament on a yearly basis.

Viability Gap Funding

The VGF Scheme was notified in 2006 to enhance the financial viability of competitively bid infrastructure projects, which are justified by economic returns, but do not pass the standard thresholds of financial returns. Under the scheme, grant assistance of up to 20 per cent of capital costs is provided by the Central Government to PPP projects undertaken by any Central Ministry, State Government, statutory entity or local body, thus leveraging budgetary resources to access a larger pool of private capital. An additional grant of up to 20 per cent of project costs can be provided by the sponsoring Ministry, State Government or project authority.

India Infrastructure Finance Company Limited (IIFCL)

IIFCL was incorporated by the Ministry of Finance in consultation with the Planning Commission in 2006 for providing long-term loans for financing infrastructure projects that typically involve long gestation periods. IIFCL provides financial assistance up to 20 per cent of the project cost both through direct lending to project companies, and by refinancing banks and financial institutions. IIFCL raises funds from both domestic and overseas markets on the strength of government guarantees. IIFCL has sanctioned loans aggregating `40,373 crore for 229 projects involving a total investment of `3,52,047 crore and disbursed `20,377 crore till the beginning of the fiscal year 2012-13.

IIFCL is expected to graduate in the Twelfth Plan from the existing role of a normal lender to that of a catalyst mobilising additional resources for financing of infrastructure. This could be achieved by IIFCL providing guarantees for bonds issued by private infrastructure companies rather than expanding its direct lending operations. This would enable mobilisation of insurance and pension funds, external debt and household savings. IIFCL would also make subordinated debt available as an additional source of finance. Further, IIFCL may also substitute its take-out financing scheme with an Infrastructure Debt Fund.

IDFC

IDFC was founded on the recommendations of the 'Expert Group on Commercialisation of Infrastructure Projects' under the Chairmanship of Dr. Rakesh Mohan. IDFC, a Public Private Partnership, is incorporated in Chennai. Government holds 54% of the company, rest is held by foreign shareholders and domestic entities.

Infrastructure Debt Fund

Infrastructure projects are capital intensive and have long payback periods, and, therefore, require long-term funds at comparatively low costs. Infrastructure projects in India are financed mainly by commercial banks, as insurance and pension funds do not normally lend for new projects. The present bond market lacks depth to address the needs for a long-term debt. With a view to overcoming these shortcomings, Infrastructure Development Funds (IDFs) are being set up for channelising long-term debt from domestic and foreign pension and insurance funds, as well as from other sources. These IDFs will also carry adequate credit enhancement in terms of implicit government guarantees for repayment of debt. The Reserve Bank of India, and the Securities and Exchange Board of India have already laid down regulatory framework for the IDFs.

Besides augmenting debt resources for financing infrastructure, the IDFs would refinance PPP projects after their construction is completed and operations have stabilised. By refinancing bank loans of existing projects, the IDFs are expected to take over a significant volume of the existing bank debt, and this will release an equivalent volume of fresh lending for infrastructure projects.(Read ahead for more IDFs)

Deepak Parekh committee on financing infrastructure

High Level Committee on Financing Infrastructure under the Chairmanship of Shri Deepak Parekh submitted its Interim Report to the Government of India in 2012. The Committee in its recommendation has suggested "rationalization of tariff" in order to maintain the inflow of investment. This would also result in improving the collection efficiency and reducing their losses. The report lays down detailed plans for every infrastructure sector, with special attention to the railways. The report titled '**Financing of Infrastructure**' recommended regulatory reforms through an overarching legislation. It says reforms are necessary for ensuring future investments in the infrastructure sector. It has warned that in the absence of reforms, even existing investments would be jeopardized.The panel has suggested public-private partnership (PPP) as the means of achieving target levels of investment.Issues related to the General Anti-Avoidance Rules (GAAR) and delays in environmental clearances and land acquisition should be resolved to attract investment in the infrastructure sector.

Engineering, Procurement, Construction (EPC) Contract

Developed countries are preferring Engineering, Procurement and Construction (EPC) contracts where the contractor is responsible for design and construction on a turnkey basis and for a fixed price. The Planning Commission has published a model EPC contract for Highways. It is expected that about 20,000 km of two-lane National Highways would be developed under this model. (More ahead)

PPPs: General Introduction

Public-private partnership (PPP) in infrastructure is a relatively new experience in most developing countries of the Asian and Pacific region. So far, only few countries have established institutional arrangements and developed manuals and resource materials in support of PPP development and for the capacity-building of their public officials. In the absence of such established institutional arrangements and resource materials, public officials face difficulties in project development and implementation, and general public can have many misunderstandings about PPPs.Governments in most developing countries face the challenge to meet the growing demand for new and better infrastructure services. As available funding from the traditional sources and capacity in the public sector to implement many projects at one time remain limited, governments have found that partnership with the private sector is an attractive alternative to increase and improve the supply of infrastructure services.

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:

1. Resources
2. Risks
3. Responsibilities, and
4. Rewards

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). □Properly executed planning and development of a project also allows better screening of options, and helps in deciding appropriate project structure and choice of technology considering cost over the whole life cycle of the project.

Often, lack of government funding has been the main reason for considering a PPP option for a project. However, lack of government funding may not be the main reason for deciding a PPP option for the implementation of a project. A project may not be considered for being implemented as a PPP project unless efficiency gains from improved project delivery, operation and management, and access to advanced technology can offset the costs. In fact, many countries have established value for money as the main criterion in judging the merits of a PPP option for a project.

PPPs have become attractive to governments as an off-budget mechanism for infrastructure development as:

- They can enhance the supply of much-needed infrastructure services.
- They may not require any immediate cash spending. They provide relief from the burden of the costs of design and construction.
- They allow transfer of many project risks to the private sector.
- They promise better project design, choice of technology, construction, □operation and service delivery.

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. Both partners should clearly understand the various risks involved and agree to an allocation of risks between them.

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 offset through efficiency gains.

Often, the success of PPPs depends on regulatory efficiency.

Features of PPP Projects
- Promise of better project structure and design.
- Better service delivery, especially if performance based payment is considered.
- Better chances of completion on time and within the budget.

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 4 broad categories in order of generally (but not always) increased involvement and assumption of risks by the private sector.
The four broad categories are:
- Supply and management contracts
- Turnkey contracts
- Lease
- Concessions

Each of these four categories has many variants. While the spectrum of models 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. In fact, many PPP projects of recent times are of combination type.

