

Infrastructure Growth and Capital Market Challenges in India

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Abstract:-India has embarked upon an ambitious target of spending Rs. 10,525 billion on infrastructure growth and development. This monetary target may well be on course from a tax payer’s perspective, however can we say that all is kosher in this regard. There is no long tenor Rupee yield curve which is the “acceptable” benchmark for the Institutional Investors community. This renders the scope for infrastructure growth much more daunting. In this paper there is a point of view expressed in the context of the “features” of the Indian debt and equity markets which make it an uphill task for the sustainable monetization of the physical assets. This precludes them from being self-sustaining. Infrastructure is the backbone of any economy. Infrastructure needs heavy investments which means over 50 percent of funds come from government and domestic Financial Institutions as well as cross border pension funds, endowments agencies and the like.

Keywords— Infrastructure, growth, investment, government, debt and equity markets

I. INTRODUCTION

Infrastructure is the backbone of an economy which needs special attention from the government of the country so that the country gets balanced infrastructure development and improved infrastructure facilities covering every part of the country. In addition the social aspect relating to the people of country get benefitted as a result of development in the overall infrastructure available.

Infrastructure development plays a significant role in encouraging a country’s economic growth by enhancing country’s productivity thus helping firms from different regions of the country to compete with each other and even compete in the international market.

Infrastructure development requires substantial funding and projects in this area require a long period of time to be executed. This is the reason why most of the infrastructure projects are government funded especially in India, however trends are changing and investments in infrastructure as percentage of Gross Domestic Product(GDP) has declined as private investment infrastructure remained stable on the other hand public investment in infrastructure has seen a decline in past years.

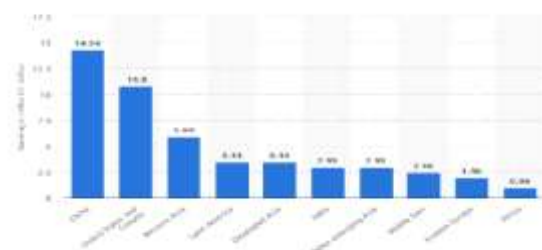
Few Important source of infrastructure funding in India are shown in the graph below



II. FUTURE PROJECTION OF INFRASTRUCTURE SPENDING IN INDIA COMPARED TO OTHER COUNTRIES

It has been projected that infrastructure spending in India from 2016 to 2030 will be to the tune of USD 2.95 trillion which compared to China; having projected infrastructure spending of USD 14.24 trillion for the same period is on the lower side. This clearly reflects the extent of gap in the infrastructure spending by these two countries

Projected infrastructure spending from 2016 to 2030, by region or country (in trillion U.S. dollars)*



(statista, 2016)

III. RECENT INITIATIVES IN INFRASTRUCTURE SECTOR IN INDIA

In recent years the Indian government’s initiatives like ‘Smart City Mission’ and ‘Housing for All’ is a step in supporting growth in this sector and further, 100% FDI is permitted through automatic route in Infrastructure sector making it an attractive sector for investment. This is one of the reasons why the Infrastructure sector is the largest recipient of FDI inflows in India

The quality of Infrastructure is one of the major drawbacks of infrastructure development as India ranks 63 in the list of the Top 100 countries: Ranking of countries according to their quality of infrastructure in 2018. The report by Statista (i.e. a Sectoral specific research institute) states in its report that that Singapore is ranked 1, Korea 6, the Russian Federation 51 and China 41.

The infrastructure sector has become the biggest focus area of the Government of India. Under Union Budget 2018-19, USD 92.22 billion was allocated to the sector. Increased impetus to develop infrastructure in the country is attracting both domestic and international players. The Private sector is emerging as a key player across various infrastructure segments, ranging from roads and communications to power and airports. In order to boost the construction of buildings in the country, the Government of India has decided to come up with a single window clearance facility to accord speedy approval of construction projects. In 2018, India was ranked 44th out of 167 countries in World Bank's Logistics Performance Index (LPI) 2018. India was also ranked second in the 2018 Agility Emerging Markets Logistics Index.

The cumulative growth in the index of eight core industries was 4.7 per cent in 2017-18 and 5.5 per cent year-on-year in April-September 2018. As of April 2018, 56 new airports are expected to become functional in the country over the next few years. In the road sector, the government's policy to increase private sector participation has proved to be a boon for the infrastructure industry with a large number of private players entering the business through the Public-private Partnership (PPP) model. India is expected to become the third largest construction market globally by 2022. India has a requirement of investment worth Rs 50 trillion (USD 777.73 billion) in infrastructure by 2022 to have sustainable development in the country.

