



# Infrastructure Financing and Business Models

## INTRODUCTION

In any socio-economic ecosystem, infrastructure services hold the key to the quality of life its citizens can enjoy. It is estimated that to achieve adequacy in these services, India needs to spend around \$4.51 trillion on infrastructure by 2030.

In the light of this, National Infrastructure Pipeline has been conceptualized to boost infrastructure financing. But what exactly qualifies as infrastructure? Why infrastructure financing is important and what is its current status? What are the challenges holding back growth of infrastructure financing? What are the various business models to enable Private sector participation? What are the financial sector reforms needed to holistically reform the sector? In this edition, we will try to answer these questions.

## INFRASTRUCTURE SECTOR: BACKGROUND

### ● What is infrastructure?

- ⇒ The **National Statistical Commission (NSC)**, in 2001 attempted to define infrastructure on the basis of **six broad characteristics**: (a) Natural monopoly, (b) High-sunk costs, (c) Non-tradability of output (d) Non-rivalness in consumption, (e) Possibility of price exclusion, and (f) Bestowing externalities on society.
- ⇒ In accordance with this, **physical as well as social infrastructure** are classified as infrastructure.

### ● Why is it so important?

- ⇒ Infrastructure sector **not only contributes directly** to the economy but has a **multiplier effect** on other sectors as well, such as creation of employment opportunities, boosting the growth of GDP and improvement in India's Global Competitiveness.

- ⇒ **Lack of infrastructure acts as one of the biggest constraints** in overall development leading to **inefficiencies** in the processes, which as per some experts cost almost **4-5% of GDP**.

## What are the challenges faced by the sector?

- ⇒ **Essential infrastructure deficit** corrodes the base for future development.
- ⇒ **Poor quality of infrastructure.**
- ⇒ **Delays in infrastructure projects:** According to Ministry of Statistics and Programme Implementation (MoSPI), out of 1,698 projects worth Rs. 150 crore and above, 400 reported cost overruns and 578 reported time escalation.
- ⇒ **Low investment in infrastructure:** Infrastructure investment in GDP terms fell to ~5.8% during the 12th Five Year Plan from ~7% during the 11th Five-year plan.

To ensure that these challenges are addressed, there is a need for large scale investment of institutional resources, human resources and financial resources in the sector. As a consequence, **infrastructure financing acts as a pre-requisite for any possibility of reforms** in the infrastructure sector.

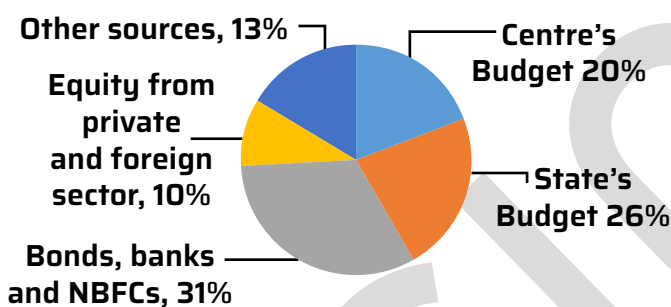
## Harmonized List of Infrastructure Sub-sectors (Infrastructure Status)

- **Cabinet Committee on Infrastructure** created a **Master List of sub-sectors** (in 2012) to be identified as **infrastructure sub-sectors**.
- The inclusions in the list are based on the **six criteria** (identified by NSC) along with **economic and human capital development**.
- Latest addition in the list has been the **logistics sector (in 2017)**.



## National Infrastructure Pipeline (NIP)

### FINANCING OF NIP



NIP has been envisaged as an institutional mechanism which can enable seamless and long-term infrastructure financing. It aims **to provide infrastructure services** that raise the **quality of life and ease of living** in India to global standards.

- The NIP has been made by **aggregating the information provided by various stakeholders across infrastructure sub-sectors** identified in the **Harmonized Master List of Infrastructure**.
- All projects costing greater than Rs 100 crore per project under construction, proposed Greenfield projects, Brownfield projects and those at the conceptualization stage have been included under NIP.

## WHAT IS THE CURRENT STATUS OF INFRASTRUCTURE FINANCING?

- **Banks and NBFCs:** In India, the infrastructure financing landscape is dominated by bank lending. According to the 12th five year plan, domestic bank credit and NBFC credit accounted for **51% and 27% of the total debt financing** of the infrastructure sector respectively.