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.

Turnkey /EPC
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. This type of private sector participation is also known as Design-Build.

The main pros and cons of this model include the following:
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.

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- operate-transfer. 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. 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.

The main pros and cons of this model include the following:

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.

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.

Concessions

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 (Like in the VGF) 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.

The main pros and cons of this model include the following:

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.

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 modal, 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.

Suitability and which model to select

Each model has its own pros and cons and can be suitable for achieving the major objectives of private-private partnership to a varying degree. Special characteristics of some sectors and their technological development, legal and regulatory regimes, and public and political perception about the services in a sector can also be important factors in deciding the suitability of a particular model of PPP.

There is no single PPP model that can satisfy all conditions concerning a project's locational setting and its technical and financial features. The most suitable model should be selected taking into account the country's political, legal and socio- cultural circumstances, maturity of the country's PPP market and the financial and technical features of the projects and sectors concerned. As an example, for a new project, a BOT type of model may be quite suitable in a matured PPP market while a BOO type of models may be more appropriate in a developing/untested market.

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 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.

SPV has many advantages. Protected finance is available. 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 shareholder.

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.

PPPs in Infrastructure

Private investment in infrastructure is being encouraged in an environment which ensures competition and transparency. Protection of public interest is being ensured by institutionalising the necessary frameworks and processes for due diligence, checks and balances. However, it is recognised that unless governance issues, such as those related to competition in service provision, collection of user charges, institutional capacity, regulation, and dispute resolution continue to be adequately addressed, mobilisation of sufficient resources for the requisite infrastructure investment may not be possible.

Till 2012, government had approved 285 PPP projects involving an investment of `2,47,300 crore.

The government has identified several areas for reform of policies and processes.

PPP in Highways

The National Highway network of the country spans about 70,548 km. The National Highway Development Project (NHDP), covering a length of about 54,000 km of highways, is India's largest road development programme in its history. The government has encouraged increased private sector participation in upgrading the arterial road network of the country to world class standards. More than 60 per cent of the estimated investment requirement is expected to be financed through PPP. With several key projects on the anvil spanning a length of about 45,000 km (including six-laning of four-laned roads, expressways and port connectivity projects) and a large number of projects in States, there are increasing opportunities for the domestic and foreign players in the sector. The government has decided to widen 20,000 km of less than two-lane National Highways to two-lane standard in the EPC mode.

PPP in Civil Aviation

During the Eleventh Plan, the private sector played a major role in the development of metro airports through PPP. The development of Greenfield (new) international airports at Hyderabad and Bengaluru along with the redevelopment of the Delhi International airport was successfully completed during this period. The redevelopment of Mumbai International airport, which was also taken up through PPP, is at an advanced stage of completion. Investment by the private sector on the four metro airports during the Eleventh Plan periodwas `23,187 crore. Further, it was observed that introduction of PPP has led to a significant rise in the collection of revenues, especially non-aviation revenues.

Airports Authority of India has identified 15 operational Airports for taking up operation and maintenance of both terminal and air side through PPP. This would be taken up in two phases. In the first phase, nine airports, namely Guwahati, Jaipur, Ahmedabad, Bhubhaneshwar, Lucknow, Gaya, Udaipur, Khajuraho and Amritsar would be taken up; and in the second phase, six airports would be taken up for operation and maintenance through PPP. Kolkata and Chennai airports have been constructed by AAI with an investment of about 4,200 crore. PPP in management and operation of airports is not only preferable for reasons of efficiency and superior services but also important for keeping passenger charges low, because of the ability of private entities to raise non-aviation revenues that cross-subsidise airport charges. This proposition is borne out by the international experience and the experience of PPP metro airports in India. It is, therefore, recommended that these large airports should be awarded under the PPP mode for their management and operation.

Five green field airports including Navi Mumbai, Goa, Kannur, Chandigarh and Kota have been identified for development through PPP. For building and operating a Greenfield airport on PPP basis, a precise policy and regulatory framework has now been spelt out in the Model Concession Agreement for Greenfield Airports.

CAA in the place of DGCA

Government decided to set up a new regulator for the aviation sector -- the Civil Aviation Authority -- that will replace the Directorate General of Civil Aviation (DGCA)(July 2013). The Civil Aviation Authority will be responsible for ensuring safety and regulating the Indian civil aviation sector.The government has proposed levying of a "safety fee" on each passenger to fund the new proposed Civil Aviation Authority (CAA).

PPP in Urban Infrastructure

Private sector participation needs to be encouraged in urban infrastructure sectors like water sup- ply and sewerage and solid waste management. In urban transport, private sector can provide more efficient transport services, construct and maintain modern bus terminals with commercial complexes, over bridges, city roads and so on. PPP initiatives are also being undertaken to develop metro rail systems in Indian cities

Hyderabad Metro Rail Project

Hyderabad Metro Rail Project is presently under construction on PPP mode with a total project cost of `12,132 crore. The project is spread over three high density traffic corridors of Hyderabad with total length of 71 km and is being developed on Design, Build, Finance, Operate and Transfer (DBFOT) mode. The project was awarded to the successful bidder for a VGF of `1,458 crore which will be provided by the Central Government while the remaining investment will be made by the concessionaire. This will be the single largest private investment in a PPP project in India. It is also one of the largest metro rail projects built and operated by a private entity anywhere in the world. The project demonstrates how large volumes of private capital can be deployed in public projects in a transparent, efficient and competitive manner. The concession has been awarded on the basis of the Model Concession Agreement for Urban Transit developed by the Planning Commission.

Delhi Metro is a rapid transit system serving Delhi, Gurgaon, Faridabad, Noida, and Ghaziabad in the National Capital Region of India. Delhi Metro is the world's 13th largest metro system in terms of length. Delhi Metro is India's first modern public transportation system, which has revolutionized travel by providing a fast, reliable, safe, and comfortable means of transport. The network consists of six lines with a total length of 189.63 kilometres (117.83 mi) with 142 stations, of which 35 are underground, five are at-grade, and the remainder are elevated.

Delhi Metro is being built and operated by the Delhi Metro Rail Corporation Limited (DMRC), a state-owned company with equal equity participation from Government of India and Government of National Capital Territory of Delhi. However, the organisation is under administrative control of Ministry of Urban Development, Government of India. Besides construction and operation of Delhi metro, DMRC is also involved in the planning and implementation of metro rail, monorail and high-speed rail projects in India and providing consultancy services to other metro projects in the country as well as abroad.