Indian infrastructure sector witnessed 91 M&A deals worth USD 5.4 billion in 2017. In the first half of 2018, infrastructure and real estate witnessed Private Equity/Venture Capital deals worth USD 3.9 billion. All villages in India will be connected through a road network by 2019 under Pradhan Mantri Gram Sadak Yojana (PMGSY). In August 2017, a new Metro Rail Policy was announced to boost private investment in the sector. The Government is also working on improving energy infrastructure in the country and investment opportunities worth USD 300 billion will be available in the sector by 2028.

According to Department of Industrial Policy and Promotion (DIPP), Construction Development sector and Infrastructure Activities sector received FDI inflows amounting to USD 24.87 billion and USD 13.11 billion, respectively from April 2000 - June 2018.

Though FDI is flowing into the Infrastructure sector however the quality remains a major concern. (IBEF, 2018)

IV. INFRASTRUCTURE DEVELOPMENT IN INDIA AND IMPORTANCE

A. Road

India's road sector has total span of more than 5.5 million km which is one of the largest in the world, 64.5 % of

goods and 90% of passenger's traffic use road network in India.

(IBEF, 2018)

B. Ports

India has 12 major and 200 notified minor and intermediate ports which are strategically important as maritime transport handle 95 percent of India's trading volume and 70 percent the trading value.

(IBEF, 2018)

C. Railways

Railway network spread over length of 115000 Km handling 12,617 passenger trains and 7,421 freight trains each day from 7,349 stations plying 23 million travelers and 3 million tonnes (MT) of freight daily. India's railway network is recognized as one of the largest railway systems in the world under single management.

(IBEF, 2018)

D. Power

In May 2018, India ranked 4th in the Asia Pacific region out of 25 nations on an index that measures their overall power generation and in August 2018 the total installed capacity of power stations in India stood at 344.69 Gigawatt (GW).

(IBEF, 2018)

E. Airports

In FY 2018 India's 125 Airports handled 308.75 Million Passengers and 3.36 (MMT) of cargo making the country the third largest domestic civil aviation market in the world.

(IBEF, 2018)

F. Telecom Infrastructure

There are over 400,000+ telecom towers in India which are estimated to increase at a CAGR of 3% over next 4-5 years helping to achieve and become the world's second-largest telecommunications market with a subscriber base of 1.17 billion.

(Tower and Infrastructure providers association, 2017)

(IBEF, 2018)

G. Renewable energy

As of July 2018, total renewable power generation installed capacity (grid interactive) in the country stood at 116.82 GW, which is 33.81 per cent of the total installed capacity of 345.49 GW. With a potential capacity of 363 gigawatts (GW) and with policies focused on the renewable energy sector, Northern India is expected to become the hub for renewable energy in India.

(IBEF, 2018)

V. IMPORTANT INFRASTRUCTURE PROJECTS UNDERWAY IN INDIA

A. *Setu Bharatam Programme*

Rs 50,000 Crore to be spent on constructing 208 new bridges/road under bridges and further 1500 bridges will be widened to for safe and seamless travel on national highway.

(www.narendramodi.in, 2016)

B. *Mumbai Trans harbour link*

22 Km road way linking sewri to navasheva project that has an estimated cost of Rs 22,000 Crore.

(FPJ Web Desk, 2018)

C. *Delhi Mumbai Industrial Corridor*

Delhi-Mumbai Industrial Corridor is a mega infrastructure project of USD 90 billion with the financial & technical aids from Japan, covering an overall length of 1483 KMs between the political capital and the business capital of India, i.e. Delhi and Mumbai.

(DMIC, 2014)

D. *Gift City Gujarat*

The project, spread over 886 acres, including a 261-acre SEZ on the outskirts of Gandhinagar, is expected to involve investments of Rs 78,000 crore when completed by 2026.

(PANDIT, 2014)

E. *Mumbai costal road project*

A 29.20 Km of Costal Road to be built at estimated cost of Rs 15000 Crore.

(MCGM, 2018)

(Sharma, 2018)

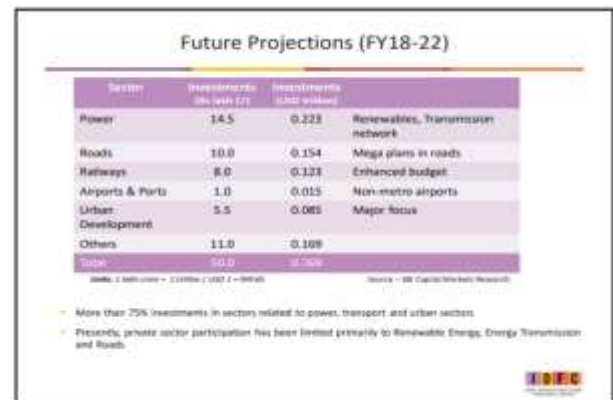
12th plan investment in infrastructure

Sector	Target (in Rs.trillion)	Estimated achievement (in Rs.trillion)	Target achieved (%)
Electricity	15	11.4	76.0
Roads & bridges	9.1	8	87.9
Telecom	9.4	4.4	46.8
Railways	5.2	4	76.9
Irrigation	5	4	80.0
Water supply & sanitation	2.5	1.9	76.0
Renewable energy	3.2	1.8	56.3
Mass rapid transport system	1.2	0.9	75.0
Ports	1.9	0.7	36.8
Airports	0.88	0.3	34.1

