Financing for Infrastructure Investment in G-20 Countries

Ramprasad Sengupta, Sacchidananda Mukherjee and Manish Gupta

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Ramprasad Sengupta[1]

Sacchidananda Mukherjee[2]

Manish Gupta[3]

[1] *Professor Emeritus of Economics, Jawaharlal Nehru University, New Delhi & Distinguished Fellow, India Development Foundation, Gurgaon, India. E-mail: rps0302@gmail.com, Mobile: +91 9871840681, 9899596614*

[2] *Associate Professor, National Institute of Public Finance and Policy (NIPFP), 18/2, Satsang Vihar Marg, Special Institutional Area, New Delhi – 110067. E-mail: sacchidananda.mukherjee@nipfp.org.in, Mobile: +91 9868421239, 9953978287*

3 Assistant Professor, National Institute of Public Finance and Policy (NIPFP), 18/2, Satsang Vihar Marg, Special Institutional Area, New Delhi – 110067. E-mail: manish.gupta@nipfp.org.in, Mobile: +91 9868452580

Abstract

This study looks into various sources of financing infrastructure and the demands for infrastructure investments and highlights the mismatch between demand and supply of funds for infrastructure financing in India. In order to address this mismatch, and given the constraints of traditional sources of infrastructure finance in India, this paper suggests credit enhancement scheme (CES) as an alternative framework for mobilizing long-term infrastructure finance. It suggests for scaling up CES as one of the options for leveraging global finance for long-term investment in infrastructure projects. The suggested scheme of credit enhancement could be scaled up at the G-20 level for mobilizing finance from sources which were earlier shying away from investing in infrastructure projects (e.g., pension and insurance fund). This study also suggests a possible structure for operationalizing this scheme at the G-20 level. The proposed scheme is not specific to G-20 countries, but could be used by other countries (including developing countries which have low sovereign ratings) to leverage long term finance for infrastructure sector.

Key Words: Infrastructure finance, Demand for infrastructure investment, Credit Enhancement Scheme, Sovereign risk rating, G-20, India.

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Financing for Infrastructure Investment in G-20 Countries

1. Introduction

The availability of (quantity and quality) infrastructure services determines the consumption and production frontiers of an economy (Fay et al., 2010),[1] while the long term investment in infrastructure facilitates the achievement of the growth potential of an economy.[2] The links between availability of infrastructure services and economic development and that between economic development and economic growth further reinforce the role of infrastructure in achieving economic growth for a country or region in the context. The assessment of gap in infrastructure availability[3] (i.e., the difference between the present stock of infrastructure and the desired stock corresponding to a level of economic activity as per some benchmark norm) is important in this context. It may mean the existing deficiencies in infrastructure in both quantitative and qualitative sense. Or, in the planning context this would mean the growth of the additional infrastructural stock required to support a target growth rate. The target of growth may be combined with changes in structural compositions (sector-wise and region-wise) and also urban-rural composition of the economy over a given planning horizon. Besides, the environmental strengthening of infrastructure for sustainability of the development process would constitute a further additionality of infrastructural demand. The difference between the end-date stock and actual stock at zero date of planning gives the gap of real facilities which are required to be made up for achieving the growth target. The financial investment requirement

[1] Availability of infrastructure facilities influences economic growth of a country through various channels (Agénor and Moreno-Dodson, 2006). The impact of infrastructure endowment and quality on growth and development indicators is well documented (Calderón and Servén, 2004). The relationship between infrastructure and economic growth is complex (Fay et al., 2010) and evidences from literature do not allow us to draw conclusion that more stock infrastructure leads to higher economic growth in uncertain terms (e.g., Calderón et al., 2011; Briceño-Garmendia et al., 2004; Romp and de Haan 2005; Seethepalli et al., 2008; Calderón and Servén, 2010). However, infrastructure plays a crucial role in facilitating the concerned countries to achieve high economic growth

[2] Many emerging markets and all low-income countries require a major step to increase in infrastructure investment to alleviate growth constraints, respond to urbanization pressures and meet their crucial development, inclusion and environmental goals (Bhattacharya et al., 2012).

[3] It is generally agreed that investment in new infrastructure projects is positively correlated with output and growth. However, despite the widespread agreement regarding the economic benefits of infrastructure investment, there remains a substantial deficit in new infrastructure investment globally (for further discussion on the infrastructure gap, see Asian Development Bank Institute, Infrastructure for a Seamless Asia (Tokyo, 31 August 2009); OECD, Infrastructure to 2030 – Volume 2: Mapping Policy for Electricity, Water and Transport (Paris: OECD Publishing, July 2007)).

would be the investment cost per unit of growth of the stock and the required quantum of accumulation of infrastructural real stock over the planning horizon. [4]

These estimates would require the following adjustments to obtain those of required investment and that of requirement of future mobilization of financial capital –

(i) the finance already mobilized for investment in ongoing projects which would be commissioned at a date in future during the planning horizon. The balance of finances required for the completion of the existing on-going projects is one component of the future financial requirement,

(ii) the financial requirement of projects which have to be initiated during the planning horizon for meeting the post-terminal requirement of growth. It is, however, the part of this requirement which will have to be spent during the concerned planning horizon.

(iii) the financial requirement of new projects which will be starting and be finished within the planning horizon.

The total investment requirement of all the three elements (i) to (iii) will thus depend on the growth rate targeted, pre-terminal and post-terminal growth rate, average gestation lag and investment cost per unit of infrastructural stock among others. In order to estimate the total financial requirement of such investment, one may take either a broad macro level top-down approach or a bottom-up approach in constructing the macro level aggregates from the sectoral project level data. A macro level model is based on behavioural relation between growth of infrastructural stock and the underlying determining factors of macroeconomic growth along with its structural pattern of change. Such model could be used for deriving the financial requirement of investment for future projection or prediction. On the other hand, the bottom-up approach will derive the aggregate requirement of investment from samples of project level data on infrastructural stocks and its composition.

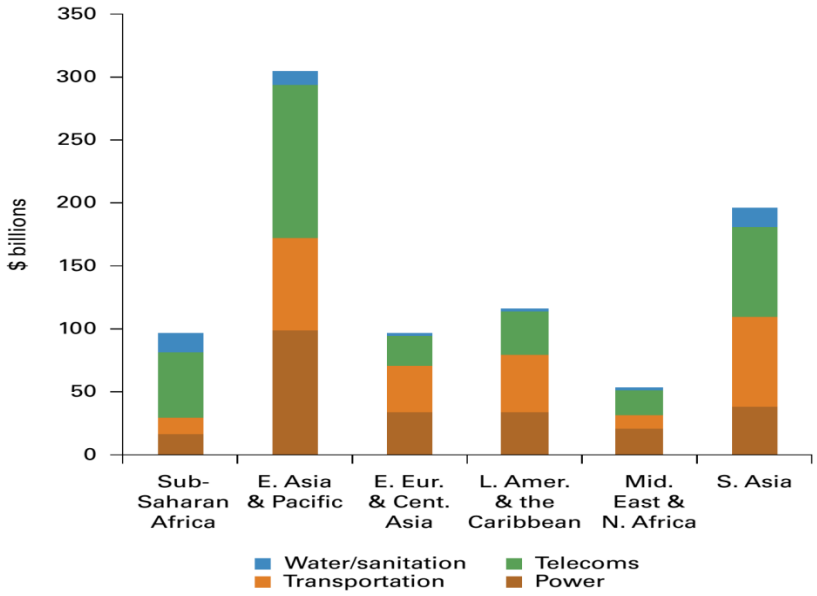
2. Global Overview of Infrastructural Investment

Figure 1 shows that the composition of future investment requirement (over next 20 years) for four major infrastructure sectors (power, transportation, telecoms and water and

[4] For example, Bhattacharya et al. (2012) estimates that the investment spending in infrastructure (excluding that on operation and maintenance) in developing countries will need to increase from the rate of current spending of approximately $0.8-0.9 trillion per year, to approximately $1.8-2.3 trillion per year by 2020, or from around 3percent of GDP to 6-8 percent of GDP.

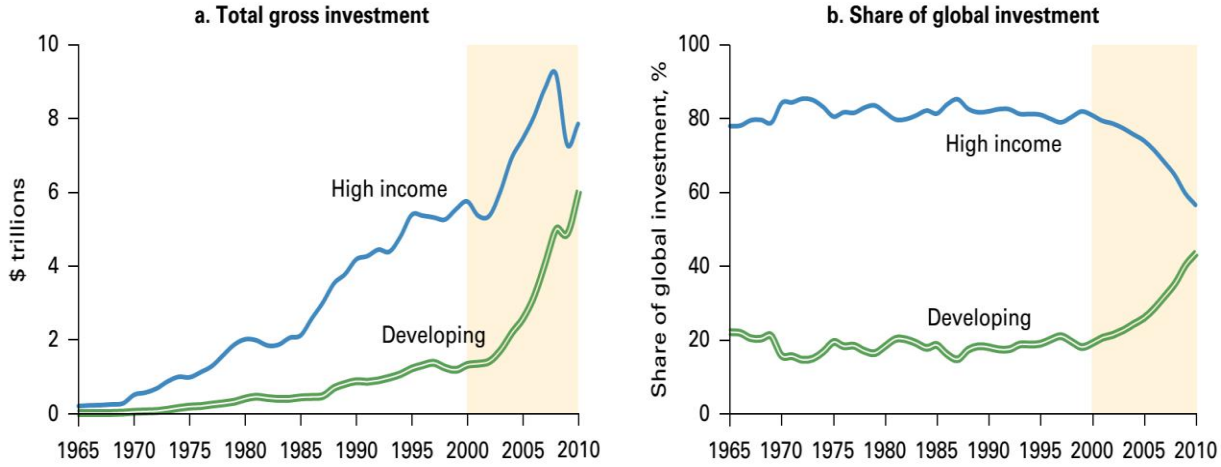
sewerage) will vary across the regions. Though gross investment in developing countries has gone up post 2000, the share of developing countries in global investment is yet to pick up (see Figure 2).