The Delhi Metro Rail Corporation has been certified by the United Nations as the first metro rail and rail-based system in the world to get "carbon credits for reducing greenhouse gas emissions" and helping in reducing pollution levels in the city by 630,000 tonnes every year. The Government of India and the Government of Delhi jointly set up the Delhi Metro Rail Corporation (DMRC) registered in 1995 under the Companies Act, 1956.

The **Mumbai Monorail** is a monorail system under construction in the city of Mumbai, India as part of a major expansion of public transport in Mumbai. The project is being implemented by Mumbai Metropolitan Region Development Authority (MMRDA), with a consortium of Larsen & Toubro (L&T) and a Malaysian infrastructure firm Scomi Engineering. It will be the first monorail in India Construction began in 2009. The first line is scheduled to be completed soon.

PPP in Ports

The government has encouraged private sec- tor participation in port development and operations. Foreign direct investment up to 100 per cent is permitted under the automatic route for port development projects. Private investment has been envisaged on PPP basis in ports of Kolkata, Haldia, Paradip, Vizag, Ennore, Chennai, Tuticorin, Cochin, New Mangalore, Mormugao, Mumbai, JNPT and Kandla.

PPP in Power

To attract private sector participation, government has permitted the private sector to set up coal, gas or liquid-based thermal, hydel, wind or solar projects with foreign equity participation up to 100 per cent under the automatic route. The government has also launched Ultra Mega Power Projects (UMPPs) with an initial capacity of 4,000 MW to attract `160–200 billion of private investment. Out of the total nine UMPPs, four UMPPs at Mundra (Gujarat), Sasan (Madhya Pradesh), Krishnapatnam (Andhra Pradesh) and Tilaiya Dam (Jharkhand) have already been awarded. The remaining five UMPPs, namely in Sundergarh District (Orissa), Cheyyur (Tamil Nadu), Girye (Maharashtra), Tadri (Karnataka) and Akaltara (Chattisgarh) are yet to be awarded. To create Transmission Super Highways, the government has allowed private sector participation in the transmission sector. A PPP project at Jhajjar in Haryana for transmission of electricity was awarded under the PPP mode. Further, to enable private participation in distribution of electricity, especially by way of PPP, a model framework is being developed by the Planning Commission.

PPP in Railways

Dedicated Freight Corridor Corporation of India Limited (DFCCIL) has been set up for implementing the Dedicated Freight project and the Ministry of Railways would explore the possibilities of attracting private investment in some segments of this project. Indian Railways has decided to redevelop 50 railway stations in the metropolitan cities and major tourist centers like Delhi, Jaipur, Chandigarh, Patna, Bypanahalli, Bhubneshwar, Mumbai CST, Howrah and so on as world-class stations through PPP. The proposal to set up of production units for manufacturing of electric and diesel locomotives at Madhepura and Marhowra respectively and passenger coaches at Kanchrapara through PPP has already been approved. Further, movement of container trains has already been opened to the private sector, and this has acquired more than 25 per cent share of the market. Construction of an elevated metro rail project in Mumbai is being undertaken through PPP.

PPP in Micro Irrigation

A scheme for setting up Micro Irrigation Systems (MIS) through PPP will be launched in pursuance of the government's objective to enhance irrigation efficiency, productivity and farm incomesby employing more efficient means of irrigation in integrated clusters. The absence of organised operations in the farm sector would be overcome by farmers coming together for the purpose of implementing this scheme through a single entity in every village. The existing subsidies which are provided by the Central and State Governments for on-farm MIS equipment and solar systems would be availed of under this scheme. Similarly, budgetary support would continue to be provided for the development of infrastructure. PPP in MIS would help in dou- bling the irrigation efficiency as compared to flow irrigation.

PPP in Storage of Food grains

A scheme for setting up modern storage facilities through PPP under the VGF has been formulated in pursuance of the Government decision to create 2MMT of modern storage facilities in the form of silos. This would enhance food security, reduce wast- age and

improve the quality of stored food grains.

Silos will be constructed and operated under the PPP mode across several states. Land for construction and operation of silos would be provided on licence to the private entity and up to 20 per cent of the total project cost will be provided as VGF. For storage of foodgrains at the Silos, the Concessionaire will be entitled to receive a recurring storage charge which shall be payable on adherence to performance and maintenance standards. It is expected that in the first phase, a capacity of 2 million MT of silo capacity would be created under the PPP mode.

PPPs in Social Sectors

The Twelfth Plan lays special emphasis on the development of social sectors in view of their impact on human development and quality of life, especially of the underprivileged sections. The physical targets set in the Plan cannot be met out of public resources alone. It is, therefore, imperative that resources have to be attracted from the private sector to ensure that targets, in physical and financial terms, are met by the end of the Twelfth Plan period.

In the social sectors, it may not be possible to adopt the user-charge-based concessions, although they may not be completely ruled out. However, concessions which would provide reim- bursement of service costs could attract considerable private investment. The main advantages of adopt- ing the PPP approach in the social sectors would be enhanced investment, reduction in time and cost over-runs, improvement in efficiencies and better quality of performance.

PPP in Education

A scheme for setting up 2,500 schools under PPP mode is being rolled out in the Twelfth Plan. The purpose of the scheme is to meet the govern- ment's objective of establishing world-class schools for providing quality education to underprivileged children who cannot afford to pay the tuition fee that good private schools charge. It is expected that the scheme will help in creating capacity for providing quality education to 40 lakh children, out of which 25 lakh will be from the underprivileged category.

The respective rights and obligations of the private entity and the government will be codified in an agreement with the former undertaking to deliver the agreed service on the payment of a unitary charge by the government. Recurring tuition support would be provided for up to 1,000 students from under privileged categories at par with the amount that the Central Government spends on a student in Kendriya Vidyalaya. There would be no capital support and land would have to be procured by the private entity. Infrastructure support shall be made available by the government for the under- privileged students at the rate of 25 per cent of the recurring tuition support. The concession would be for a period of 10 years. There will be no financial bidding. Predetermined criteria relating to capacity and track record of the respective applicants will be taken into account in selection of the private entities.

The scheme for 2,500 PPP schools should be viewed as an opportunity to evolve innovative ways to empower and enable non-government players to engage in providing world-class education, especially to children from low-income families. The objective should be to combine the respective strengths of the public and private sectors to complement each other in pursuit of the shared goal of good education for all. In particular, adoption of the PPP mode would lead to rapid expansion of access to world-class education by low-income families.