Note: As reported by Financial Express

(Behere, 2018)

VI. FUTURE PROJECTION OF SECTORS FROM YEAR 2018 TO 2022

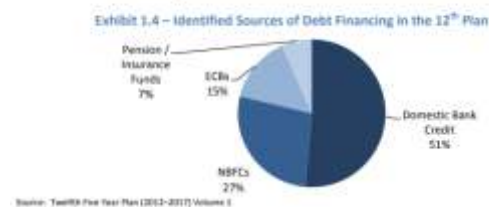


(YELLURKAR, 2018)

As can be seen from the above two charts energy sector has the highest percentage of total infrastructure investment in 12th Plan and future projections show that the power sector remains the most focused sector of infrastructure investment

Source of debt funding infrastructure projects in India – the Capital markets play

1.5 Financing Infrastructure Sector
The likely total debt resources are INR 22.66 Trillion in the Twelfth Plan and the estimated breakup of the sources of debt funding is shown in the Exhibit below.



As can be seen from the above chart domestic banks are the major source for infrastructure Debt funding followed by Non-Banking Finance Companies (NBFCs) with contribution of 51% and 27% respectively whereas External Commercial Borrowings (ECB) share is 15% and the Pension / insurance funds having a minimal share of 7%.

(FICCI, 2016)

Domestic banks are already sitting on a substantial amount of stressed assets which have weakened their Balance Sheets. This coupled with exertion of the Infrastructure financing, which is typically long term in nature, impacts the liquidity of the banks. The Private sector investments are witnessing a shortfall of around 53% as can be seen in 12th five year plan. Investments of Rs 38 trillion in 12 Specified infrastructure sectors compared to a target of Rs 55.75 trillion.

VII. CHALLENGES HAMPERING INDIA’S INFRASTRUCTURE DEVELOPMENT

In India Infrastructure development faces multiple challenges like land acquisition issues, funding constraints,

delays related to identification and award of projects and shortage of skilled manpower are some major reasons which are currently causing delays in infrastructure projects in India.

(Agrawal, 2016)

A. Land acquisition

Land has remained a most important economic resource and source of livelihood for a large number of people in India, It has been also important for community identity, History and culture.

Thus it becomes difficult to acquire land and pay the price for the land that have emotional value attached with it and even calculating the cost of replacing the livelihood earned by the family who's land is been acquired to onetime payment for the land acquisition.

(cprindia, 2017)

B. Delay in regulatory and environmental clearance

There are various categories of approvals required across the project cycle at every stage, right from the pre-tendering stage to post-construction. For instance, at the pre-tendering stage, there are substantial delays in inviting bids. Moreover, approval is required from multiple layers of the government at the central, state, and local levels. In most cases, there is lack of coordination between the different agencies, leading to standoffs on critical approvals, which seriously affect the execution of projects.

(Agrawal, 2016)

Environmental Clearance has also started having a direct impact on investments for the infrastructural projects. This scenario has made it difficult for the developers to raise funds from the financial institutions as earlier the bankers would allow the infrastructure companies to draw funds even if they felt environment clearances were on the way whereas now, funds are preferred to be allocated after physically checking the clearances given by the ministry. The scenario is also discouraging Foreign Direct Investment in the environment sector.

(Mishra, 2012)

C. Funding constraints

India's infrastructure sector depends largely on banks and NBFCs for debt financing and they share 51% and 27% as of 12th five year plan, As Indian banks and NBFCs are hit by financial crisis the banks distress debt issues and large NBFCs defaulting on interest payments makes it difficult to get financing due to the liquidity crunch.

Private sector investments in infrastructure in India have reached an estimated 50% of total investments in infrastructure.

(FICCI, 2016)

D. Capacity of private players

A few of the private integrated players can achieve large infrastructure projects and the issue is that they have already secured several projects due to which it becomes difficult to undertake new projects as there is a limited capacity of domestic Rupee financing.

Moreover, infrastructure projects in India are becoming more complex and larger in size and such projects require *financial patronage* and additional project management skills, which most medium-to-small Indian companies currently lack. Foreign players can bring in investments and technical expertise to undertake large and complex projects. There is, therefore, a need to speed up ongoing efforts to simplify the approval and the regulatory processes to attract foreign developers to invest.