Figure 1: Region-wise Annual Infrastructure Needs Over the Next 20 Years (by 2030)



Source: World Bank (2013, p. 6)

Figure 2: Status of Investment in Developing and High Income Countries



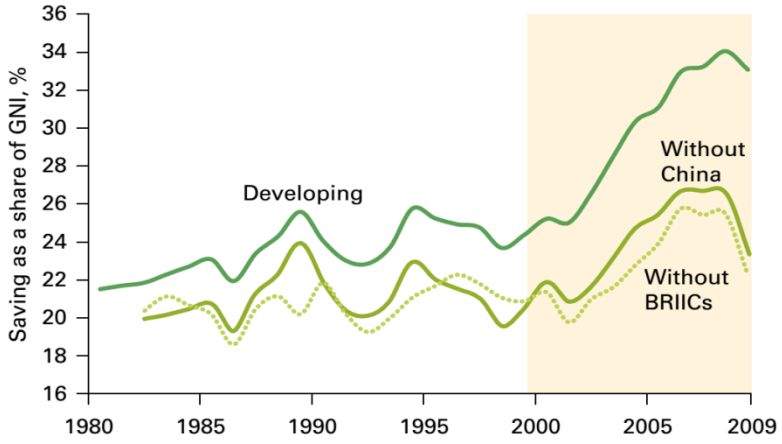
Source: World Bank (2013, p. 20)

On the supply side the major determining factor for infrastructure financing would be savings that can be mobilized from the various domestic sources and the foreign savings and the

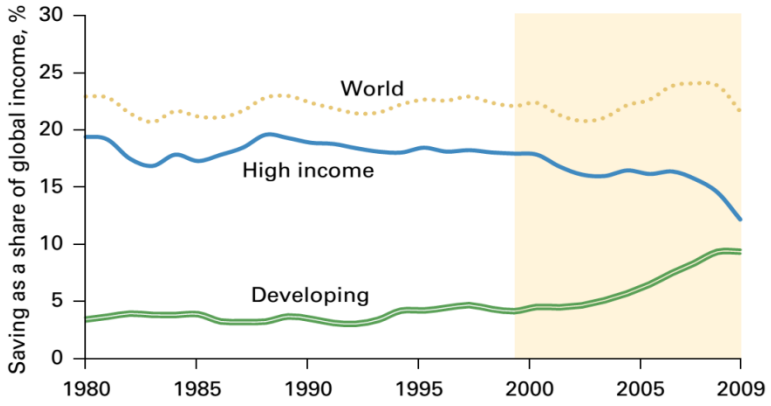
comparative rates of return from investment in the infrastructure vis-a-vis other sectors. The latter is again affected by the various risks and uncertainties involved in the infrastructural investments, whose understanding become crucial for infrastructural development planning.[5] Figure 3 shows the savings behavior of the various groups of countries and their respective shares in the global savings.

Figure 3: Savings Behavior of Developing and High Income Countries

a. Saving rates



b. Share of saving in global income

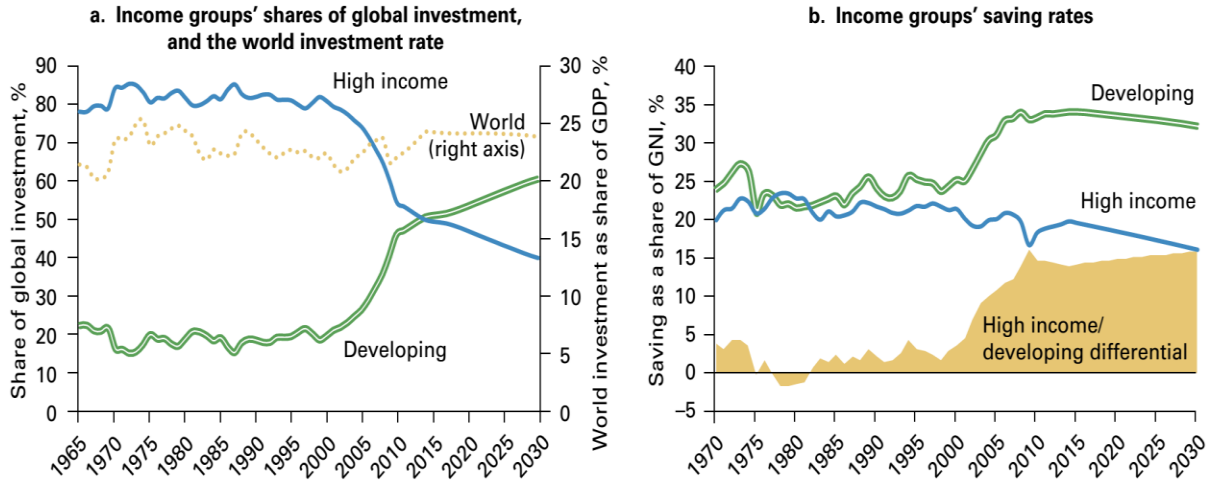


Source: World Bank (2013, pp. 63-64)

[5] The savings from developing and emerging countries could be used by developing and emerging countries (Figure 4). Currently they get very low returns from allegedly safe investments in developed countries bonds. The challenge is to transform the excess savings into stable, predictable and scaled finance while providing investors a safe high quality asset in terms of return to investment (Bhattacharya et al., 2012).

The risks associated with such investments may be defined at the country level as well as at the company or project level depending on the precise destination of investment. The G-20 forum could play a crucial role in mitigating country specific risks whereas Multilateral Development Banks (MDBs) could minimize the project or company specific risks through credit enhancements (or Partial Credit Guarantee).

Figure 4: South – South Cooperation in Global Savings and Investments



Source: World Bank (2013, p. 3)

These risks may in turn arise broadly for two reasons - (i) business environmental uncertainties including those relating to country, region, company or project specific factors, and (ii) social externalities of public good types of projects of infrastructure causing the basic divergence between private benefits and social benefits.[6] Since the flow of finance is contingent upon the revenue flows which may not capture the social benefit, the government policies and manner of intervention for bridging the gap often ends up with such constrained flow of finance that constitute a serious source of policy risk. In other words, public good characteristics of infrastructure projects make it in fact often difficult for private investors to capture all the benefits that accrued to society within their prospective revenue stream and therefore often the

[6] Bhattacharya et al. (2012) points out various types of risks during the different phases of the infrastructure project. They are – a) Macroeconomic risks, b) Political risks, c) Technical and preparation-phase risks, d) Construction-phase risks, e) Revenue risks and f) Operating risks. The risk-return profile of projects will change substantially both according to the nature of the project and according to the phase the project is in (Bhattacharya et al., 2012).

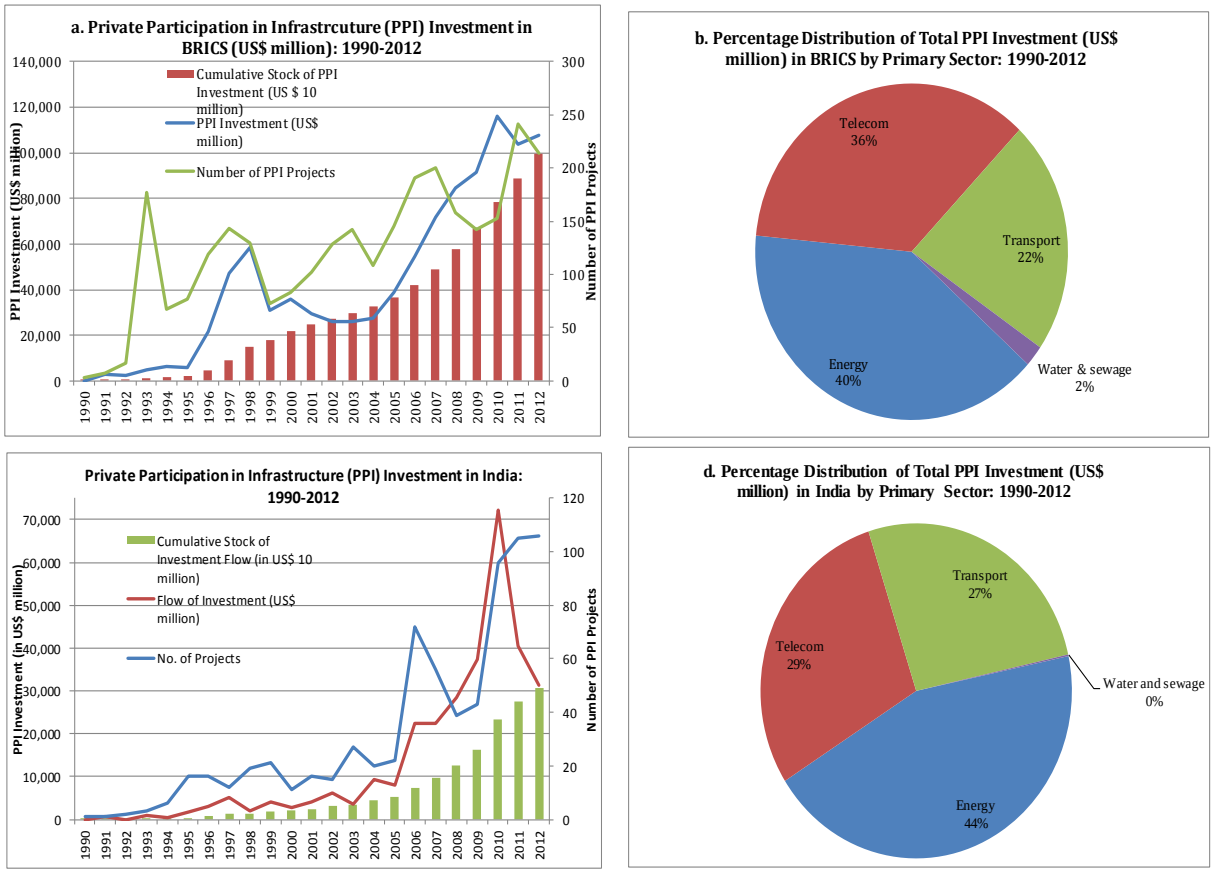
financial return on investment as compared to the real social return is found to be low.[7] Social benefits that would accrue to the society at large warrant often intervention of the Government particularly in public-private partnership projects.[8]

One may however, point out here that the Government of India provided viability gap funding since 2006, which was meant or targeted to enhance the financial viability of the competitively bid infrastructure projects (PPP ones) which are guaranteed by the economic rate of return (i.e., taking care of externalities generated by a project) but do not pass the standard thresholds of financial returns. In such cases Central Government may provide assistance up to 20 percent of capital cost to the PPP projects undertaken by any Central Ministry, State Government and local bodies. An additional grant up to 20 percent of the project cost can be further provided by the sponsoring Ministry, State Government or project authority. This would permit some leveraging budgetary resources to access a larger pool of private capital. Since private participation in infrastructure projects is low in India (Figure 5), this financing option is expected to generate interests among private infrastructure firms to take up PPP projects.