PPP in Health Care Services

Several State Governments are experimenting with delivery of health services through different models. Planning Commission is also in the process of preparing a scheme for setting up secondary and tertiary care hospitals through PPPs at various District Headquarters. The principle objective of the scheme is to create a health care delivery mechanism comprising multi-specialty hospital to meet the growing health care needs of the poor, and for supplementing human resources in the sector by setting up nursing schools and medical colleges.

It is expected that in the Twelfth Plan, the pro- posed scheme will be rolled out by the Government, and a 200-bed district-level hospital would serve a catchment area of about 8–10 lakh of population (20 lakh for a 300-bed tertiary care hospital). This will help families from the economically disadvantaged groups get access to quality health care through hospitals set up under this scheme, especially those who are covered under the Rashtriya Swasthya Bima Yojna (RSBY).

PPP in Skill Development

As part of the government's initiative to augment the programmes for skill development, the Prime Minister had announced setting up of 1,500 ITIs through PPP in unserved blocks. The objective is to create centres of excellence in vocational education especially for the youth from low-income families in order to improve their prospects of gainful employment. The programme will be expanded to cover a total of 3,000 blocks during the Twelfth Plan.

A major proportion of the costs incurred by an ITI are of a recurring nature, and it is therefore, proposed to provide support for the recurring expenditure incurred by an ITI towards training students from underprivileged families. Further, it is proposed to provide capital grant to meet a part of the cost of creating the infrastructure for setting up the ITIs. It is expected that 30 lakh youth, including 15 lakh youth from socially and economically disadvantaged groups would be initiated into vocational training and will acquire skills through the ITIs set up under this scheme.(Read along with the Chapter on Inclusive Growth)

Financial Support to PPPs in Social Sectors

A scheme for financial support to PPPs in the social sectors is being formulated as part of the Twelfth Plan initiative to enhance investments and coverage in social sectors, and also to expand the role of private participation.

The scheme envisages that capital investment and recurring costs to be incurred by a non-government entity on the delivery of services to EWS families, based on a concession agreement between government (or a statutory authority) and a non- government entity, will be provided by the respective State Governments, who in turn will be eligible for Viability Support Funding (VSF) from the Central Government.

Capacity Building in the States

The State Governments generally do not have dedicated staff resources for handling PPP projects or for building the requisite capacity. Such capacity is critical for conceptualising project proposals, engaging consultants, interacting with and supervising consultants, analysing and processing their advice for government approvals, interacting with prospective investors, executing the project documents and monitoring implementation. Therefore, the Planning Commission may need to provide financial assistance (ACA) to the State Governments for the setting up a nodal Secretariat for PPP in each State.

The aforesaid PPP Secretariat in each State would be responsible for identifying areas in the respective States amenable to PPP, conceptualise the projects, initiate and approve feasibility studies, appraise and approve bid documentation, guide the process and so on. This would enable capacity building in the States. The total expenditure on this scheme over the next five years would be limited to about `100 crore.

India Front-Runner in the PPP Race: ADB

According to a study by the Economic Intelligence Unit of the Economist commissioned by Asian Development Bank (ADB), while UK and Australia have been categorised as mature economies, India is positioned in the league of developed economies like Republic of Korea and Japan on implementation of PPP projects for infrastructure development. India has outscored China and Japan to rank second on PPP projects performance among the Asian nations and fourth in the Asia-Pacific nations. As per the Report, PPP development in India has been driven by strong political will and advances in public capacity and processes.

The Report states that PPP projects have a huge level of overall acceptance and use in India. It states that government agencies have a relatively high level of proficiency in PPP projects and that as a result of introduction of Model Concession Agreements, the risk allocation has been improving. In terms of finance, matters have improved, with a variety of initiatives (such as the creation of the Viability Gap Funding and the India Infrastructure Finance Company Limited) enabling greater participation of private finance in infrastructure.

To conclude, the gains of private participation in meeting the policy objectives of the Government have been significant during the Eleventh Plan. These initiatives will be expanded and reinforced during the Twelfth Plan, especially in social sectors such as health, education, skill development and so on with a view to meeting the investment targets, while also ensuring inclusiveness. It is envisaged that by the end of the Twelfth Plan, not only will there be `55,74,663 crore worth of investment in infrastructure sectors, but also that PPPs would have successfully forayed into the social sectors to promote universal access, while ensuring quality in the delivery of services.

Financing Infrastructure

Traditionally, infrastructure development used to occur through the public sector. However, given the scarcity of public resources, and the need to shift scarce public resources into health and education, efforts have been made to induct private participation in the development of infrastructure. These efforts have met with a fair degree of success. As of 31 March 2012, 390 PPP projects have been approved involving an investment of 3,05,010 crore. According to a report published by the World Bank, India has been the top recipient of PPP investment since 2006 and has accounted for almost half of the investment in new PPP projects implemented in the first half of 2011 in developing countries. An Asian Development Bank report states that India stands in the same league as developed economies like South Korea and Japan on implementation of PPP projects and the Model Concession Agreements prepared in India and used in our PPP projects have also been commended.

The total investment in infrastructure sectors in the Twelfth Plan is estimated to be `55.7 lakh crore, which is little more than one trillion dollars at prevailing exchange rates (about Rs.60 for a US Dollar in mid-July 2013). The share of private investment in the total investment in infrastructure rose from 22 per cent in the Tenth Plan to 36.61 per cent in the Eleventh Plan. It will have to increase to about 48 per cent during the Twelfth Plan if the infrastructure investment target is to be met. These projections have also been validated by the high level

commit- tee on infrastructure set up under the chairmanship of Shri Deepak Parekh. Its interim report that was presented in October 2012 is given elsewhere in this Chapter) The committee has however qualified its projections as dependent on several policy initiatives that the government would need to take for ensuring this level of investment.

The Twelfth Plan lays special emphasis on the development of social sectors in view of their impact on human development and quality of life. Unlike the case with other infrastructure, experiments with PPP in the social sector have been more limited. Many States have experimented with PPPs in health and education. The Central Government has approved setting up of 2,500 Model Schools in PPP mode and a proposal for setting up 3,000 ITIs through PPP is under consideration. These initiatives will be strengthened during the Twelfth Plan.