(Agrawal, 2016)

E. Widening infrastructure investment gap

India requires USD 4.5 trillion worth of investments in infrastructure by the year 2040 and as per current trends of investments in infrastructure it is expected that India can reach about USD 3.9 trillion of infrastructure investments and the gap would be around of USD 526 billion between amount invested and amount required.

Issues around infrastructure creation in India bring to the fore some core themes that are worth analyzing. The structure of infrastructure companies, cost over-runs, retail investor exposure to credit funds, and the need to recycle assets to real-money balance sheets are once again in focus given the problems that certain large Financial Institutions are facing currently.

VIII. HOW DO WE REMEDY THE SITUATION WHICH IS BECOMING A QUAGMIRE OF CHALLENGES?

Firstly, onemust assess whether it makes economic sense for many more infrastructure companies to be publicly listed. Being publicly listed has its advantages in terms of greater scrutiny of financial information and the liquidity available to the Company through share sale. Additionally, listed companies have their own stocks which are a "currency" of sorts to attract and retain top talent.

But public listings also mean implicit pressure from the markets for quarterly performance, something an infrastructure business, which is long-dated by its very nature, is not particularly well suited to handle. For all the advantages of being publicly listed, it is worth pondering whether in an Indian context quarterly pressure of results can hinder infrastructure businesses from making the correct decisions keeping the long-term goals in mind. While scrutiny of financial results is crucial, so is the capacity of the infrastructure business to focus on the aim of creating long-dated assets.

A better level of corporate governance is essential for infrastructure businesses, given the scale of investments, the lack of alternative uses of assets once created, and the urgent need to develop such assets. Whether publicly listed or not, overall corporate governance standards need to improve to create a more robust ecosystem.

Secondly, there is the constant debate on the public versus private aspect regarding infrastructure creation and asset management. The truth is that both are essential. The way forward for India to create the requisite infrastructure both in respect of quantity and quality will require the private sector to work together with the government. This has to be a symbiotic relationship and not one which calls for an either / or discussion. The experiences of the past projects clearly signify this to the stakeholders.

There are issues that a public-sector project or a private sector company faces, but this does not necessarily mean that there is a fundamental issue with all such projects and companies. Transparency and effective policies are crucial. Project-wise analysis is required to determine as to who is better placed to take care of the three essential components of each project, i.e., Build, Operate and Finance.

Given the complexity of infrastructure assets, a "one size fits all" solution will not work. While issues around land acquisition and the time required for approvals have seen improvement over the years, India needs to ensure that such problems continue to receive constant attention. The issues above are generic to the infrastructure sector regardless of the ownership of the asset. In addition as and when such issues arise they need to be dealt with a sledge hammer rather than have a kid glove treatment.

Thirdly, to boost infrastructure creation and credit flow one needs to have a more efficient process with regards to credit risk pricing. Credit ratings must reflect the embedded credit risk to enable the higher flow of credit into the sector. For instance, a rating should ideally move through downgrades and upgrades in notches to reflect the gradual re-pricing of credit risk. Such credit systems provide the investor base with greater confidence in both the rating system and the credit quality of the underlying market. The managing of the credit migration process also needs to be carefully tracked over the entire project execution and life of the project.

A jump in credit rating indentation over multiple notches over a short span of time tends to imply the credit risk in the system isn't being priced at the right pace. To further enable efficient and constant re-pricing of ratings to reflect credit risk a secondary market in credit products must develop. Only with a secondary market for credit products can credit genuinely be priced and assessed by the markets. The agencies like the Asian Development Bank (ADB), IFC (W) and other multilateral / bilateral agencies have been advocating and encouraging this step for the longest of time in its various covenants when extending financial support to various projects.

Fourthly, the investor base for the financing of infrastructure assets deserves attention. On the retail side, the credit funds that have invested in infrastructure have provided the sector with much-needed capital and the investors with an opportunity to earn attractive returns. But till a secondary market for credit products develops in India to aid credit risk pricing, retail investors will need greater education on what returns and risks infrastructure assets present. Short-term liquidity in a fundamentally illiquid investment may not always be easy to come by. This is especially true for those in the retail segment who may not be able to appreciate the nuances with respect to re-investment and basis risk.

On the institutional investor side, the need for more "real money" (i.e. pension funds and insurance companies) investors cannot be over-emphasized. A greater share of infrastructure assets in India must be on Balance sheets that hold the assets to generate returns to match liabilities, and not from a pure financial return perspective. The ability of a "real money" investor who has a long-term horizon of 20 years or so to manage short-term revenue fluctuations from an asset is far greater than it is for a financial investor with a much shorter time horizon.

Issues that infrastructure creation faces present us with opportunities to learn and implement solutions. An iterative process that continually imbibes new learning is essential for India to create the required infrastructure that a rapidly growing economy will need in the decades to come.