- ⇒ However, due to rising non-performing assets, driven by declining asset quality in infrastructure sector, **share of banks and NBFCs has been decreasing continuously.**
- **Development Finance Institutions (DFIs):** According to annual reports on DFIs, the **total disbursement by DFIs was ~23%** of the average annual infrastructure investment between 2013 and 2018 **predominantly in power and railways.**
  - ⇒ DFIs have shown higher growth in infrastructure loan assets versus commercial banks.
- **Bond markets:** Bond markets have grown substantially over the past five fiscals. However, according to RBI, the bond market has **a share of only 31%** in the total outstanding corporate credit reflecting low penetration in infrastructure financing. This is mainly because:
  - ⇒ Bond markets remain skewed towards sovereign securities (approx. 70%), resulting in crowding out of funds for corporate bonds.
  - ⇒ Infrastructure projects in the under construction stage are **typically rated at BB or below**, signifying the high risk in funding these projects.
- **Equity and IPO:** According to Bloomberg, the equity market for the infrastructure sector in India had a market capitalisation of about Rs 9 lakh crore (as of 2018), as against a total market capitalisation of Rs 150 lakh crore, constituting ~6% of the total trades in the market.
  - ⇒ Between fiscals 2008 and 2018, infrastructure corporates have raised an aggregate amount of ~Rs 30,000 crore through equity issuance but **yearly numbers have been extremely fluctuating.**
- **Other Sources of funding:**
  - ⇒ **External Aid (Multilateral and Bilateral):** India's major development partners include **Asian Development Bank (ADB), Agence Française de Développement (AFD), Japan International Cooperative Agency (JICA), World Bank** etc.
  - ⇒ **Foreign Direct Investment (FDI):** According to RBI, FDI inflows in infrastructure sector have grown from Rs 0.2 lakh crore in fiscal 2011 to Rs 0.8 lakh crore in fiscal 2019.

### Development finance institutions (DFIs)

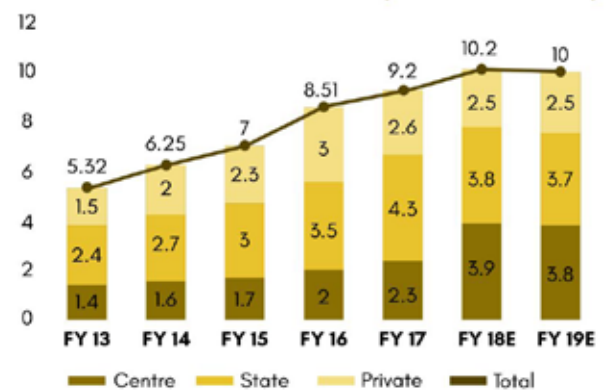
DFIs are **specialised institutions** promoted or assisted by the government to channel 'development finance' to important sectors, especially where commercial finance is not a viable proposition.

DFIs in infrastructure are sector-specific - national-level ones play an important role in railways, power and roads sectors, whereas state level DFIs are largely in the urban sector. **E.g. SIDBI, NHB, NABARD.**

## India's infrastructure investment profile

- Infrastructure investment in India during fiscals **2008 to 2017** was **estimated at \$1.1 trillion.**
- As per estimates, India's infrastructure investment for fiscals **2018 and 2019** were **~Rs 10.2 lakh crore and ~Rs 10 lakh crore respectively.**
- From 2008 to 2017, infrastructure investment was predominantly made by the public sector (i.e. Centre and state governments with a share of ~70%), while the share of private sector was ~30% (the share of private sector during last two years was ~25%).
- **Power, roads and bridges, urban, digital infrastructure and railways** sub-sectors together constituted **~85% of the total** infrastructure investment in India during fiscals 2013 to 2019.