Resort to PPPs in the social sector often raises concerns about the commercialisation of services that are normally expected to be provided free or highly subsidised. These are important concerns but they can be addressed by well-drafted concession agreements and strict monitoring to ensure that PPP concessionaires abide by their commitments. This must be reinforced with penalties for non compliance. While extending the concept of PPP to social and urban sector projects, the need for 'people's' participation in the design and monitoring of PPP schemes becomes crucial. Local citizens are direct stakeholders in such projects and therefore their support becomes crucial. Therefore, some cities and States have begun to shape PPPs in the social and urban sectors as People–Public–Private Partnerships (PPPPs). This is a valuable innovation which should be applauded.

Take out financing

In the Union Budget speech for the year 2009-10, the Hon'ble Union Finance Minister stated "To stimulate public investment in infrastructure, we had set up the India Infrastructure Finance Company Limited (IIFCL) as a special purpose vehicle for providing long term financial assistance to infrastructure projects. We will ensure that IIFCL is given greater flexibility to aggressively fulfill its mandate. Takeout financing is an accepted international practice of releasing long-term funds for financing infrastructure projects. It can be used to effectively address Asset-Liability mismatch of commercial banks arising out of financing infrastructure projects and also to free up capital for financing new projects.

Objectives of the Takeout Finance Scheme

- To boost the availability of longer tenor debt finance for infrastructure projects.
- To address sectoral / group / entity exposure issues and asset-liability mismatch concerns of Lenders, who are providing debt financing to infrastructure projects.
- To expand sources of finance for infrastructure projects by facilitating participation of new entities i.e. medium / small sized banks, insurance companies and pension funds.

EPC

EPC Contracts refers to an Engineering, Procurement and Construction contract. In an EPC Contract, the EPC contractor undertakes total responsibilities for the project upto the commissioning stage for a pre-agreed consideration. While conceptually, EPC contract may look similar to turnkey contract, it goes a little further than a turnkey contract as in an EPC contract the EPC contractor undertakes total responsibility as well as liability for the commissioning of the project whereas in a turnkey contract, the contractor is generally responsible for selling of the plant. Road projects with less traffic density, which are unviable on toll mode, may be executed through engineering, procurement and construction (EPC) contracts. According to a high-power committee headed by HDFC Chairman Deepak

Parekh, this will help speed up road construction projects in the country. The conventional item rate contracts are prone to high cost and time overruns.

Viability Gap Funding

The scheme aims at supporting infrastructure projects that are economically justified but fall short of financial viability. Support under this scheme would be available only for infrastructure projects where private sector sponsors are selected through a process of competitive bidding. The total Viability Gap Funding under this scheme will not exceed twenty percent of the Total Project Cost; provided that the Government or statutory entity that owns the project may, if it so decides, provide additional grants out of its budget, but not exceeding a further twenty percent of the Total Project Cost.

The government will provide a Viability Gap Funding (VGF) which shall not exceed 20 per cent of the Total Project Cost; provided that the Government or statutory entity that owns the project may, if it so decides it will provide additional grants out of its budget, but not exceeding a further 20 per cent of the Total Project Cost. VGF under this scheme will normally be in the form of a capital grant at the stage of project construction. Proposals for any other form of assistance may be considered by the Empowered Committee and sanctioned with the approval of Finance Minister on a case-to-case basis. The project should be implemented i.e. developed, financed, constructed, maintained and operated for the Project Term by a Private Sector Company to be selected by the Government or a statutory entity through a process of open competitive bidding; provided that in case of railway projects that are not amenable to operation by a Private Sector Company, the Empowered Committee may relax this eligibility criterion. The project should provide a service against payment of a pre-determined tariff or user charge. The concerned Government/statutory entity should certify, with reasons: That the tariff-user charge cannot be increased to eliminate or reduce the viability gap of the PPP; That the Project Term cannot be increased for reducing the viability gap. Thus, Viability Gap Funding means a grant one-time provided by the Public Sector (Central Government / State Government) for Financial Support to PPPs in Infrastructure, with the objective of making a project commercially viable.

It is a Plan Scheme administered by the Ministry of Finance. Suitable budgetary provisions are made in the Annual Plans on a year-to- year basis for the scheme.

Recently, a government appointed committee headed by the Department of Economic Affairs (DEA) Secretary Arvind Mayaram today approved viability gap funding (VGF) of Rs 1,458 crore for development of Hyderabad Metro Rail.

IDF

Setting up of Infrastructure Debt Funds (IDFs) was announced in the Union Budget for 2011-12. These are aimed at accelerating and enhancing flow of long term debt for funding infrastructure projects in the country. They will also act as a catalyst to channelize domestic savings. IDFs would provide a vehicle for refinancing the existing debt of infrastructure projects which are funded mostly by commercial banks. This would create fresh headroom for commercial banks and enable them to take up a larger number of new infrastructure projects.

An IDF can be structured either as a company or as a trust. If set up as a trust, it would be regulated by SEBI under the Mutual Fund Regulations. If set up as a company, the IDF would be structured as a Non-Banking Finance Company (NBFC) and will be under the

regulatory oversight of RBI. Guidelines with enabling provisions have already been issued by the Reserve Bank of India and SEBI.

An IDF-NBFC would issue either rupee or dollar denominated bonds and invest only in debt securities of Public Private Partnership projects which have a buy-out guarantee and have completed at least one year of commercial operations. Such projects are expected to be viewed as low-risk investments and would, therefore, be attractive for risk-averse insurance and pension funds.

Establishment of Infrastructure Debt Fund through PPP model is taking place in India. A Memorandum of Understanding (MOU) was signed, recently for setting-up India's First Infrastructure Debt Fund(IDF) structured as a Non-Banking Finance Company (IDF-NBFC). The fund is jointly promoted by ICICI Bank, Bank of Baroda, Life Insurance Corporation (LIC) and Citicorp Finance (India) and it is titled Infradebt Limited. Ratings agency Crisil assigned 'AAA' ratings to India Infradebt Limited, the country's first infrastructure debt fund under the non-banking finance company structure which is a PPP.

Infradebt Ltd, the IDF, would seek to raise debt capital from domestic as well as foreign resources and would invest in infrastructure projects under the Public-Private Partnership model that have completed one year of operations. The IDF will expand and diversify the domestic and international sources of debt funding to meet the large financing needs of the infrastructure sector, thereby giving an impetus to the creation of the infrastructure necessary to drive India's growth.A higher credit rating would enable IDFs to access long-term funds for infrastructure sector at competitive rates

CCI

The Cabinet cleared setting up of the Cabinet Committee on Investment for fast tracking decision on big projects on in December 2012.December. Prime Minister heads this super investment body which will fast track clearances for mega projects.