IX. OVERVIEW OF THE INFRASTRUCTURE INDUSTRY WITHIN ASIA

Infrastructure in developing countries in Asia and the Pacific has improved rapidly but remains far from adequate. More than 400 million Asians still lack electricity; roughly 300 million have no access to safe drinking water and 1.5 billion lack basic sanitation. In many countries, power outages constrain economic growth. City traffic congestion alone costs economies huge amounts daily in lost productivity, wasted fuel, and human stress. Developing countries in Asia will need to invest USD 26 trillion in infrastructure from 2016 to 2030, or USD 1.7 trillion per year, if the region is to maintain its growth momentum, eradicate poverty, and respond to climate change, according to the Asian Development Bank report, [Meeting Asia's Infrastructure Needs](#).

Between 2016 and 2030, the region needs to invest USD 14.7 trillion for power, USD 8.4 trillion for transport, USD 2.3 trillion for telecommunications, and USD 800 billion for water and sanitation improvements. East Asia accounts for 61% of the investments needed through 2030. As a percentage of gross domestic products, the Pacific require investments valued at 9.1% of GDP, with South Asia at 8.8%, Central Asia at 7.8%, Southeast Asia at 5.7%, and East Asia at 5.2%.

In terms of sectors, power accounts for 56% of needed infrastructure investments with transport 32%,

telecommunications 9%, and water and sanitation accounting for 3%.

The costs of mitigating climate change in Asia and the Pacific are estimated at USD 200 billion per year. This primarily comes from investments in the power sector, including in renewable energy, smart grids, and energy efficiency.

In the transport sector, shifts from more carbon-intensive modes of travel (private cars) to less carbon-intensive modes (public transit and railways) will require supportive policies and regulations as well as investments.

The costs of climate proofing are estimated at USD 41 billion annually with most of that – i.e. USD 37 billion – going toward transportation investments, including climate-proofing roads and elevating road embankments to protect from flooding.

Currently, developing economies in the Asia and Pacific region annually invest an estimated USD 881 billion in infrastructure. Multilateral agencies like ADB have an important role to play in public and private sector infrastructure financing. ADB is scaling up its operations by 50% from USD 14 billion in 2014 to more than USD 20 billion in 2020, with 70% of this amount for sovereign and non-sovereign infrastructure investment. A growing proportion of ADB finance is expected to go to the private sector. ADB is also working with bilateral donors and providers of private foreign capital.

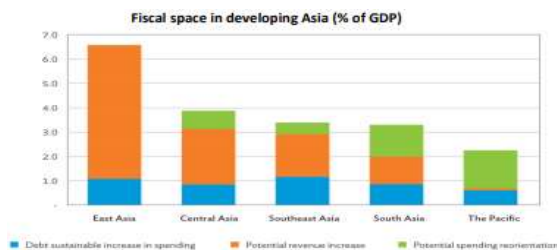
Infrastructure investment gaps – \$102 billion or 4.1% of GDP

	Estimated Current Investment (2015)	Climate-adjusted Estimates	
		Annual Needs	Gap (% of GDP)
Total Asia-Pacific (25)	881	1,340	459 2.4
Total without PRC (24)	195	505	308 5.0
Selected Central Asia Countries (3)	6	12	7 3.1
Selected South Asia Countries (8)	134	329	195 5.7
Selected Southeast Asia Countries (7)	55	157	102 4.1
Selected Pacific Countries (5)	1	2	2 6.9

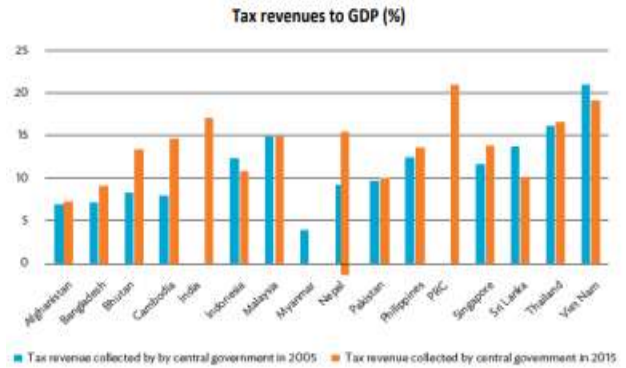
X. WAYS TO REDUCE THE INFRASTRUCTURE INVESTMENTS GAPS

A. Reforms should continue

Fiscal reforms to enhance sustainability of government finances and public infrastructure investments



Increase tax revenues for capital spending - indicative targets: tax/GDP=18% - remove loopholes in tax system - good governance in tax collection



Source: Meeting Asia's Infrastructure Needs, ADB, 2017; Ahmad (2015); World Bank 2017