INDIA'S INFRASTRUCTURE INVESTMENT TREND SINCE FISCAL 2013 (Rs LAKH CORE)



Source: Appraisal documents for five-year plans, CRIS estimates (Investments mentioned are at current prices)

# WHAT ARE THE CHALLENGES IN FINANCING INFRASTRUCTURE?

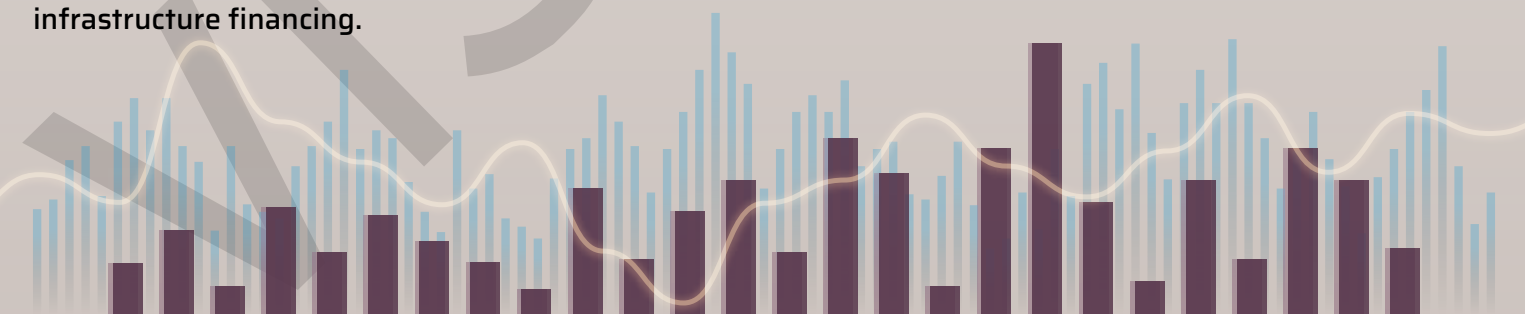


- **Banks face the challenge of stressed assets:** Banks and NBFCs, which were traditional lenders to infrastructure, have high exposure to stressed assets in the infrastructure sector.
  - ⇒ For instance, the share of NPAs in the infrastructure sector had **touched 22.6 percent in 2018** as per RBI's Financial Stability Report of December 2018.
- **NBFCs face liquidity crunch:** In 2018, one of the largest infrastructure NBFCs defaulted on loan payments. This led to a loss of investor confidence in NBFCs as a whole, and especially those with infrastructure lending as a focus, creating a liquidity crunch and ultimately increasing the cost of funds for most NBFCs.
- **Domestic pension and insurance funds:** Pension and Insurance funds are an important component of infrastructure financing, as they are ideal for the requirement of long-term gestation period in the sector. But **pension assets as a % of GDP remains low at ~10%** in India as against 130% in Australia, 140% in the US, 105% in the UK, and 94% in Canada.
  - ⇒ Also, **strict regulatory requirements** by agencies like IRDAI, EPFO etc. require insurance and pension funds to **invest only in highly safe government and public sector bonds**, even at the cost of earning lower returns.
- **Infrastructure Development Funds (IDFs) to gain critical mass:** IDFs are currently at a very nascent stage in the Indian market. Thus, they will take time to gain investor confidence and realise their full potential. Also, IDFs face two critical problems-**limited availability of operational infrastructure** projects with a track record of satisfactory performance of one year and **unwillingness of banks** to part with their good infrastructure assets to IDFs under the current environment.
- **Limited Private and Foreign capital in infrastructure:**
  - ⇒ **Technical issues in credit rating scale:** Operational infrastructure projects, which are fundamentally viable, may face short-term liquidity mismatches, which constraints the conventional rating system.
  - ⇒ **Environmental, social and corporate governance (ESG) parameters:** FDI considerations of investors also depend on ESG parameters of the project. For example, increased water scarcity because of the project, labour conditions during production, lack of understanding of global ESG guidelines have had a negative effect on FDI.

## What are IDFs?

These are funds that **exclusively invest in companies engaged in infrastructure** sectors like roads, ports, power etc. Key IDFs in the Indian market are L&T IDF, IDFC IDF, ICICI IDF and Kotak IDF.

In order to overcome these challenges, the **National Infrastructure Pipeline** has highlighted various **business models** to enable Private sector participation and simultaneously recommended **financial sector reforms** in infrastructure financing.