[7] Possible capturing of the social benefits within the prospective revenue stream could be through a levy of betterment charge or development fee (in terms of higher property tax, registration fee etc.) for infrastructure projects. Successful capturing of the land value / real estate price appreciation, due to infrastructure development in transport sector, could possibly supplement the prospective revenue stream of the projects.

[8] The issue of capturing the co-benefits of infrastructural development through simultaneous development of real estate, shopping centres, business centres could potentially be integrated within the road infrastructure development projects to garner financial resources to finance (self - financing) the infrastructural developments.

Figure 5: PPP Investment in BRICs and in India: 1990 – 2012



Source: Generated from World Bank's Private Participation in Infrastructure Database

3. Mobilization of Domestic Savings

The essential problem of financing infrastructural construction revolves around the balancing of demand and supply of financial resources for infrastructure. The investible resources of an economy has two components (a) domestic savings and (b) external savings flowing into the economy in the form of external commercial borrowings, equity capital and foreign direct investment. So far as the domestic savings is concerned, it contains three components:

(i) households savings

(ii) business or corporate savings which is essentially retained undistributed profit of the companies and

(iii) government budgetary surplus

However, what makes both India's and other developing countries' problem challenging is that the current revenue account budget runs into deficit to meet the huge budgetary need of welfare expenditure for the people which the government has to provide as part of the basic public good and public services. Cross country comparison shows that India's level of public spending on social sectors like education and health is low both in per capita terms and as a percent of GDP (Table 1). The deficit can be reduced either by reducing the expenditure or by raising tax revenues or by a combination of the two. These measures would create additional fiscal space for dealing with the deficits. However, cutting down on expenditures, would also result in a reduction in social sector expenditures which would be highly detrimental to the developmental interest of the common people. Raising revenue from taxes would raise the tax-GDP ratio and could provide fiscal space to reduce the deficits. Any budgetary or fiscal deficit thus causes a crunch on financial resources available for investment in infrastructure as well as other sectors. As the revenue deficit of the government is financed through mobilization of household savings both directly (through small savings) and indirectly (through issuance of government securities), an increase in the budgetary deficit would crowd out total savings that would be available for the infrastructure as well as other sectors. It is also expected that with the sustained growth of the economy the banking sector will have extra financial resources to invest in infrastructure through mobilization of domestic savings.[9]

[9] Additional savings that would be generated as a result of increase in per capita income (due to economic growth) could further supplement investment. In other words, additional savings would be available for investment along with growth in per capita income, given the saving and consumption behavior of the economy.

Table 1: Expenditure on Health and Education in 2010 in Selected Countries

Countries	Per capita public expenditure on (current US$)		Public expenditure on (as percent of GDP)	
	Health	Education	Health	Education
G20 Countries				
Argentina	478.26	528.06	5.24	5.78
Australia	3145.41	2896.11	6.07	5.59
Brazil	464.99	639.17	4.24	5.82
Canada	3732.66	2552.89	8.05	5.50
China	119.82	-	2.70	-
France	3520.79	2298.13	8.98	5.86
Germany	3558.17	2039.82	8.86	5.08
India	**14.72**	**47.04**	**1.04**	**3.32**
Indonesia	32.41	88.23	1.10	2.99
Italy	2493.94	1519.22	7.39	4.50
Japan	3394.43	1630.43	7.87	3.78
Korea, Rep. of	845.46	-	4.12	-
Mexico	275.47	463.15	3.10	5.21
Russia	394.86	-	3.69	-
Saudi Arabia	511.61	-	2.65	-
South Africa	289.54	425.54	4.06	5.96
Turkey	513.76	-	5.07	-
United Kingdom	2906.29	2268.22	7.98	6.23
United States	4061.88	2621.15	8.40	5.42
Neighbouring Countries				
Bangladesh	8.95	-	1.35	-
Nepal	14.57	28.13	2.44	4.72
Pakistan	9.82	23.43	0.96	2.29
Sri Lanka	37.29	47.18	1.55	1.97

Source: World Development Indicators, World Bank. http://data.worldbank.org/indicator/all (last accessed on 14 April 2014)

So far as the domestic savings are concerned, it is to be noted that it is only the part of financial savings and not physical savings which can be mobilized and deployed into infrastructural investment. A large amount of potential (yet unrealized) profit and savings remain blocked in the form of accumulation of physical stocks and inventories**.** Besides, the households and other savers often find holding / storing the savings or the surplus earned in the form of physical assets like gold or investment in real estates to be an economic way of hedging against

risk and uncertainty due to inflation and other factors.[10] The business sector savings are however mostly held/ stored in the form of financial assets which can be easily liquidated and used.

The total financial savings of the economy would be flowing to the various sectors including infrastructure after being intermediated through the money market or financial system of a country. The funds that reach the infrastructure sector through various channels as follows:

(i) Commercial banks
(ii) Non-banking financial corporations
(iii) Insurance companies
(iv) External commercial borrowings
(v) Equity and FDI from abroad

Each of these channels of flow of funds has to observe certain institutional norms or regulatory restriction in the interest of certain financial prudence and risk management. It may be first of all noted here that there was no major demand facing the financial system which required funds for infrastructural investment till the Tenth Five Year Plan period (2002-03 to 2006-07). As infrastructural investments were taking place mostly in the public sector, it is the budgetary sources and internal resources as generated within the public sector which could meet most of such financial needs. The situation drastically changed during the Eleventh Five Year Plan period (2007-08 to 2011-12) when share of private participation in infrastructural investment went up and the role of financial system in supplying debt finance for infrastructure assumed much greater importance. This trend is going to be accelerated during the Twelfth Five Year Plan (2012-13 to 2016-17) for meeting the financial need of growing infrastructural investment. Table 2 shows the changing ownership composition of such investment projects and that of financial sources.

The share of public investment in infrastructure has thus declined from two-third in the Eleventh plan to approximately half in the Twelfth Five Year Plan. The share of debt finance in the total financing requirement would correspondingly rise to almost 50 percent in the Twelfth

[10] To improve risk mitigating environment in the country, the Reserve Bank of India (RBI) has recently allowed foreign investors in debt instruments to hedge their currency exposure. The RBI is also working on to allow foreign institutional investors (FIIs) to hedge their currency risk by using exchange traded currency futures in the domestic exchanges. Source: http://businesstoday.intoday.in/story/rbi-allows-foreign-investors-to-hedge-currency-risks/1/204787.html (last accessed on 26 July 2014).

plan as consistent with the debt-equity or debt to non-debt ratio in the structure of financing of infrastructure as per the Eleventh FYP.

Table 2: Source-wise Projected Investment in Infrastructure

*(Rs. crores at **current prices**)*

Sectors	Total 11th Plan	2012-13	2013-14	2014-15	2015-16	2016-17	Total 12th Plan
1. Public	**1536773**	**457702**	**510707**	**570862**	**637497**	**714057**	**2890823**
Centre	856717	250758	280662	315217	354296	400129	1601061
States	680056	206944	230045	255645	283201	313928	1289762
2. Private	**887504**	**293310**	**376747**	**490455**	**648077**	**875251**	**2683840**
3. Total (1+2)	**2424277**	**751012**	**887454**	**1061316**	**1285573**	**1589308**	**5574663**
4. GDP (market price)	33604450	10150618	11645987	13358028	15347089	17661485	68163208
Investment as percent of GDP (mp)	**7.21**	**7.40**	**7.62**	**7.95**	**8.38**	**9.00**	**8.18**
Public Investment in Infrastructure	**1536773**	**457702**	**510707**	**570862**	**637497**	**714057**	**2890823**
Budgetary Sources (incl. equity)		234,954	253,832	274,658	297,719	323,384	1,384,547
Internal resource generation in PSEs		91,629	103,171	116,341	130,705	147,340	589,185
Borrowings		131,119	153,703	179,862	209,073	243,333	917,092
Private Investment in Infrastructure	**887504**	**293310**	**376747**	**490455**	**648077**	**875251**	**2683840**
Internal accruals or resource generation (incl. equity)		87,992	113024	152042	200904	271328	825291
Borrowings		205318	263723	338413	447172	603923	1858549
Total Investment	**2424277**	**751012**	**887454**	**1061316**	**1285573**	**1589308**	**5574663**
Share of Non-debt investment		414575	470027	543041	629328	742052	2799022
Share of Debt financing		336437	417426	518275	656246	847256	2775641
Share of Private Investment in Total Infrastructure Investment (%)	**36.61**	**39.06**	**42.45**	**46.21**	**50.41**	**55.07**	**48.14**

Note: The share of private sector investment in infrastructure was 19.8 percent in the 10th Five Year Plan
Source: Twelfth Five Year Plan, Vol. 1, pp. 89-90.

As debt financing is likely to be a major source of financial resource requirement for the infrastructural sector, it is important to note the compositional source of such debt finance for infrastructure during the Twelfth plan and also the major limitations of such sources. Table 3

shows how relative share and absolute levels of flows of debt finance would change over the years of the Twelfth plan and the resource gap between requirement and availability of such resources would grow over time. Table 3 shows that this gap will grow from Rs 91,918 crores in 2012-13 at current prices to Rs. 1,23,862 crore in 2016-17 resulting in a total five yearly gap of Rs. 5,10,451 crores for the Twelfth Five Year plan. This has been a major source of concern for the development planners in India.

Of the different sources, during the Twelfth Five Year Plan the shares of Bank credit, Non-Banking Financial Companies (NBFCs), Pension or Insurance Funds and External Commercial Borrowings (ECBs) for debt financing is projected to be 51.4 percent, 27.3 percent, 6.6 percent and 14.6 percent respectively as per table 3.

Table 3: Sources of Debt Financing

(Rs. crore at current prices)

	2012-13	**2013-14**	**2014-15**	**2015-16**	**2016-17**	**Total Twelfth Plan**	
Domestic Bank Credit	119066	162663	216015	285513	381389	1164646	*(51.4)*
NBFCs	56973	81027	112014	154124	214325	618462	*(27.3)*
Pension/Insurance funds	21681	25694	29602	33941	39331	150248	*(6.6)*
ECBs	46799	56020	65182	75484	88349	331834	*(14.6)*
Likely Total Debt Resources	**244519**	**325404**	**422813**	**549062**	**723394**	**2265190**	
Estimated Requirement of Debt	336437	417426	518275	656246	847256	2775641	
Gap between estimates & likely requirement	91918	92022	95462	107184	123862	510451	

Note: Figures in parenthesis refer to percentage share in total debt
Source: Twelfth Five Year Plan, Vol. 1, p. 91.