The proposed body will not be a substitute for the Foreign Investment Promotion Board (FIPB). FIPB is for clearance of foreign direct investment proposals and if the investment is upto Rs.1200 crores, its decision is final. For FDI beyond the Rs.1,200 crores, CCEA permission is required.

PM will be the chairman of the committee and he will nominate its members. The cabinet committee on infrastructure will be dissolved and all the powers will be vested with the Cabinet Committee on Economic Affairs (CCEA).

The proposal to set up a high-level body for according speedy clearance to infrastructure projects entailing investment in excess of Rs 1,000 crore was initially mooted by Finance Minister Chidambaram who had proposed setting up NIB to oversee and monitoring large projects. NIB could also be called Cabinet Committee on Investment.

The proposal, however, had evoked sharp criticism from the Environment Ministry, which had said that NIB would dilute its powers.

Environment Ministry said that the proposal seems to have been mooted only for the benefit of large firms and investors, while having no provision for redressing the concerns of affected people.

Finance Minister said there were over 100 projects, each involving investment of Rs. 1,000 crore or more, that have been delayed for various reasons. "The main purpose is to oversee and monitor large projects which will give a fillip to India's economic growth. Our problem is not conceptualising projects. Our problem lies in getting numerous clearances and getting the project off the ground within a reasonable time

The functions of the Committee are as under:

(i) to identify key projects required to be implemented on a time-bound basis, involving investment of Rs 1000 cr or more, or any other critical projects, as may be specified by the Committee, in sectors such as infrastructure, manufacturing, etc.;
(ii) to prescribe time limits for issue of requisite approvals and clearances by the Ministries/Departments concerned in respect of projects in identified sectors;
(iii) to monitor the progress of identified projects including the time prescribed/taken to obtain each approval each approval/clearance and delays, if any;
(iv) to review implementation of projects, that have been delayed beyond the stipulated timeframe, including issues causing delay in grant of clearance/approvals;
(v) to review the procedures followed by Ministries/Departments to grant/refuse approvals and clearances;
(vi) to take decision regarding grant/refusal of approval/clearance of specific projects that are unduly delayed , if deemed necessary;
(vii) To consider and decide measures required for expeditiously granting/refusing approvals/clearances in identified sectors including simplification of rules/procedures followed by the respective Ministries/Departments for decision making; and
(viii) to require statutory authorities to discharge functions and exercise powers under the relevant law/regulation within the prescribed time frames for promoting investment and economic growth.

Accordingly, all the concerned Ministries/Departments have been requested to review projects, both in public and private sectors, having investment of Rs 1000 cr or more that are pending on account of delay in according clearances/approvals and to formulate and circulate the proposals for the consideration of the CCI, after due inter-ministerial consultations, in respect of such delayed projects. If the Administrative Ministry/ Department feels that a proposal needs to be considered by the Committee of Secretaries first, it should send a note/proposal for consideration by the Committee of Secretaries to the Cabinet Secretariat.

The CCI took up the task to debottleneck stalled projects involving cumulative investment of Rs. 1.61 lakh crore. Investment of Rs. 69,000 crore has already been made in these stalled projects. This clearance would facilitate future investment of Rs. 92,000 crore. These initiatives include issue of environment clearance to 106 different development projects; clearances to 30 New Exploration Licensing Policy blocks, where clearances were pending with either the ministry of commerce or the ministry of defence; clearances to 10 power transmission line projects and North Karanpura Thermal Power project in Jharkhand.□A special cell in the Cabinet Secretariat is essentially in the nature of a project monitoring group for all large projects. If a decision of the CCI is required in any case, the special cell will bring the case to the CCI.

2013-14 Union Budget and Infrastructure

The Finance Minister has promised new industrial corridors, smart cities, bigger role for private firms in coal, a regulator for the dispute-ridden highways sector and support for innovative financing for infrastructure projects

Airport express

The Delhi Airport Metro Express (DAME) is a Delhi Metro line from New Delhi Metro Station to Dwarka Sector 21, linking the Indira Gandhi International Airport. The line, also known as the Orange line is operated by the Delhi Airport Metro Express Pvt. Limited (DAMEPL), a subsidiary of Reliance Infrastructure, the concessionaire of the line, and opened in February 2011. The total length of the line is 22.7 km, of which 15.7 km is underground and 7 km, from Buddha Jayanti Park and Mahipalpur, is elevated.

Service was suspended from July 2012 to January 2013 due to technical problems. After reopening, the speed was cut to only 50 km/hr, extending journey time from the airport to New Delhi Station to over 40 minutes. On 27 June 2013 Reliance Infrastructure Ltd intimated DMRC that they are unable to operate the line beyond 30 June 2013. Following this DMRC took over operations of Airport Express line from 1 July 2013.

Why Reliance Infra pulled out?

Delhi Airport Express Private Ltd (DAEPL) was a special purpose vehicle set up by the parties to operate and run the 22.7-km line. Reliance has pulled out of its 30-year contract to operate the Airport Express line. Lessons for the PPP are: The government, having decided that India needs upgraded infrastructure and lacks the public funds to build it, has focused in its planning on partnerships with the private sector. Reliance Infrastructure won the bid to operate the Airport Express on the assumption that it would carry 40,000 people a day. In effect, it has even at its best been carrying half those numbers, around 17,000. As a result, much advertising space has gone unsold. And so made losses; it costs Rs 7 crore a month to run, but the revenue from tickets and advertising is only Rs 3 crore. That is presumably what lies behind the private sector operator's unwillingness to persist with the project; DAMEPL appears to have decided that the prospects of a turnaround in the line's fortunes are not great. The question is, of course, whether the original estimate of 40,000 metro riders was reasonable - another example of how auctions can lead to unrealistic estimates in the hope of renegotiation later. PPP projects have to work out how this problem can be avoided. The project was built at a cost of Rs 5,700 crore, with Reliance spending Rs 2,285 crore and the DMRC paying Rs 3,415 crore. What went wrong? For one, it appears that construction standards were deficient. That meant that the speed of the train was drastically lowered, and a planned 17-minute trip began to take as much as 45 minutes - which made it difficult to attract riders, as the ticket price of Rs 150 became extremely unattractive for a regular metro-rail ride. Scheduling and track layout itself minimised the attractiveness of the Airport Express as an option for travellers. It shut down before midnight, for example, opening at 5.15 am - whereas most international flights take off and land in Delhi between midnight and 4 am. And the Airport Express did not even run to Terminal 1 of Delhi airport, the terminal through which most of Delhi's cost-sensitive passengers fly; nor did it connect seamlessly with the rest of the Metro. The government intends to launch PPP-financed infrastructure worth Rs 1.15 lakh crore in the coming months. If the lessons of the Airport Express are learned, we can be far more gainful.