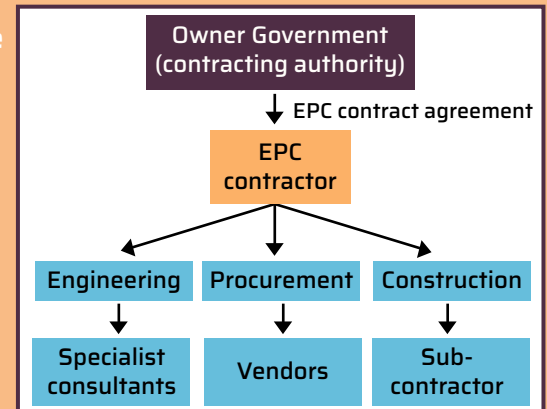
# Types of Business Models

## Engineering, Procurement and Construction (EPC) Model

EPC projects involve infrastructure development contracts in which the **responsibility of delivering the project at a guaranteed price within a fixed period** and with quality and performance parameters as per pre-determined standards is **with the contractor**.

### Features of EPC Model:

- **Asset ownership during the contract is public.**
- Capital investment is borne by the private player and this investment is compensated by the public sector.
- Payment from public sector/concessing authority depends on achievement of predetermined construction milestones.
- The model is generally used for Greenfield projects where there is significant demand/ revenue risk leading to viability issues.

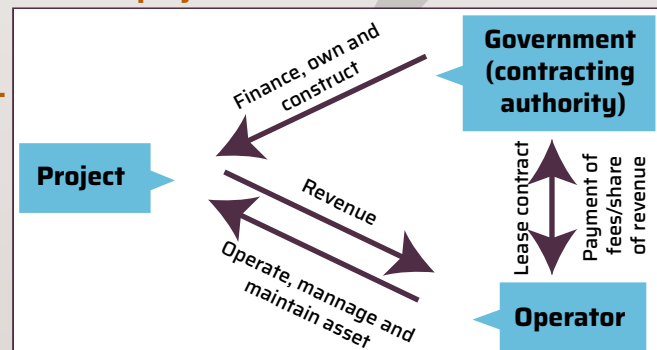


## Leasing Contract Model

In lease contracts, the infrastructure **asset owned by a public entity** is leased out to a private partner. The primary role of the private sector is **Operation and Maintenance of the project**.

### Features of Leasing Contract Model:

- **Concession period for the project is generally 10-15 years.**
- Revenue in this model is generated by fee charged from the users without any fixed component from the public sector.
- Leasing contract can also be executed between two or more private entities.
- This model is generally adopted for Brownfield projects.

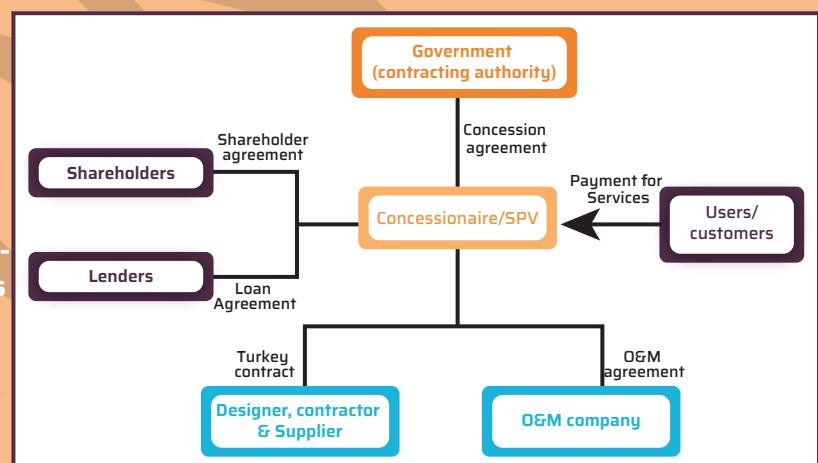


## Build Operate Transfer (BOT) Model

BOT model has a **public sector entity** (the contracting authority) and **private sector partner**. The model operates by **defining and granting rights to a private sector partner** to build and operate an infrastructure facility/ service for a fixed duration or concession period (typically for a long period of 15-30 years).