The domestic bank credit has been projected to be the largest supplier of debt finance to the infrastructure sector in the twelfth plan period. In the eleventh five year plan period the bank credit grew rapidly for financing the debt requirements of the infrastructural companies mainly through reducing the share of SLR in the total deposits as the banking system had often earlier invested more than the statutory requirement of SLR in the government securities for extra interest earning. However the unwinding of such excess money in SLR investment reduced the share of SLR investment in total deposits which came down from 47.3 percent in 2004-05 to 29 percent in 2011. The rise of credit to infrastructure raised bank's credit to deposit ratio, the share

of infrastructure in gross bank credit rose from 6 percent in March 2007 to 11 percent in March 2011 and to almost 15 percent as share of non-food credit in the same year. The trend as projected alone in table 3 about such growth of bank credit in the twelfth plan will supply half of the debt financing requirement of the infrastructure sector. However, such trend of rising share of infrastructural credit in the total bank loans is leading to several problems.

a) As infrastructural investments have often higher risk premium, the risky loans and advances in the economy are being concentrated in the banking sector. The low credit rating of these loans in general causes high interest costs on such advances to them.

b) The growing credit to infrastructure would tend to reach soon the sectoral exposure limit of 15 percent for infrastructure.

c) Besides, infrastructural loans are in general long term loan, while the bank deposits are mostly short term ones. As a result, there is a high probability of mismatch between the structures of asset and liability of bank's financial resources. This asset liability mismatch leads to serious problem in banking sector's financial management.

However, under such circumstances the credit growth by the domestic banks which are under public will depend on the growth of bank's retained earnings and raising more of bank's own capital. The latter is possible if the government dilutes its own shareholding in the public sector bank and mobilizes capital by such divestment or by way of infusing capital into the public sector banks to the extent permitted by the budgetary provisions. Government will have to fall back upon such method if particularly the public sector banks are under stress due to non-performing assets (NPA) and compulsion of writing off of bad loans.

Traditionally non-budgetary debt financing for infrastructure projects was almost exclusively done through loans from the commercial banks. PPP infrastructure projects in India depend on bank loans for over 80 percent of their debt. However, this longstanding means of infrastructure financing through loans from banks is no longer sustainable, as it would tend to crowd out investment projects of other priorities. In fact the banks do not have adequate resources to meet all the country's projected infrastructure financing needs and are also fast approaching their allowed sector exposure limit for infrastructure finance which is currently at 15 percent (Figure 6). Figure 6 shows the extent of commercial banks' lending to the

infrastructure sector. The rising share of infrastructure sector in total bank's non-performing asset in last two year (2011-12 and 2012-13) is a concern (Table 4).

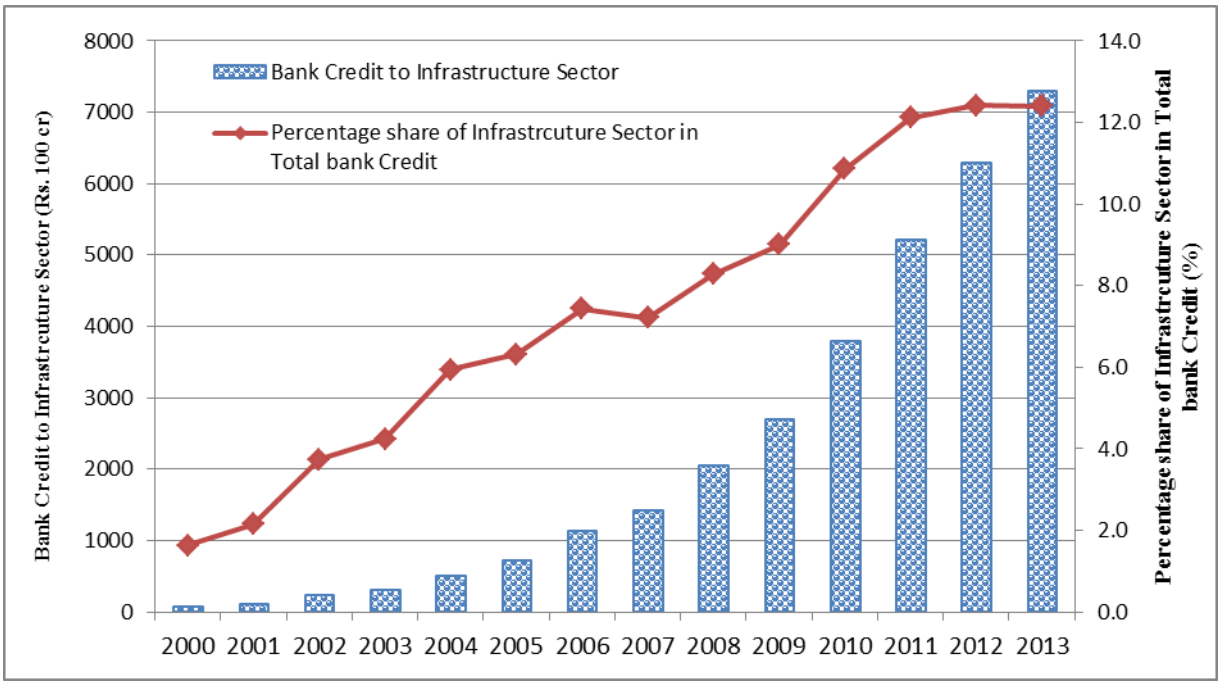
Table 4: Asset Quality of Infrastructure Loans by Scheduled Commercial Banks

(Rs. 100 Crore)

As on 31 March	2009	2010	2011	2012	2013
Total Bank Credit (A)	29,999.00	34,967.20	42,992.50	50,748.30	58,796.70
Total Bank NPAs (Gross) (B)	682.16	818.08	941.21	1,371.02	1,838.54
Total NPA to Total Bank Credit Ratio [(A/B)*100]	2.27	2.34	2.19	2.70	3.13
Infrastructure Sector					
Total Outstanding (Gross) Loans to Infrastructure (C)	2,618.00	3,816.12	5,371.08	6,164.40	7,860.45
Share of Infrastructure in total bank credit [(C/A)*100]	8.73	10.91	12.49	12.15	13.37
Total NPAs (Gross) in Infrastructure (D)	16.02	22.84	39.1	63.25	114.09
NPA to Credit Ratio for Infrastructure Sector [(D/C)*100]	0.61	0.60	0.73	1.03	1.45

Source: RBI's Statistical Tables Relating to Banks in India (2012-13) and http://www.rbi.org.in/scripts/BS_SpeechesView.aspx?Id=831 (accessed on 14 February 2014)

Figure 6: Exposure of Banking Sector in Infrastructure Financing in India



Source: http://www.rbi.org.in/scripts/BS_SpeechesView.aspx?Id=831 (accessed on 14 February 2014) and Handbook of statistics on the Indian Economy 2012-13, RBI

The Reserve Bank of India in the Financial Stability Report[11] has expressed concern that the annual growth rate of bank exposure to infrastructure was around 40 percent in the year 2010-11 (see Annexure 1 for detailed table). In recent years while the growth in exposure to infrastructure finance has moderated, with the current exposure is Rs. 7.3 lakh crore as on 31 March 2013 to the infrastructure sector (RBI, Handbook of Statistics on the Indian Economy, 2012-13). If country's private sector debt requirement for infrastructure (i.e., Rs. 5,10,470 crore for the 12th Five Year Plan)[12] is to be financed by commercial banks, it would further expand the exposure of bank lending to infrastructure sector.

The Non-Bank Financial Corporations (NBFCs) are the second most important source of debt financing of infrastructural projects in India. The major infrastructural finance companies (IFCs) have been PFC, REC, IDFC, IIFCL, L&T Infra and IFCI. The outstanding credit from such IFCs to infrastructure sector has increased at the CAGR of 28 percent per annum during 2008 to 2010. The PFC and REC which together constitute 80 percent of the lending by the IFCs had their outstanding credit growing at the annual rate of 27 percent per annum during the same period. As these institutions are in a better position to mobilise deposit resources for longer term and can lend also for long term infrastructural investment, they do not face the kind of asset liability mismatch problem that commercial banks often have to face. However, total capital resource base which these institutions can tap is limited as compared to the commercial banks since they cannot accept any arbitrary deposits from public unless specifically permitted. As a result they do not have a large variety of deposits from retail customers and cannot offer the kind of financial instruments or products as the commercial banks. Besides, the sectoral allocation of such sources of financial resources and sectoral exposures are quite restricted and confined to a few major infrastructural sectors like power, rural electrification, roads and ports, etc. by the regulators system. The high growth of such non-banking sources of institutional finance would in fact require further drive of capital mobilization such that the credit through this channel can grow approximately at the rate of 20 percent per annum as per the projections of the 12th Five Year plan.

The deficit in India's infrastructure requirement can however be met/ addressed by tapping into India's large resource pool of insurance and pension funds through bond market.

[11] Financial Stability Report, June 2011, Reserve Bank of India
[12] Twelfth Plan Document, Vol.1 Table 3.19, page 91.

However, these funds have not been fully utilized for financing infrastructure, a major constraint being that the statutory requirements require that these funds in the interest of social security reason could invest only in assets rated AA or above. However, infrastructure assets are typically rated for India fall between BBB– to A, at best.

3.1 Insurance Companies

It may be noted here that life insurance companies are required to invest 15 percent of their Life Fund in infrastructure and housing (5th Amendment of IRDA Investment Regulations, 2013). Although the Asset under Management (AUM) of life insurers in the Life Fund increased at a CAGR of 16.31 percent per annum, the share of infrastructure investments during the same period increased only marginally from Rs 69,837 crores to Rs 72,439 crores. at a CAGR of 1.25 percent per annum (see table 5). As a result the share of Infrastructure investments in the Life Fund has come down to 10 percent in 2009-10 vis-a-vis 15 percent in 2006-07. For Non-life insurers, the AUM however, increased at a rate of 9.62 percent per annum from Rs 50,383 crores in 2006-07 to Rs 66,372 crores in 2009-10 whereas the share of infrastructure investments increased continually from 12 percent in 2006-07 to 16 percent in 2009-10.

Table 5: Insurance - Investment in Infrastructure during 2007-08 to 2009-10

(Rs. crores.)