SIA

Social impact assessment (SIA) is a methodology to review the social effects of infrastructure projects and other development interventions. The origin of SIA comes from the environmental impact assessment (EIA) model, which first emerged in the 1970s in the U.S, as a way to assess the impacts on society of certain development schemes and projects before they go ahead - for example, new roads, industrial facilities, mines, dams, ports, airports, and other infrastructure projects. It has been incorporated since into the formal planning and approval processes in several countries, in order to categorize and assess how

major developments may affect populations, groups, and settlements. SIA is often carried out as part of, or in addition to, environmental impact assessment, but it has not yet been as widely adopted as EIA in formal planning systems, often playing a minor role in combined environmental and social assessments.

Social impact assessment is also of increasing importance as a means to measure and monitor the social returns or social outputs of a business.

Social impacts can be defined as the consequences to people of any proposed action that changes the way they live, work, relate to one another, organise themselves and function as individuals and members of society. This definition includes social-psychological changes, for example to people's values, attitudes and perceptions of themselves and their community and environment. Indeed, some SIA practitioners consider social impacts to be only 'as experienced' (e.g. stress, disruption, hunger) and differentiate these from the causal processes (e.g. over-crowding, infrastructure pressure, poverty)

The main types of social impact that occur as a result of these project-related changes can be grouped into five overlapping categories:

- lifestyle impacts – on the way people behave and relate to family, friends and cohorts on a day-to-day basis;
- cultural impacts – on shared customs, obligations, values, language, religious belief and other elements which make a social or ethnic group distinct;
- community impacts – on infrastructure, services, voluntary organisations, activity networks and cohesion;
- amenity/quality of life impacts – on sense of place, aesthetics and heritage, perception of belonging, security and livability, and aspirations for the future; and
- health impacts – on mental, physical and social well being, although these aspects are also the subject of health impact assessment .

The key points of the above discussion are that:

- social and biophysical impacts are interconnected and should be assessed together;
- SIA is understood to be concerned with the human consequences of development proposals, identifying all significant social impacts that arise in this context; and

National Investment & Manufacturing Zones (NIMZs)

The Government of India has announced a National Manufacturing Policy with the objective of enhancing the share of manufacturing in GDP to 25% within a decade and creating 100 million jobs. The National Investment & Manufacturing Zones (NIMZs) are an important instrumentality of the manufacturing policy.

The basic detail is as follows: State government selects the land and applies to the Central government to accept its proposal to set up an NIMZ. If the central government accepts, it notifies the same and sets up an SPV that manages it. State government owns it itself or makes any other arrangement of ownership.

NMIZs are the cornerstone of the NMP for realising its goals.NIMZs will be developed as green field industrial townships, benchmarked with the best manufacturing hubs in the world.

These NIMZs will seek to address the infrastructural bottleneck which has been cited as a constraining factor for the growth of manufacturing".

The NMIZ will function as "a self-governing and autonomous body and will be declared by the State Governments as an Industrial Township under Art 243 Q (c) of the Constitution.

They would be different from SEZs in terms of size, level of infrastructure planning, and governance structure related to regulatory procedures and exit policies". NIMZ may also have SEZs located in them. While SEZs mainly concentrated on exports, NIMZs have no such role, though they may export if they choose to. SEZs exist for the services secor s well while NIMZ does not.

Thus, NIMZ is going to be an all-inclusive gigantic structure combining production units, public utilities, logistics, environmental protection mechanisms, residential areas and administrative services. It may also include one or more Special Economic Zones (SEZs), Industrial Parks and Warehousing Zones, Export Oriented Units (EOUs) and Domestic Tariff Area (DTA) units.

The NMP prescribes that an NIMZ would have an area of at least 5000 hectares and that the State Government "will be responsible for selection of land suitable for development of the NIMZ, including land acquisition if necessary".

As regards internal infrastructure of NMIZ, it will be provided by a Developer or a group of Co-developers, while external linkages will be provided by Govt. of India and the concerned State Govt. Thus, it requires Centre-State co-ordination. The NMP says that the administrative structure for NMIZ will be headed by an SPV- Special Purpose Vehicle .

While the Central Govt will be responsible for notifying the NIMZ and issuing necessary clearances, the State Governments really have many tasks to perform. Apart from selecting the land and acquiring if necessary: such as ensuring water requirements, power connectivity, infrastructure linkages, etc. .

The NMP empowers the Central Govt. with the creation of a High Powered Committee to ensure necessary coordination among central ministries and state governments and also monitor the progress of environmental and other clearances, as well as ensuring external physical infrastructure in a time bound manner. The latter includes: Rail, Road (National Highways), Ports, Airports and Telecom and it also talks about using public private partnership model for this purpose and providing Viability Gap Funding.

State Govt may also have to provide such external linkages. Other functions of states government include, among other things,

a) land,
b) funding of initial cost of land,
c) exploring funding arrangements, including from international funding institutions, long term tax free debentures, etc
d) power connectivity,
e) water requirements,
f) state roads connectivity,
g) sewerage and effluent treatment,
h) health, safety and environmental issues, etc.

Besides the above major features of NMIZ, the NMP deals at great length on matters of

a) institutional framework [e.g. making Department of Industrial Policy and Promotion (DIPP) as the nodal department of Govt. of India];
b) rationalization and simplification of business regulations – dispensing with complying with 70 laws and regulations and filing sometimes as many as 100 returns a day;
c) making labour laws flexible;
d) exit policy for units in NMIZs that also ensures prospect of loss of job insurance policy for employees;
e) leveraging infrastructure deficit and government procurement, etc.

A typical NIMZ will be of at least 5,000 hectares in size and will be chosen by the state governments from its own land or through acquisitions. The preference will be for non-agricultural land with adequate water supply. If needed, the states may reserve a certain share of the land for MSMEs.