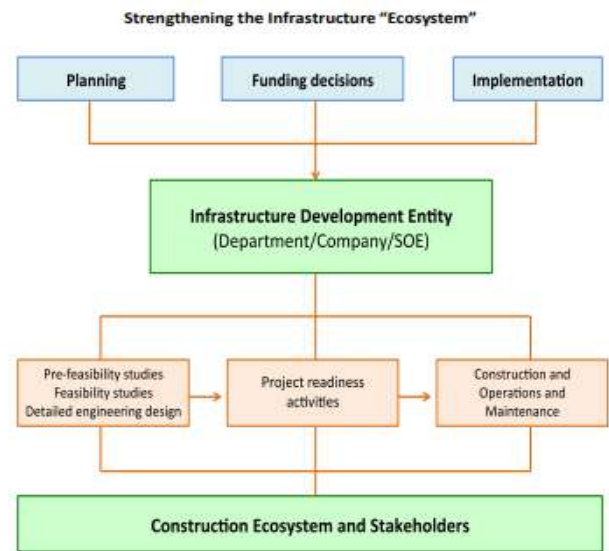
Manage current and future liabilities - set annual budgets within medium-term fiscal frameworks - monitor regularly government liabilities

B. Institutional connectivity matters

Institutional connectivity refers to effective policies and institutions to enhance seamless connections, as critical as physical infrastructure

Strengthen domestic capacity and governance to implement successful infrastructure projects: - legal frameworks - regulatory policies - policy environment - coordination among agencies/authorities - engagement with private sector to boost efficiency of infrastructure services

Ability to address border and behind-the-border barriers to enhance cross-border collaboration infrastructure (e.g., harmonization of regulatory standards)

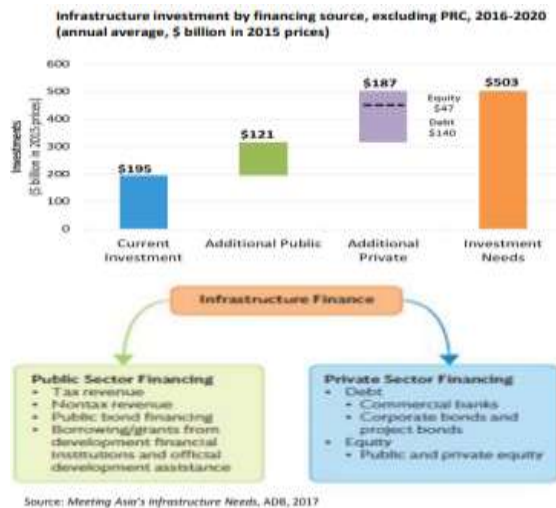


Source: Meeting Asia's Infrastructure Needs, ADB, 2017

C. Financing is still key

Efficiency in public financing - direct fiscal support through capital spending - strong public support facilitates private capital financing

Strengthen private sector support mechanisms - enhance efficiency of existing modes of private financing - making PPP work (i.e., transparency of projects; enforceable contracts)



Source: Meeting Asia's Infrastructure Needs, ADB, 2017

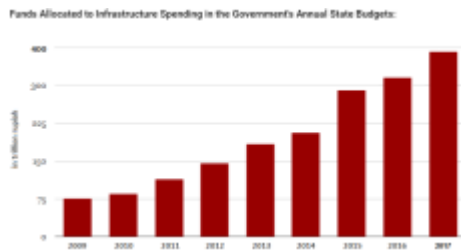
(Perdiguero, 2017)

XI. THE TREND OF INFRASTRUCTURE DEVELOPMENT AND INVESTMENT IN THE REGION AROUND INDIA

A. Indonesia

In World Economic Forum (WEF)'s Global Competitiveness Report 2015-2016, Indonesia ranks 62nd out of 140 economies in terms of infrastructure development.

Though the ranking is mediocre there has been increasing infrastructure spending. It increased from Rupiah 75 trillion (USD 5.2 Billion) in 2009 to Rupiah 385 trillion (USD 26.82 Billion) in 2017.



Based on the National Medium-Term Development Plan (RPJMN) 2015-2019, a total of IDR 4,796 trillion (approx. USD 358 billion) worth of investment in infrastructure is required to meet the government's targets by 2019. However, the central and local state budgets can only contribute 41 percent to the financing, while state-owned companies can contribute up to 22 percent. This implies that

37 percent of funds (equal to IDR 1,752 trillion) need to originate from the private sector.

B. Thailand



The Thai government understands the importance of infrastructure development toward economic growth, and must be commended for their continued forward thinking in promoting public private partnerships as an alternative source of funding to meet the infrastructure funding gap. The PISU Act, the PPP Strategic Plan, the PPP Fast Track, and the EEC Fast Track are very promising policies that displays the Thai government's commitment toward public private partnerships. Moreover, it is worth noting that the Thai government acknowledges that the previous plans and policies were very focused on roads and rails, and is now looking to expand the pipeline into new sectors such as airports, education, and health. Therefore, we expect several new projects and opportunities in 2018 for both the public sector and private sector companies who may be interested in the development of infrastructure projects in various sectors.