	Mar 07	Mar 08	Mar 09	Mar 10
Life Insurers (Life Fund)				
Asset Under Management as on	4,65,555	5,41,630	6,29,650	7,32,613
Infrastructure Investments	69,837	63,262	66,673	72,439
(percent share)	(15 %)	(12 %)	(11 %)	(10 %)
Non-Life Insurers				
Asset Under Management as on	50,383	56,280	58,893	66,372
Infrastructure Investments	6,102	7,660	8,980	10,373
(percent share)	(12 %)	(14 %)	(15 %)	(16 %)

Source: Working Sub-Group on Infrastructure (undated)

Insurance penetration is estimated to continue to rise, with the insurance premium growing from the current approximate of 4 percent of GDP to 6.4 percent of GDP by the end of the Twelfth Plan. Investment in infrastructure by the insurance sector has been projected in table 6 based on the past few years average investment by insurance companies (about 63 percent of premium income) after deducting commissions and expenses, and the infrastructure investment

as a share of the total insurance investment flows (of 6.2 percent). While there is much greater scope for channelizing insurance funds for infrastructure (which needs long-term funding) there are various prudential and regulatory constraints in the sector precluding this.

Table 6: Insurance - Projections for Infrastructure Financing

(Rs. crores)

	Mar-11	Mar-12	Mar-13	Mar-14	Mar-15	Mar-16	Mar-17
GDP Projections	78,77,947	90,16,310	1,03,19,167	1,18,10,287	1,35,16,873	1,54,70,061	1,77,05,485
Premium (% of GDP)	4.10%	4.40%	4.70%	5.10%	5.50%	5.90%	6.40%
Total premium	3,22,996	3,96,718	4,85,001	6,02,325	7,43,428	9,12,734	11,33,151
Total Investment	2,04,586	2,51,281	3,07,200	3,81,513	4,70,888	5,78,126	7,17,738
Infra Investment	12,562	15,429	18,862	23,425	28,913	35,497	44,069

Sources: *Working Sub-Group on Infrastructure (undated)*

Assumptions: 1. Advanced Estimates of GDP for FY11 based on Economic survey 2011

2. Premium as a percent of GDP for March 2011- 2017 based on estimates of Subgroup on Household Sector Savings

3. Investments estimates based on assumption of 63.14 percent of total premium collected towards investments

4. Investments into infrastructure based on assumption of 6.14 percent of total investments towards Infrastructure

Thus, going forward combined funds of Rs 1,50,766 crore may be available from insurers towards the infrastructure investments during the Twelfth plan, if insurance penetration grows rapidly and the pattern of investment in infrastructure continues as per the past few years' experience.[13] The funds available from the pension/insurance for the infrastructure sector as projected by the Twelfth Five year plan is Rs. 1,50,248 crore. The Report on the Working Group on Savings during the Twelfth Five Year plan has however, projected the total funds available from the insurance sector during the Twelfth five year plan period to be Rs. 1,47,960 crore.

These infrastructure projects, however, cannot particularly leverage funds from the insurance companies, pension funds and provident funds because of the IRDA and PFRDA guidelines which requires a minimum domestic AA rating for the projects. This shortfall in credit rating requirement can explain the discrepancy between the growth of Asset under Management (AUM) and that of investment flow into infrastructure. However, infrastructure projects on the other hand face multiple risks at the stages of construction, land acquisition, environmental clearances, and also for the reasons of financing and cost escalations, enforcement of property rights etc. As a result projects at the stage of inception get a low credit rating typically in the

[13] Based on the projections of the Working Sub-Group on Infrastructure, Infrastructure Funding Requirements and its Sources over the implementation period of the Twelfth Five Year Plan (2012- 2017).

BBB- category. Even after their commercial operations begin i.e., after the date of commissioning of the facilities, ratings may go up to BBB+ or A, at best, as observed in India.[14]

3.2 Overseas Market: External Commercial Borrowings (ECB)

Infrastructure companies can also tap external credit markets. The share of infrastructure investments in overall ECB borrowings has however gradually come down. The estimates of the external borrowings during 12th Five Year Plan are based on the five year averages (2006-07 to 2010-11) of the actual external borrowings.

Table 7: ECB Inflows to Infrastructure during 2006-07 to 2010-11

(USD Mn.)

	FY07	FY08	FY09	FY10	FY11
Total ECB inflow (USD Mn)	25,353	30,967	18,363	21,669	25,776
ECB flow to infrastructure (USD Mn)	6,211	10,156	5,223	2735@	
ECB flow to infrastructure as percent of total ECB	(24%)	(33%)	(28%)	(26%#)	

Source: RBI; Economic Survey 2010, Ministry of Finance;
Note: @ Data available only for first half of FY10; # Half yearly data annualized for estimating yearly percent share

However, the classification for infrastructure as per Ministry of Finance includes air transport (airplanes), and power equipment, which are not classified as Infrastructure Projects under the definition of either Planning Commission or RBI.[15] Further most of the infrastructure financing is of long tenor, whereas ECB availability is for lower time frame. Therefore, for the purpose of 12th Five Year Plan, 10 percent of ECBs are assumed to be channelized towards infrastructure investments. It is to be noted also that the extent of sectoral exposure to commercial borrowing in US$ or Rupees would depend on RBI's regulation and permission in view of all the prudential limits for capital adequacy, etc.[16] The total ECB/ FCCB borrowings at the country level have been projected at Rs 5,49,574 crores and therefore, the external funds

[14] It is also possible that the costs of some infrastructure projects which are on the revenue stream may be inflated to leverage additional finance than that is actually required. This jacking up of costs and other irregularities may not always get reflected into their credit ratings.

[15] For definition of Infrastructure please refer to the document at http://www.infrastructure.gov.in/pdf/doi.pdf (last accessed on 1 April 2014)

[16] It may be noted that there is an annual indicative ceiling of US$ 40 billion on ECBs. However, this should not be construed as a constraint to financing infrastructure projects. Further, there is a ceiling of US$ 25 billion for FII in corporate bonds (infrastructure companies), which so far has largely remained unutilized.

towards infrastructure funding is estimated at Rs 54,957 crores.[17] However, the 12th five year plan document and the Report on the Working Group on Savings during the Twelfth Five Year plan has projected the total funds for infrastructure sector through this route to be respectively Rs. 3,31,834 crore and Rs. 61,065 crore respectively.

3.3 Equity and FDI

The equity/ FDI during the first three years of 11th Five Year Plan were approximately 14 percent of the total investments made towards the infrastructure building whereas the overall debt contribution was 41 percent implying a debt equity ratio of 2.93:1. Assuming that the proposed infrastructure spending gets funded in the same ratio, the equity/ FDI available is estimated at Rs 4,55,414 crores. However, it would be pertinent to mention that Equity financing will be a key constraint for going forward – possibly even bigger than debt financing. A large part of equity investments relies on foreign investments with domestic investment institutions not coming in majorly at primary level for taking equity in infrastructure projects. Regulatory changes which will make projects commercially attractive are needed to draw adequate equity capital to infrastructure sectors. Also other changes like amendment in pension/Provident Fund regulations to allow investments in equity markets will be critical. The Working Group on Savings during the Twelfth Five Year plan has projected that Rs. 4,56,487 crore would be available during the plan period through equity and FDI while the 12th five year plan document projects availability of such funds to be Rs. 8,25,291 crore.

3.4 Total Funds Available (Equity & Debt)

Based on the above analysis, the total funds available from different sources apart from budgetary support is as given in table 8.

[17] Working Sub-Group on Infrastructure, Infrastructure Funding Requirements and its Sources over the implementation period of the Twelfth Five Year Plan (2012- 2017)

Table 8: Total Equity & Debt Funds Available

(Rs. crores.)

	Source	12th Plan Document	WG on Savings during 12th plan
1	**Total Debt** (a+b+c+d)	**2265190**	**1337508**
a)	Commercial Banks	1164646	744006
b)	NBFCs	618462	384477
c)	Insurance/Pension	150248	147960
d)	ECBs	331834	61065
2	**Equity/FDI**	**825291**	**456487**
3	**Total Funds (1+2)**	**3090481**	**1793995**

Source: Report of the Working Group on Savings during the Twelfth Five Year Plan (2012-13 to 2016-17), table 33, page 1193 and Twelfth Five Year Plan, Vol. 1 Page 90-91.

3.5 Funding Gap

The funds required during the 12th Five Year Plan to finance the infrastructure sector have been estimated at 55,74,663 crores.[18] Of the total requirement for the infrastructure Rs. 19,73,732 crore would come from the budgetary sources (both Central and State Governments) and the remaining has to be financed by debt and equity.

Table 9: Estimation of the Funding Gap

(Rs. crores)

	Particulars	12th Plan Document	WG on Savings during 12th plan
1	Total Investment Requirement @	**5574663**	**5574663**
2	Finances from Budgetary sources #	1973732	1973732
3	Total Debt (a+b+c+d)	2265190	1337508
	a. Commercial Banks	1164646	744006
	b. NBFCs	618462	384477
	c. Insurance/Pension	150248	147960
	d. ECBs	331834	61065
4	Equity/FDI $	825291	456487
5	Total Investment Available (2+3+4)	**5064213**	**3767727**
6	**Funding Gap (1-5)**	**510450**	**1806936**

Note: @ Total investment requirement is taken from the 12th five year plan document Vol 1, p.90;
Finances from budgetary sources is taken from the 12th five year plan document Vol 1, p.90;
$ Equity/FDI for the 12th Plan document comprises private internal accruals/equity
Source: Compiled by authors

[18] Twelfth Five Year Plan, Government of India

Taking into consideration the total requirement of funds for the infrastructure sector in India during the 12th five year plan, the amount available from budgetary sources and those available from Debt and Equity we estimate the gap in infrastructure finance requirement. This is illustrated in table 9. From the table one can see that the estimated Gap in financial requirement for the infrastructure requirement during the 12th five year plan would be in the range of Rs. 5,10,450 crore and Rs. 18,06,936 crore.

4. Financing the Funding Gap

Thus, as observed from above, during the 12th Five Year plan the funding gap in the public and private sources is expected to be in the range of Rs. 5,10,450 crore and Rs. 18,06,936 crore. A major challenge in infrastructure development is how to meet the funding gap.