### Features of the BOT Model:

- **Right to operate and maintain the asset**, besides the collection of user fee, vests with the **private player** but the ownership of the asset belongs to the public sector entity.
- Compensation of the private partner can come from various sources like **tariff revenue, annuity revenue, revenues from development rights and termination payments** for pre-defined events (e.g. defaults by public sector entities).
- The model is generally used in **Greenfield projects** where the demand/ revenue risk is **low to high**.



### Variants of BOT model

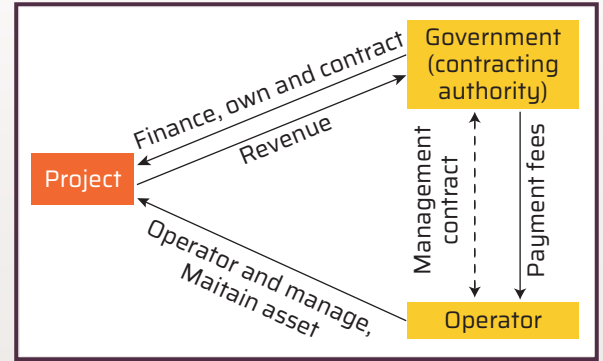
- **Design-build-finance-operate-transfer (DBFOT):** Under DBFOT, there is an additional flexibility for the private partner with respect to **undertaking detailed design of the project** during the construction period.
- **Rehabilitate-finance-operate-transfer (RFOT):** Under this model, a public sector entity enters into a contractual arrangement with a private sector partner to **refurbish an existing facility** or infrastructure asset.
- **Build-own-operate (BOO):** In this model, the private partner is responsible for construction and O&M of the asset. It also has the responsibility of **providing the service/ facility** to the users unlike the BOT model.

## Management Contracts Model

This is a contractual arrangement between a public sector unit and a **private sector entity**, where the public sector entity owns a particular infrastructure asset and the private sector entity is responsible for the **Operation & Maintenance** of a part or the whole of the asset/ facility or service.

### Features of the Management Contract Model

- **Concession periods are generally Short-to-medium term, typically 3-10 years.**
- Compensation for the private sector is provided by pre-determined fee with performance incentives.
- This model is applicable **only for brownfield projects.**

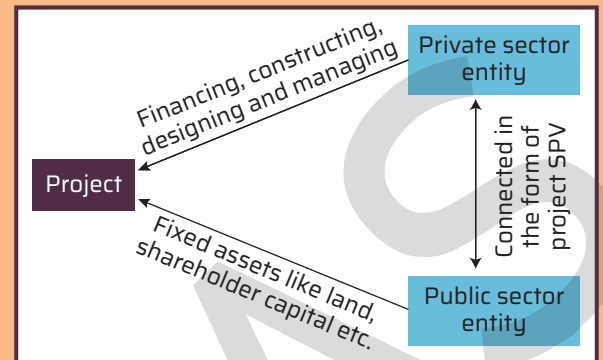


## Joint Venture (JV) Model

Under this model, a **government/public sector** entity maintains a continued participation in **the management and operations** of the project alongside private sector entity.

### Features of JV Model:

- Both Public and Private entities have asset ownership during the contract period.
- Private sector is compensated by revenue from operations as well as fee charged from the users.
- This model is generally adopted in cases like infrastructure assets of strategic importance or assets that require significant financial contribution from the government.

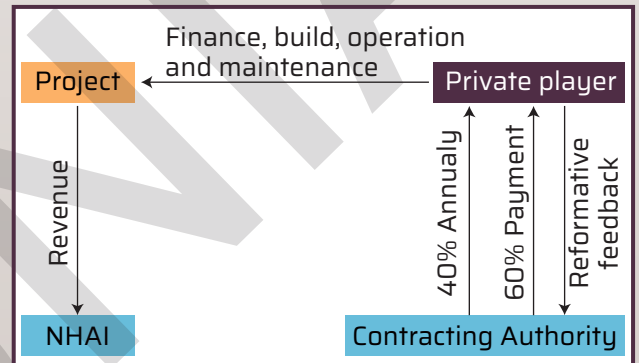


## Hybrid Annuity Model (HAM)

Under this model, government makes payment in a fixed amount for a considerable period and then in a variable amount in the remaining period. This hybrid type of payment method is called HAM.