1) *Infrastructure fund*: In the past, securities issuance as shares or debentures were used as a financial tools to mobilized fund to service investment in new project. Today, SEC-Thailand has introduced a new product so called "Infrastructure fund" as a financial tool to raise fund and investment in infrastructure project. With the new tools, private sector or state enterprise can mobilize fund to develop infrastructure project and ease the government's burdens on budget and public debts.

In brief, both the public and private sectors can participate in the development of the country's infrastructure by investing into the fund.

2) *Key features*: Key provisions of the regulations on establishment and management of infrastructure fund are as follows:

1. Infrastructure fund is an closed-end fund with the minimum size of THB 2 billion (at least THB 1 billion per project, except for electricity type only THB 500 million per project is required)
2. Minimum 75% of total asset must be invested in infrastructure asset within 6 months since fund registration or capital raising
3. There are 10 types of infrastructure that the fund can invest which are rail transportation, toll way,

electricity, water supply, airport, deep seaport, telecommunication, alternative energy, water management system and natural disaster protection system. However, above-mentioned infrastructure projects must be operated for the benefit of Thai general public and must not provide services to any customers and/or group more than 1/3 of total capacity.

4. Maximum gearing ratio of 3 times
5. The fund shall distribute at least 90% of net profit to the unitholders

C. South Korea

Success Factors of Korea's PPP Projects: Firstly, the PPP Act provided a very clear legal framework. According to the Act, the Ministry of Strategy and Finance (MOSF), considered to be the most competent government ministry, was designated as the main regulator to draw up the Basic Plan for PPP and to direct government policy. Implementation of procedures, rights and obligations, as well as a risk-sharing mechanism, are clearly defined in the Act to effectively reduce potential business risks for private sector participants.

Secondly, the supporting agency was established under government think tanks. PICKO in the 1988 Act was initially established under the Korea Land Institute, providing services such as feasibility studies. Later, PICKO was expanded to become the Public and Private Infrastructure Investment Management Center (PIMAC) by the 2003 Act under the Korea Development Institute (KDI) in order to provide a wide range of professional support for PPP projects and to conduct research on PPP policies as the demand for professional services increased and as experiences were accumulated. PIMAC consists of experts from various fields including economics, finance, accounting, law, engineering, urban planning, and more, and is providing various professional services throughout the entire PPP procurement process such as carrying out feasibility studies and VFM tests,¹⁰ formulating the Request for Proposal (RFP), evaluating proposals, and supporting negotiations. PIMAC also offers training programs for government officials, and explores cooperation opportunities with international organizations and foreign countries. In short, thanks to PIMAC, PPP implementation conditions are thoroughly considered, while transparency can be enhanced with a competitive bidding process for the selection of private partners.

Thirdly, the government has rendered strong support to stimulate investment in PPP projects. There are two types of support to the private sector: financial support and risk-sharing measures.

Fourthly, success in inviting foreign investors is also an important factor. Foreign investors are treated the same as domestic investors and further entitled to additional benefits including tax credits and financial support. Additional support for foreign investors is provided as follows:

When foreigners invest more than USD 10 million to build PPP facilities in a Foreign Investment Area, tax breaks are granted in the areas of corporate tax, income tax, acquisition tax, registration tax, and property tax.

When foreign exchange losses arise from loans in foreign currency for construction due to fluctuation in the foreign exchange rate, the government can offer subsidies or long-term loans.

For projects in which foreign investments account for a significant portion of the total investment, each foreign investor's position is respected to the fullest extent with respect to language and provisions for conflict resolution in the concession agreement.

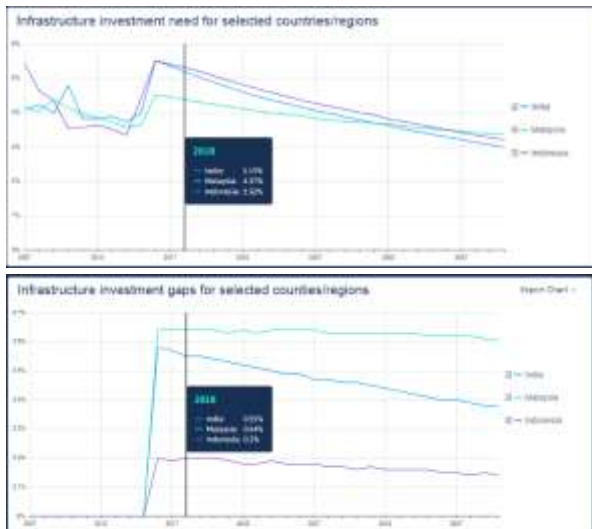
Lastly, since the recent financial crisis, Korea's PPP projects have been allowed to use flexible financing conditions. For example, for the financial security of the project, private partners need to maintain a minimum required equity ratio. Thus, during the construction period, project companies are required to maintain an equity ratio of at least 20 percent for a BTO project, or 5 percent or more for a BTL project. However, when the investment ratio of financial investors is above 50 percent of the total equity, the minimum required equity ratio during construction could be lowered from 20 percent to 15 percent. The concessionaire is also allowed to refinance according to changes in the macroeconomic environment, project risk, and so forth. Refinancing gain is shared between the concessionaire and the government to benefit both parties. The refinancing gain can be used to lower the user fee so that facility users can also benefit from refinancing. Financing through the Infrastructure Fund is also encouraged to diversify investor profile.