There is in fact need to develop new and innovative methods and sources of mobilization resources for financing infrastructure sector to meet such challenge of funding gap. One of the options which can be explored and developed is the credit enhancement facility (or partial credit guarantee) for the projects of developing countries of the G-20 forum facing such serious fund limitation particularly for debt financing. By this new facility it is proposed to issue new bonds bearing a higher credit rating (AA, as required for attracting pension and insurance funds) than the actual level as otherwise assessed by the rating agencies. This facility of credit enhancement would be made operational only by the offer of guarantee by a financial institution and/or Multilateral Development Bank (MDB) to ensure no default for the promised return for the bond of such enhanced credit rating. The risk of any default of payment due to such enhancement of credit rating is thus shared by the guarantor and counter guarantor, if any by way of upfront payment.[19]

Given the level of development and deepening of capital market, provision for credit enhancement could be supplementary to other initiatives for mobilization of finance for infrastructure investment. One of such initiatives could be mobilizing domestic household savings to infrastructure sector directly. For example investment made in as well as incomes earned from long-term infrastructure bonds are exempted from personal income taxation, or

[19] The extent of risk sharing between the guarantor and project developer will be pre-decided before the executing of such agreement of credit enhancement and would vary from case to case.

investment incomes earned from Infrastructure Debt Funds are exempted from taxation to incentivize investment of financial resources into this channel.[20] In addition to the differential tax treatment for infrastructure investments or several other similar incentives, schemes could be thought of to mobilize household savings directly into infrastructure sector. The Union Budget 2014-15 has proposed Infrastructure Investment Trusts (InvIT) to mobilize domestic household savings through capital market. It is envisaged that such a scheme 'would reduce the pressure on the banking system while also making available fresh equity' (Budget Speech of Finance Minister, Union Budget 2014-15). It is also expected that with the deepening of Domestic Currency Bond Market, more India Infrastructure Exchange Traded Funds (ETFs) would be introduced in the capital market.

In India, development of bond financing of infrastructure is contingent upon availability of investment grade instruments and development of domestic bond markets. However, provision of credit enhancement of bonds issued by the infrastructure companies could possibly accelerate the flow of foreign debt in financing infrastructure projects. The inflow of foreign fund will depend upon demand for such credit enhanced products and the risks appetite of the foreign institutional investors. In addition to credit enhancement, the following measures could improve the investment grade of the projects:

- reforms in accounting and auditing of projects (e.g., stringent process of project appraisal and approval of projects in consistency with international best practices like eliminate gold-plating of project costs etc.),
- removing various uncertainties (which are mostly regulatory in nature),
- identification and selection of right infrastructure projects (e.g., selection of a stock of long-term 'bankable' infrastructure projects, standardization of the process and materials for the preparation of projects, and time limits on regulatory and environmental assessment processes),
- improvement in domestic investment climate (e.g., macroeconomic and political stability, providing certainty for investors in such areas as regulation, taxation, accounting and governance, freed from the 'uncertainties of the political cycle'),

[20] IDFs would raise resources from domestic as well as international capital market without a sovereign guarantee, albeit with some credit enhancement by the Government.

- addressing contractual challenges of dealing with the range of risks associated with the construction and operation of infrastructure projects,
- developing and deepening of capital markets,
- better pricing of infrastructural services, and
- adoption and deployment of technology to allow more efficient use of infrastructure (e.g., agency limitations, regulatory constraints, political willingness).

A number of initiatives have been taken by the Government to mobilize finance for infrastructure investment. These includes, among others (a) Infrastructure Debt Fund[21], (b) Long term Infrastructure Bond (sub-section 80CCF of Income Tax Act) (in addition to Rs. 1 lakh limit under section 80C of the Income Tax Act), (c) Amendment of regulation relating to the Insurance sector (5th amendment of the IRDA Investment Regulations, 2013), (d) Enactment of the new Land Acquisition Act and (e) Innovative role of Domestic Financial Institutions like IFCL, PFC. In addition to these the Reserve Bank of India had taken a number of steps to support investment credit flow to the infrastructure sector. Some of these measures are (i) Take-out Finance: Banks may enter into take-out financing arrangement with domestic FIs (IIFCL, IDFC etc.)[22], (ii) Enhancement of the credit exposure limit of the banks: At present the banks in India have a credit exposure limit of 15 percent of the bank's capital funds for single borrower and 40 percent of the bank's capital funds for group borrowers. The Reserve Bank of India in order to incentivize investment in the infrastructure sector has relaxed the credit exposure limits for the banks. Credit exposure limits of the banks have now been extended to 20 percent of the bank's capital for single borrower and to 40 percent of the bank's capital in case of group

[21] In order to encourage institutional investors with long term funding sources, Infrastructure Debt Funds (IDFs) have been allowed to be set up either as NBFCs or MFs. Scheduled commercial banks would be allowed to act as sponsors to IDF-MFs and IDF-NBFCs with prior approval from RBI. ICICI Bank and IDBI Bank have been granted approval to sponsor an IDF-NBFC each.

[22] Take-out financing is a method of providing finance for longer duration projects of about 15 years by banks sanctioning medium-term loans for 5-7 years. It is given that the loan will be taken out of books of the financing bank within pre-fixed period by another institution, thus preventing any possible asset-liability mismatch. After taking out the loan from banks, the institution could offload them to another bank or keep it. Under this process, the institutions engaged in long term financing such as IIFCL/IDFC agree to take out the loan from books of the banks financing such projects after the fixed time period, say of 5 years, when the project reaches certain previously defined milestones. On the basis of such understanding, the bank concerned agrees to provide a medium term loan with phased redemption beginning after, say 5 years. At the end of five years, the bank could sell the loans to the institution and get it off its books.

borrowers provided the additional capital exposure is on account of extension of credit to infrastructure projects, and (iii) Managing Asset liability mismatch: banks have been allowed to issue long term bonds with a minimum maturity of 5 years to the extent of their exposure of residual maturity of more than 5 years to the infrastructure sector.

In the 6th BRICS summit held in Fortaleza, Brazil in July 2014, the 5 nations signed the long-anticipated document to create the US$100 billion BRICS Development Bank and a reserve currency pool worth over another $100 billion. The BRICS Development Bank is a multilateral development bank will be operated by the BRICS countries (Brazil, Russia, India, China and South Africa) to foster greater financial and development cooperation among the five emerging markets. It is a small but significant step to fill the gap in infrastructure financing in developing countries. Out of the total initial capital of US$100 billion, China will contribute US$41 billion, Brazil, Russia and India would give US$18 billion each, and South Africa would contribute US$5 billion. It is scheduled to start lending in 2016. The initiative is expected to meet a part of growing financing requirements for infrastructure and other development projects in the BRICS countries and other developing countries.

One also needs to explore the possibilities of mobilizing additional finances for infrastructure from financial institutions (FIs) like the National Bank for Agriculture and Rural Development (NABARD), Small Industries Development Bank of India (SIDBI), National Housing Bank (NHB) and Export-Import Bank of India (EXIM bank). Though these financial institutions (FIS) have specific mandates to cater to specific sectors, one can explore the possibility or flexibility of their investment in infrastructure (Financial Stability Report, RBI, December 2013).

Given the constraints regarding the availability of resources for financing infrastructure, in the next section we explore an innovative method of mobilizing global finance for infrastructure sector in G-20 countries.

In the following section, study explores Credit Enhancement Scheme (CES) as one of the options of scaling up infrastructure finance where risks associated with individual projects are pooled together for credit enhancement. It is to be mentioned that risk rating associated with an infrastructure project is a function of several factors, among them user fees, risk sharing, cost overrun, property rights, and procurement are some of the important factors determining rating

of the project. Average rating of infrastructure projects in India is low due to these factors. Keeping in mind these shortcoming CES is explored as one of the alternative options to mobilize global financial resources for infrastructure investment in India and other Member countries of G-20. Unless appropriate measures are taken to weed out these shortcomings, the risk ratings of Indian infrastructure projects will remain low at least in the short or medium run. Keeping in mind these constraints, the present study proposes and explores the possibilities of scaling up CES as one of the alternative options for leveraging global finance for long-term investment in infrastructure projects.

5. Credit Enhancement Scheme (CES)

Credit Enhancement Scheme as practiced today in India is a Partial Credit Guarantee (PCG) provided by a credible financial institution (or a group of institutions) for upgrading the credit rating of a fully operational infrastructure project, so that it could attract domestic institutional investors (pension and insurance funds) to finance the infrastructure project's bonds.[23] The CES aims to improve the ratings of operational investment grade (on the Indian national scale) infrastructure projects, enabling them to access the domestic bond market and attract investors who could provide long term infrastructure finance. The proceeds of the bonds are solely used for partial repayment of their exiting debts/loans specific to the project for which bonds are issued. This in process releases a part of the financial capital blocked by initial lenders/ creditors of the project (banks and financial institutions) and enhances their capacity to finance other infrastructure projects (either greenfield or brownfield). However, this cannot be the only source of financing greenfield projects.

In India, the present financial regulatory system does not allow the pension fund and insurance fund to be invested in infrastructure projects which is having lower credit rating than the minimum requirement of AA rating. However, a majority of infrastructure projects in India have rating ranging from BBB- to A (on the Indian national scale).[24]As a result, they cannot attract funds flow from some of the domestic institutional investors (pension and insurance funds). The high probability of default (as reflected by their credit rating) also compels the

[23] The CES in India is still in the nascent stage and as per Economic Survey 2013-14, total amount sanctioned (cumulative) for bond issuance for four pilot projects under CES in the country by IIFCL is about Rs. 2200 crores (Government of India, 2014).