### Features of JV Model:

- HAM is termed as a mix of BOT Annuity and EPC models.
- In the case of highway development, the government will contribute to 40% of the project cost through annual payments (annuity). The remaining 60% payment will be made on the basis of the assets created and the performance of the developer.
- There is no toll right for the developer. Under HAM, revenue collection would be the responsibility of the National Highways Authority of India (NHAI). (Use of this model is **currently limited to Highway development.**)
- It has been stated that the HAM will be used in stalled projects where other models are not applicable.



# FINANCIAL SECTOR REFORMS RECOMMENDED BY NIP: THE WAY FORWARD



- **Revitalising the bond and credit markets:** Institutional investors are more suited to fund infrastructure projects given the long-term patient capital requirement of infrastructure projects.
  - ⇒ Strict regulatory requirements require these investors to invest only in safe government and public sector bonds and they have limited appetite for lower-rated assets (below AA). As most of the infrastructure projects are rated below AA, it is critical to enhance their rating by **creating a well-capitalized Credit Enhancement Institution**.
  - ⇒ It is also important that **long-term resources** from the **pension and insurance sectors** are channeled into the infrastructure bond market.
  - ⇒ Building up capacity of **banking and financial institutions**, including India Infrastructure Finance Company Limited (**IIFCL**) and **SBI**, to provide long-term infrastructure finance is critical for growth of the sector.
- **Strengthening the municipal bond market in India:** So far, **eight local bodies in India** have raised **Rs 3,390 crore via municipal bonds**. To tap the enormous potential of municipal bonds, following governance and accounting reforms need to be undertaken:
  - ⇒ Improving **financial discipline and regular disclosures**.
  - ⇒ **Augmenting revenue base** and buoyancy of revenues of local governments.
  - ⇒ **Addressing gap in creditworthiness of local governments** through innovative credit enhancement structures.
- **Revitalising asset monetisation:** The direct benefit of asset monetisation is that it creates an enabling environment for participation of long-term institutional investors and introduce private sector efficiencies in the management of infrastructure assets.
  - ⇒ The **NHAI is amongst the first** to monetise operational assets in the past four years.
  - ⇒ Also, **Infrastructure Investment Trusts** are a key way in which **private developers** could **monetise their investments** in infrastructure projects to enable them to raise cash for new project development.
  - ⇒ The Indian InvIT market is not yet mature and has supported formation of only **10 InvITs till date**. The leverage norms (debt to asset value) for InvITs have been recently relaxed to 70% from 49%.
- **Revitalizing land monetization:** Monetizing surplus land gives authorities an opportunity to raise capital from the market against their land assets. Following can be done to enable this:
  - ⇒ **Identification of surplus lands** with government departments or CPSEs.
  - ⇒ A **National Land Management Corporation** to act as the facilitator for land monetisation and also act as an asset manager for lands owned by government of India and CPSEs.

## Infrastructure Investment Trusts (InvIT)

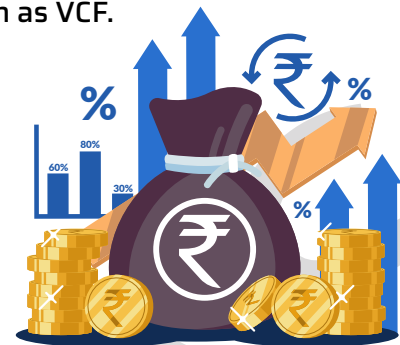
An Infrastructure Investment Trust (InvITs) is like a mutual fund, which enables direct investment of small amounts of money from possible individual/institutional investors in infrastructure to earn a small portion of the income as return.