D. Comparison between India, Indonesia and Malaysia



It is estimated that India's infrastructure investment will be around 4.64% of the GDP compared to Indonesia's 5.12% and Malaysia's 3.73% in 2018.

In 2018 India will need 5.19% of GDP as investments in infrastructure whereas Malaysia and Indonesia will need 4.37% and 5.32% of GDP respectively.



As can be seen the gap between investment needed and current trend of investment in infrastructure is at 0.55% of GDP for India and 0.66% and 0.20% of GDP for Indonesia and Malaysia respectively.

The gap is expected to reduce for India and Indonesia but remain stagnant for Malaysia. From the above graphs it can be seen that future investment in infrastructure is expected to reduce as percentage of GDP

Being the second largest economy in ASEAN countries after Indonesia the government is taking initiatives to boost infrastructure investments.

XII. DIFFERENT INFRASTRUCTURE FINANCING METHODS USED IN OTHER DEVELOPING COUNTRIES

1. Revenue Bonds

An alternative infrastructure financing method is the issue of project-specific revenue bonds to finance new investment in landmark assets such as ports, national highways, electricity generation, water and sewage management, airports and rail transport. Revenue bonds provide finance that is designed to meet project cash flows and frequently use long-dated maturities, interest rates matched to the risk profile of the project and various currency denominations. Revenue bonds may be issued by the project company or government business enterprise on terms that limit bondholder's recourse to the assets and contracts being financed. To enhance the investment attractiveness of revenue bonds, yield may be fixed and supported by government guarantee, a revenue subsidy or a guarantee of redemption. Revenue bonds may be offered in tranches with various maturities, local and foreign currencies, various maturities, and with options to convert to equity at a future date. Revenue bonds have been widely used by private companies to finance infrastructure in the United States, Europe, Canada and Australia. Unlike private firm issues, public revenue bonds may not require independent credit ratings but rely on sovereign ratings held by national and provincial governments

and the revenue support options that are put in place by government. Revenue bonds have not been widely used in Asia and account for around 13% of private capital raisings for infrastructure, Project Finance International (PFI)

2. Sukuk Bonds

Islamic bonds, structured in such a way so as to generate returns to investors without infringing Islamic law (that prohibits payment of interest).

Sukuk represents undivided shares in the ownership of tangible assets relating to particular projects or special investment activity. A sukuk investor has a common share in the ownership of the assets linked to the investment although this does not represent a debt owed to the issuer of the bond.

In the case of conventional bonds the issuer has a contractual obligation to pay to bond holders, on certain specified dates, interest and principal. In contrast, under a sukuk structure the sukuk holders each hold an undivided beneficial ownership in the underlying assets.

Consequently, sukuk holders are entitled to a share in the revenues generated by the Sukuk assets. The sale of sukuk relates to the sale of a proportionate share in the assets.^[1]

Since the beginning of 2000, sukuk have become important Islamic financial instruments in raising funds for long-term project financing. The first sukuk were issued by Malaysia in 2000, followed by Bahrain in 2001. Since then sukuk have been used by both the corporate sector and states for raising alternative financing. While sukuk issuance was affected by the global financial crisis, since 2011, sukuk have been growing in popularity

More than ten Asian countries issued a total of USD 73.1bn in infrastructure sukuk between 2002 and the end of 2015, including Malaysia with 61% of the volume issued, followed by Saudi Arabia (30%) and the UAE (7%), countries which dominate the global market for infrastructure sukuk.

3. Monoline insurance

By definition, a "mono-line insurer" covers only a single line of insurance. Claims against the insurer will be paid only up to the amount of the capital held.

Mono-line wrapped bonds had risk and credit ratings that improved considerably as a result of being covered by a guarantee. It meant that default was a risk only in the event of insolvency of the insurer and not where the project itself ran into financial difficulties.

In India there should be a governmental agency (i.e. the National Highways Corporation or a large Private sector player) who avails of Mono-line Insurance to issue bonds specifically for Infra structure financing which can meet the requirements of long dated investors like pension funds and endowment agencies (i.e. CALPERS of the world) who can then look at investment options without worrying on the risk

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