[24] Lower rating implies a wide range of risks at the individual project level including weak financial structures and possibilities of higher default.

borrowers (project developers) to pay high interest rate for the long term debt granted by the initial investors (mostly Commercial Banks and Financial Institutions) due to high risk premium.[25] The high cost of capital, long gestation period and revenue uncertainties of infrastructure projects are the major factors which discourage private investors to invest in infrastructure projects. Through the CES, infrastructure projects could raise capital at competitive interest rate from domestic bond market. *The CES does not have provision to provide PCG for greenfield projects. However, a suitable mechanism could be designed to provide PCG for greenfield projects as well to attract investors having larger appetite for risks.*

Risks at the construction stage of any infrastructure project are very different from those at the subsequent stage when the project comes on revenue stream. In relation to long-term infrastructure projects, the risk of default was typically greater in the early stages of project than at a later stage when the project generates a steady income stream. There are several factors which could ensure steady revenue stream for infrastructure projects - a) infrastructure is monopoly asset, b) users have little option/ choice (for not to use) , c) low risk when the project is completed. Therefore, clear and objective assessment of the time profile of the risks and their components is very important to design incentives for different finance providers at different stages of the project. *Different financiers could finance infrastructure projects in its different stages depending on their respective risk taking ability. In relation to different levels of risks, high risk taking financiers could finance greenfield projects whereas low risk taking financiers will enter when the project is on revenue stream.* The CES provides a guarantee for fully operational infrastructure projects, provided it meets certain criteria like Debt Service Coverage Ratio (DCR or DSCR) of greater than one.[26] The guarantor obviously absorbs a part of the underlying risk so that domestic institutional investors could buy the bonds of the projects. For existing operational infrastructure projects, CES would thus provide an opportunity for developer of infrastructure projects to swap high cost loans from banks by low cost bonds which will carry

[25] Having investment grade credit rating could help infrastructure firms to mobilize finance for their projects both from domestic as well as foreign investors. For example, Canada Pension Plan Investment Board (CPPIB) has agreed to invest over Rs. 2,000 crore in Larsen & Toubro Infrastructure Development Projects Limited (L&T IDPL), which is having [ICRA]AA (stable) credit rating as on May 2014 - http://www.icra.in/Files/Reports/Rationale/L&T%20Infrastructure%20Development_r_03062014.pdf.

[26] Debt Service Coverage Ratio (DCR or DSCR) is defined as the ratio of *profit to equity + depreciation + interest (i.e., gross return to capital employed)* and *amortized debt servicing requirement (inclusive of interest and principal repayment component).*

a lower interest rate due to guarantee for higher credit rating. As a further consequence of this swapping between bank loans and new bonds, there will be additional loanable funds available with banks (due to partial repayment received from infrastructure project developers).

Till now in India, *the CES aims to attract only the domestic institutional investors and the system cannot solve the growing investment demand in infrastructure sector fully. However, the system has capacity to scale up operation and attract foreign institutional investors provided sovereign rating is improved. The sovereign and company adjusted risk rating of the infrastructure projects needs to be upgraded to investable grade for attracting foreign investment.*

A lender is provided with reassurance, through credit enhancement, that a borrower will honour the obligation through additional collateral or third-party guarantee. The third-party guarantee or credit enhancement comes with a nominal fee (known as Credit Enhancement Fee or Guarantee Fee and it is shared between/ among partial Credit Guarantors depending on their respective share in risk sharing) and it is charged to the project developers.[27]

Since, the First Line of Partial Credit Guarantors cannot take on the entire risk while guaranteeing the bonds issued by the infrastructure project developers, the role of counter guarantors is very important as they will share a part of the underlying risk.

5.1 The Role of G-20 Forum

Different countries have different capacity to attract long-term infrastructure finance from abroad. The capacity depends on several factors and among them sovereign credit rating is one of the most important factors which determines the credit worthiness of a country.[28] Individual Member countries in G-20 which are unable to attract long-term infrastructure finance from abroad due to their low sovereign credit rating among others, could collectively approach for Credit Enhancement Scheme backed by Multilateral Development Banks (MDBs). *The G-20 could act as a facilitator and key negotiator on behalf of Member countries and help them to*

[27] In addition to the credit enhancement fee or the guarantee fee the project developers who are opting for the CES would also have to bear the costs of getting the project rated by domestic and international credit rating agencies, fee of the merchant bankers (who would do all the background for issuing such bonds in the international market), and also the costs associated with volatility of exchange rate. Since, there is no natural hedging available for such foreign exchange risks, it is expected that such risks have to be borne by the project developers only.

[28] Annexure 2 (Table A2) gives the country ratings of some of the countries of the world.

negotiate either individually or collectively with MDBs. On behalf of G-20 Member countries or countries participating for CES, G-20 secretariat could negotiate with MDBs. Collective negotiation could help individual Member countries to get competitive rate for credit enhancement or guarantee fee. If the entire CES management is outsourced to MDBs, due to their expertise in administration, availability of skilled manpower and infrastructure, strong balance sheet and high rating, and global exposures, the MDBs may charge an additional fee (also known lending spread) for managing/ administering the entire operation of CES. The collective negotiation could help to minimize the lending spread. For example, ADB charges an additional 40 basis point (100 basis point = 1 percent) as lending spread for administering the operation of ASEAN Infrastructure Fund.

Apart from this, MDBs could also assist individual Member countries to screen their infrastructure projects which will be taken up for credit enhancement at the G-20 level, and also could help individual project developers to meet the requirements (documentation and others) of international credit rating agencies'.

A scheme can be proposed in which individual member countries will maintain a portfolio of investible grade fully operational infrastructure projects along with their domestic and international credit ratings. The country (sovereign) and company adjusted risk ratings of all such infrastructure projects which fail to attract adequate financial resources can be taken up for credit enhancement by pooling their risks. In this context, the government or infrastructural financial institution(s) of the Member countries can act as First Line of Partial Credit Guarantors and MDBs can be a counter guarantor.

The proposed system is expected to release a part of capital locked in by domestic commercial banks and financial institutions in long-term infrastructure finance which could be used to finance greenfield infrastructure projects which requires high risk appetite of investors. Aggregate exposure of domestic commercial banks in infrastructure finance is very high in many Member countries in G-20 and often hits the maximum sectoral exposure limit set by their respective Central Bank. Given the exposure limit, higher liquidity at the hands of commercial banks will enable them to invest in greenfield projects where access to capital market credit is limited (as risk associated with investment is higher).

MDBs like Asian Development Bank (ADB) and World Bank are already investing in infrastructure projects and the fund flows through the normal country exposure window. *The role of the MDBs as envisaged in the proposed CES for the G-20 countries should be in addition to their role in financing development projects in each of the member countries.* In other words, the financial aid implication of such credit enhancing by the MDBs should be considered over and above the existing country or sovereign exposure limit.[29] The purpose of this scheme is not to constrain the country exposure limit of MDBs but to explore alternative options of leveraging additional private finance from sources like pensions and insurance funds for long term infrastructure investment. MDBs could also play important role in mobilizing and managing finance for infrastructure investment on behalf of G-20 Members. For example, IFC Asset Management Company (AMC) has mandate to raise and manage third-party capital and as on April 2014, it has raised US$ 6.3 billion, with capital commitments coming from sovereign wealth funds (SWF), government pension funds, private pension funds, bilateral DFIs and government, and other multilateral. AMC is in the process of raising similar funds for specific regions that will invest in infrastructure as well as other sectors (World Bank, 2014). ADB also host and manage the ASEAN Infrastructure Fund (AIF) apart from being a co-financier of the fund. ADB charges an annual fee of 40 basis points on the AIF assets to help cover the costs incurred by ADB in administering the AIF.[30]

5.2 Operational Implications

The creation of an institution for taking initiative of credit enhancement for such rating deficient infrastructure projects among the Member countries may be proposed at G-20 or global level. The risks associated with the infrastructure projects across Member countries can be pooled by such an institution and mobilize a consolidated fund by floating bonds (after upgrading/ enhancing the pooled credit rating) on behalf of such projects. The bonds will carry a rating higher than that indicated by their weighted pooled rating as per the evaluation of an international credit rating agency.[31] The institution could be a consortium of financial institutions already operating in different Member countries or could be a Multilateral Development Bank or

[29] Recently, World Bank has increased single borrower limit (SBL) by US $2.5 billion for Brazil, China, Indonesia, India and Mexico with an additional 50 basis point surcharge on the increment amount (World Bank, 2014).
[30] http://www2.adb.org/Documents/RRPs/REG/45097/45097-001-reg-rrp.pdf
[31] An assessment of the existing level of (risk weighted) guarantees of governments/banks/FIs in different G-20 countries could be important for providing leads on the scope of going forward.

a group of Development Banks etc. for the emergence of such kind of bond market in G-20.[32,33] In terms of actual operation, this would mean that the institution will float bonds for infrastructure finance to mobilize resources on behalf of a shelf of infrastructure projects (with rating deficiency) which may be located in any of the Member countries. Instead of individual country specific infrastructure bond a common infrastructure bond for G-20 countries will be floated for subscription. The system can be transparent enough in which the investors will know the ratings of the bonds, the issuance agency/institution of the bond and the credit guarantor(s) and also the project destination of finance. However, projects located in different countries require different level of credit enhancement; the credit guarantors will take account of this differences and charge differential guarantee fee accordingly. Since the differential guarantee fee is proposed in accordance with different credit enhancement requirement across countries the element of cross subsidization doesn't arise.

The emergence of such an institution within G-20 platform will require harmonization of rules and regulations across Member countries as well as willingness of the exiting financial institutions within these countries to form such a consortium/syndicate. The consortium should also have to be credit rated by an international credit rating agency which will depend on the credit ratings (or balance sheets) of the member financial institutions at least for the initial period of operations. The infrastructure projects that would be considered for selection for possible credit enhancement should meet a common set of criteria which would be framed by the consortium based on consensus among Member countries within G-20. These criteria may be Debt Service Coverage Ratio to be greater than one, or certain other institutional requirements of the financial regulatory system or financial practices etc. among others. It may be suggested that Member countries to screen projects within their jurisdiction before it is being sent to the

[32] "Role of MDB can also be enhanced by arrangement like risk-transfer or risk assumption agreement. The benefit of such a structure is that no change in the lender of record is envisaged, so that existing borrower relationships would not be adversely impacted. Under this structure, one MDB assumes the risk of principal and/or interest up to a pre-agreed amount for specific loans or for a synthetic loan portfolio in exchange for a similar assumption of risk from another MDB on specific loans or a synthetic loan portfolio. This will avoid the problem of portfolio concentration by sharing of project risks among MDBs and free up lending capacity of MDBs for greater lending in a particular country." – based on discussion with Reserve Bank of India

[33] The initiative could utilize strong balance sheets of MDBs in leveraging long-term investment in infrastructure. The role of IFC Asset Management Company (AMC) in raising third party capital could potentially help such initiative (World Bank, 2014).

consortium for possible consideration for credit enhancement and for the satisfaction of the common criteria.[34]

The extent of coverage of credit enhancement through such rating upgradation and the issue of cross country allocation of benefit of such credit enhancement facility should be left to the G-20 countries to decide.