- **Enabling user charges to finance infrastructure:** It is necessary to determine fair value of user charges to finance and grow infrastructure and to ensure that it is efficiently used. It could also provide more clarity to investors and in turn improve their confidence.
- **Reforming the Value Capture Financing mechanism:** A Policy Framework (VCPF) may be adopted to augment financial resources for urban infrastructure financing.
- **Institutional reforms needed in project financing**
  - ⇒ **Right institutions for the right stage in project finance:** Using multiple investors and financing mechanisms at different stages of the project. For e.g. using Greenfield financing through banks at initial stages but using bonds to refinance the project at later stages.
  - ⇒ **DFIs with better credit appraisal skills:** A strong DFI with competitive cost of funds and strong project appraisal and credit monitoring skills can offer superior risk-based pricing of long term project loans.
  - ⇒ **Advisory think tanks for risk sharing partnership projects:** There is a need to develop a cross sectoral project advisory think tank that would generate ideas and share global and domestic best practices in crafting well-balanced risk-sharing partnership frameworks.
- **Encouraging green financing:** The financing of green projects such as renewable energy; clean transportation (including mass/public transportation); sustainable water management and water recycling; waste to energy plants; energy efficient buildings can be funded from proceeds raised by issuing green debt securities.
- **Understanding the ESG parameters:** Improving the understanding of global ESG standards (such as **World Bank Group Environmental, Health and Safety (EHS) Guidelines** & Industry Sector Guidelines, the IFC Performance Standards, Equator Principles etc. ) at both **policy level and project level** to assess the expected performance outcomes of the projects in line with India's Nationally Determined Commitments for Climate Change. These will enable global investors to assess their interest in investing in such projects.

## What is value capture financing (VCF)?

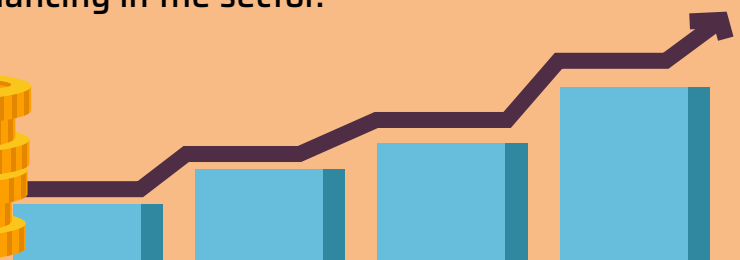
VCF refers to **recovering a portion of increment** in land or property valuation due to **positive externalities** from actions other than property owner's investments.

For example, if price of a piece land increases due to announcement of a new airport (Positive externality), increment in the property tax can be seen as VCF.



# CONCLUSION

The importance of infrastructure financing is reflected in the fact that it is a pre-requisite to initiate any reform in the sector. In that sense, reforms suggested by NIP not only address the immediate financial challenges faced by the sector but also have the potential to create strong institutional infrastructure (DFIs, Bond markets etc.) for long-term financing in the sector.





# Topic at a glance

## INFRASTRUCTURE FINANCING

### Sources

- Banks and NBFCs
- DFIs
- Bond Markets
- Equity and IPO
- External Multilateral and Bilateral Aid
- FDI

### Challenges

- Increasing share of NPA's in Banks
- Liquidity crunch faced by NBFCs
- Infrastructure Development Funds are at a nascent stage.
- Lower penetration of Pension and Insurance funds
- Limited private and foreign capital

## NATIONAL INFRASTRUCTURE PIPELINE

Aim: To enable seamless and long-term infrastructure financing to provide quality infrastructure services.

### Sources of Finance

- Centre's Budget- 20%
- State's Budget- 26%
- Bonds, Banks and NBFCs- 31%
- Private and Foreign Equity- 10%
- Others- 13%

### Inclusions

All projects costing greater than Rs. 100 crore per project under construction, proposed Greenfield projects, Brownfield projects and those at the conceptualization stage.

### Major Recommendations

- Revitalizing bond and credit markets
- Strengthening municipal bond market
- Revitalizing asset and land monetization
- Enabling user charges
- Understanding ESG parameters
- Reforming value capture financing mechanism
- Encouraging green financing
- Other institutional reforms

## Comparison chart of business models

Model	Asset Ownership	Concession Period	Capital Investment Responsibility	Private Partner Revenue Risk	Responsibility of Private Player
EPC	Public	Not applicable	Private- High	Variable	Engineering, Procurement and Construction
Leasing Contract	Public	Typically 10-15 years	Private- Very Low	High	Operations and Management
BOT	Operationally Private	Typically 15-30 years	Private- High	High	Financing, building and operations
Management Contract	Public	Typically 3-10 years	Public or Private- Low	Nil to low	Operations and Management
JV	Public and Private	Typically 20-30 years	Private- High	Medium to High	Financing, building and operations
HAM	Operationally Private	Typically 15-30 years	Private- High	Variable	Financing, building and operations