Ownership of an NIMZ will either be with the state government, a state government undertaking in joint ownership with a private partner or under any other appropriate model.

Wasteland, as far as possible will be acquired and agricultural land will be kept to minimum. It should not be in ecologically sensitive area.

SPV: The administrative structure of an NIMZ will include four entities, namely an SPV, a developer, the state government and the central government. After the central government notifies an NIMZ in the official gazette, an SPV will be constituted to exercise the powers, discharge the functions and manage the affairs of the NIMZ. This SPV can be a company, including a Section 25 company, depending upon the MoU between stakeholders.

The appropriate financial and administrative structure of the SPV will depend on the financial participation of different stakeholders who will also have their nominees on the board of the SPV. However, the CEO of the SPV will be a senior central or state government official. The SPV will include an official/expert conversant with the work relating to pollution control/environmental protection. There will also be representation to the industrial units functioning in NIMZs. The main functions of the SPV will include master planning of the zone, preparation of a development strategy and an action plan for self-regulation to serve the purpose of the policy, formulation of rules and procedures for development, operation, regulation and management of NIMZs and their enforcement.

The SPV will also expedite environmental clearance and clearances under the air and water Acts, work out an arrangements with the state government regarding revenue streams including the levy of user or service charges or fees or rent for the use of infrastructure/properties in NIMZs and the creation of specific mechanisms for specialised services.

The SPV can take up the development work on its own through various agencies/contractors or take up the development in partnership with a developer who shall be selected through a transparent process.

Labour advantages: NIMZs will put in place a comprehensive exit policy that will promote productivity while providing flexibility by reducing some of the moving rigidities in the labour market and by ensuring protection of workers' rights as laid down in the statute.

An exit policy will be worked out, keeping in view the provisions for the protection of workers' rights within the statutory framework. Firms operating in NIMZs will have a job-loss policy to insure workers against loss of employment in the event of closure or retrenchment. This policy will be used to make compensation payment to workers at the time of closure or right sizing. The SPV can also opt for a sinking fund mechanism, instead of a job-loss policy, to be funded by contributions to provide compensation to workers. Or both can operate in combination.

Similarly, the SPV will help redeploy labour from one unit to another in case of closures. This redeployment shall be from the date of closure at the same remuneration and on the same terms as before.

Under Section 25FFF of the Industrial Disputes Act there is a mandatory requirement to pay compensation equivalent to fifteen days' average pay for every completed year of continuous service, or any part thereof in excess of six months. NMP makes it 20 days.

By July 2013, Centre has already given in principal approval for 12 NIMZs.
AP has been granted another National Investment Manufacturing Zone (NIMZ) near Ongole in Prakasam district. This will be in addition to the two NIMZs already cleared in principle by the central government in Medak and Chittoor districts. The zones will be developed as integrated industrial townships with state-of-the-art infrastructure, clean and energy-efficient technology and skill development facilities. Andhra Pradesh would be the second state after Maharashtra to have more than two NIMZs. Japan, Germany, the UK, Russia and China have shown keen interest in investing in these NIMZs.

SEZs
According to SEZ Act 2005, a Special Economic Zone can be established either jointly or severally by the Central Government, State Government, or any other person involve in the manufacturing of goods. Even a foreign company can also set up SEZ in India.

In addition to Seven Central Government Special Economic Zones (SEZs) and 12 State/Private Sector SEZs set up prior to the enactment of SEZ Act, 2005, formal approval has been accorded to 574 proposals out of which 391 SEZs presently stand notified. A total of 175 SEZs have commenced export.

As per Entry No. 18 of the State List in the 7th Schedule to the Constitution of India, land is a State subject. The approval for setting up of a SEZ is given on the recommendations of the State Government. Issues related to availability/provisioning of land for SEZs are in the domain of the State Government concerned. SEZ units are under an obligation to achieve positive Net Foreign Exchange (NFE) earnings to be calculated cumulatively for a period of 5 years from the commencement of production.

Golden Quadrilateral

The **Golden Quadrilateral** is a highway network connecting many of the major industrial, agricultural and cultural centres of India. A quadrilateral of sorts is formed by connecting Delhi, Mumbai, Kolkata and Chennai, and hence its name. Other cities among the top metropolises namely Pune, Ahmedabad, Jaipur,Kanpur, Surat at north and Bengaluru, Visakhapatnam & Bhubaneswar at south are also connected by the network.

The largest highway project in India and the fifth longest in the world it is the first phase of the National Highways Development Project (NHDP), and consists of building 5,846 km (3,633 mi) four/six lane express highways at a cost of ₹600 billion (US$9.6 billion). The project was launched in 2001 by Atal Bihari Vajpayee and was planned to complete in January, 2012.

The GQ project is managed by the National Highways Authority of India (NHAI) under the Ministry of Road, Transport and Highways. The Mumbai-Pune Expressway, the first controlled-access toll road to be built in India is a part of the GQ Project though not funded by NHAI.

North-South–East-West Corridor

The **North-South–East-West Corridor** (NS-EW) is the largest ongoing highway project in India. It is the second phase of the National Highways Development Project (NHDP), and consists of building 7300 kilometers of four/six lane expressways connecting Srinagar, Kanyakumari, Porbandar and Silchar, at a cost of US$12.317 billion (at 1999 prices). As of January 2012, 5945 of 7300 kilometers project has been completed.

In combination with India's Golden Quadrilateral, and port connectivity highways, NS-EW Corridor forms a key part of Indian highway network connecting many of its important manufacturing, commerce and cultural centers. As of May 2012, India has completed and placed in use 15800 kilometers of such 4-lane highways.

The NS–EW project is managed by the National Highways Authority of India under the Ministry of Road, Transport and Highways.

Pradhan Mantri Gram Sadak Yojana

The **Pradhan Mantri Gram Sadak Yojana** or **PMGSY** is a nationwide plan in India to provide good all-weather road connectivity to unconnected villages.

This Centrally Sponsored Scheme was introduced in 2000 by the then Prime Minister Of India Shri Atal Bihari Vajpayee.

It is under the authority of the Ministry of Rural Development . It is fully funded by the central government.

The goal was to provide roads to all villages with a population of 1000 persons and above by 2003, with a population of 500 persons and above by 2007, in hill states, tribal and desert area villages with a population of 500 persons and above by 2003, and in hill states, tribal and desert area villages with a population of 250 persons and above by 2007.