The Member countries in G-20 will actually work as per the principle of Economic Union for this purpose (in attracting long-term infrastructure investment) and will agree to what would be the conditions for such credit enhancement. There is need for common framework in thinking among Member countries to conceptualize/ visualize such that uniform pattern of rules and regulations which will make credit enhancement facility collectively feasible and ensure credit enhancement. The experience of individual countries will help to formulate the guidelines which could be acceptable to all Member countries and will promote flow of funds across countries. Individual countries specially developing and emerging market economies may not be able to attract global savings,[35] but as a group under G-20 it could attract such sources of finance across countries provided such credit enhancement system is already in place. The forum will set normative rules by removing bottlenecks and ensure smoother movement of funds such that it should be operational and effective to attract long-term investment in infrastructure through such channel of credit guarantee among others.

The G-20 forum could also help/ enable the Member countries to meet the conditions of credit enhancement. Acceptance of different enabling conditions for developing and emerging market economies for credit enhancement as compared to developed countries will depend on the extent of investment opportunities and risk adjusted rate of return of infrastructure in the developing and emerging market economies vis-à-vis in the developed ones.

Reforms in global financial regulatory system are also crucial for enabling developing countries to meet the conditions set by the Credit Guarantors. Since G-20 is already working on

[34] Whether these projects required sovereign guarantee to float bonds in global capital market or not and if required, what would be the liability of the sovereign/ Government need thoughtful deliberations. Demand for sovereign guarantee will not only put additional pressure on Fiscal Situation of the concerned country/ sovereign but also put additional stress on Fiscal Responsibilities/ Budget Management targets. These are some of the issue which needs to be addressed.

[35] Due to their sovereign rating deficiency apart from deficiencies of pooled credit ratings of infrastructure projects.

global financial regulatory reforms, the reforms could be expedited through consensus among Member countries. Identification of indicators which improve the fundamental of macroeconomic foundation of a country is also very important for improving the country (sovereign) risk rating. There is also need for continuous effort from all the Member countries to address domestic financial sector regulatory reforms to weed out irregularities in financial operating system and to improve the transparency (e.g., placing credible accounting and auditing system,[36] removal of asymmetry of information, accountable governance system, removal of discrepancies, removal of political interventions, eradication of corruption) for confidence/ trust building. The realization of these conditions will also require a credible system of monitoring the performance of Member countries at the G-20 secretariat level in this respect.

For practicability and sustainability of such enhanced scheme of credit flows would however essentially require the member countries to strengthen the productivity conditions of the working of their infrastructural projects in the long run so that the upgraded ratings converge to their actual productivity driven rating. This requires that the concerned countries should address a number of issues relating to policy and legislation regarding land and natural resources, pricing and rules of allocation of such resources, pricing of the infrastructural services, solvency of the major customer sectors of infrastructural services, market development of infrastructural services, environmental and forest clearance depending on the ecosystem service conservation policies, etc. We can list some of them as follows:

1) Land use, land acquisition law, land rights etc.
2) Natural resource usage and pricing
3) Rational allocation of such natural resources as gas, water, coal supply etc.
4) Removal of wasteful subsidy in natural resource pricing
5) Environmental and forest clearance of projects in the light of eco-service conservation policies
6) Market development for gas, retail distribution of electric power etc.
7) Solvency condition of the major customer of public good supply sector like distribution companies in electricity

[36] In Budget 2014-15 speech, Finance Minister of India has encouraged Indian companies to adopt new Indian Accounting Standards (Ind AS) from the financial year 2015-16 voluntarily, as adoption of the accounting standard will be mandatory from the financial year 2016-17. The new Indian Accounting Standards will be in line with International Financial Reporting Standards (IFRS).

8) Creating competitive conditions in the natural monopoly area of infrastructural service provision which can be resolved by appropriate legislative and regulatory policy measures.
9) Risks associated with exchange rate volatility
10) Delay in project approval and clearances by the authorities
11) Poor project delivery
12) Regulatory changes and uncertainties.

All these would in fact essentially strengthen the productivity conditions by removing policy risks of the projects by eliminating sources of uncertainty and risks which would have an impact on the overall conditions of productivity and cash flow of the projects. It would be important for the countries at G-20 level to come together to an agreement regarding a common agenda for resolving the above issues. There has to emerge an arrangement of monitoring cum reporting of progress by the Member countries on such issues which would strengthen the fundamentals of financial resource flow into the infrastructure sector in these countries.

It is this credit enhancement schemes of financial resource supply to channelize more resources and the institutional and regulatory reforms for upgrading the macroeconomic condition and resource and sector specific reforms measure which all together can enhance the prospect of better financial resource flow for infrastructural investment. G-20 forum can provide the necessary leadership and coordination for marking the introduction of such innovative measures of financial resource enhancement and strengthening the basic productivity of projects by mitigating risks and uncertainties.

6. International Experience

However, the proposed CES is one such scheme where innovative way to mobilizing finances for infrastructure projects could be thought of. Several other innovative experiments for mobilizing investment for long-term finances for infrastructure is already undergoing in many parts of the world. India and other Members of G-20 could either be part of such experiments and/or could start an initiative to launch a Credit Enhancement Scheme as proposed here. However, the lessons learnt from such experiments would be helpful in exploring and developing

more such innovative ways to leverage finance for infrastructure sector. A few of such initiatives are highlighted below:[37]

European 2020 project Bond Initiative:[38] The initiative aims to attract financing for major infrastructure projects (in key strategic EU infrastructure in transport, energy and broadband) by enhancing the credit rating of the senior debt of project finance companies. The initiative would provide this credit support either by guaranteeing the debt service payments of such bonds or by the EU taking a subordinated position in the project.

ASEAN Infrastructure Fund (AIF): The AIF will lend for long-tenor sovereign or sovereign-guaranteed infrastructure projects, including public portions of PPP projects, beginning in 2012.[39] Every sovereign or sovereign-guaranteed project financed by the AIF will also be co-financed by ADB. The loan proceeds will be provided through ADB as the lender of record for the AIF. The AIF will begin its operations with equity contributions provided by nine ASEAN shareholders (they are Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, the Philippines, Singapore, Thailand and Vietnam) and ADB. Total equity contribution AIF will be US$647.2 million, of which US$ 335.2 million will be contributed by the nine ASEAN shareholders and US$ 150.0 million by ADB in three tranches and another US$ 162.0 million will be mobilized through hybrid capital (perpetual bonds). The AIF aims to mobilize infrastructure finance through issuance of bonds (backed by high investment grade rating and sufficient liquidity) targeting foreign exchange reserves of the ASEAN region (as on January 2011, it was US$ 700 billion). Therefore, the debt part of the AIF's capital structure is expected to be held by various investors including Central Banks of ASEAN countries. The AIF has granted US$ 25 million loan to fund power links in Indonesia and it is the first project of AIF (ADB, 2013).[40] The project will expand transmission network from Java to Bali and address system deficiencies that have resulted in widespread power outages and blackouts. Estimated total cost of the project is US$ 410 million and a part of the project cost will be met by a loan from ADB apart from investments from the Government of Indonesia.

[37] Please note that most of these initiatives are at the nascent stage of their formulation and/or implementation and it requires continuous tracking of these initiatives to learn from their experiences.
[38] http://ec.europa.eu/economy_finance/financial_operations/investment/europe_2020/index_en.htm
[39] http://www2.adb.org/Documents/RRPs/REG/45097/45097-001-reg-rrp.pdf
[40] http://www.adb.org/news/indonesia-power-project-marks-first-loan-asean-infrastructure-fund

National Infrastructure Bank, USA: A proposal is muted to promote an infrastructure bank that would use $10 billion in public money to leverage private investment. The objectives of the NIB would be to - a) increase total investment in infrastructure by encouraging new investment from nonfederal sources; b) improve project selection by insulating decisions from political influence; and c) encourage new investment with relatively little effect on the federal budget through a mostly self-sustaining entity. The federal government already uses a wide range of direct expenditures, grants, loans, loan guarantees, and tax preferences to expand infrastructure investment. A national infrastructure bank would be another way to provide federal credit assistance, such as direct loans and loan guarantees, to sponsors of infrastructure projects.[41]

IFC Global Infrastructure Fund: The fund has raised US $ 1.2 billion from sovereign and institutional investors to make equity and quasi-equity investments in infrastructure projects in developing countries. The fund aims to support about US$ 18 billion in infrastructure investment over the next five years, and the same time making good risk-adjusted returns for investors.[42]

Asia Infrastructure Investment Bank: A proposal has been mooted by China to set up an infrastructure bank with an initial capital of US$ 50 billion. The fund mostly will come from China. In addition to investment in infrastructure, the objective of the bank would be to promote "mega free-trade area" in Asia.

7. Conclusion

This study looks into various sources of financing infrastructure and the demands for infrastructure investments and highlights the mismatch between demand and supply of funds for infrastructure financing in India. In order to address this mismatch, and given the constraints of traditional sources of infrastructure finance in India, this paper suggests credit enhancement scheme (CES) as an alternative framework for mobilizing long-term infrastructure finance. It suggests for scaling up CES as one of the options for leveraging global finance for long-term investment in infrastructure projects. The suggested scheme of credit enhancement could be

[41]http://www.cfr.org/infrastructure/congressional-research-service-national-infrastructure-bank-overview-current-legislation/p26939

[42]https://www.g20.org/sites/default/files/g20_resources/library/Optimizing%20World%20Bank%20Group%20Resources%20and%20Supporting%20Infrastructure%20Financing.pdf

scaled up at the G-20 level for mobilizing finance from sources which were earlier shying away from investing in infrastructure projects (e.g., pension and insurance fund). This study also suggests a possible structure for operationalizing this scheme at the G-20 level. The proposed scheme is not specific to G-20 countries, but could be used by other countries (including developing countries which have low sovereign ratings) to leverage long term finance for infrastructure sector.

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Annexure 1

Table A1: Growth in Bank Credit to Infrastructure Sector

(Rs. 100 Crore or billion)

Industry	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Total Bank Credit	4434.7	5256.8	6457.4	7392.3	8641.4	11508.0	15168.0	19812.0	24769.0	29999.0	34967.2	42992.5	50748.3	58796.7
Credit to Industries	2001.3	2188.4	2295.2	2955.6	3130.7	4231.4	5504.4	6973.4	8583.4	10543.9	13114.5	16046.0	19374.0	22302.0
of which														
Credit to Infrastructure	72.4	113.5	241.3	313.3	513.1	727.0	1128.3	1429.9	2053.3	2699.9	3798.9	5214.0	6300.0	7297.0
a) Power	32.9	52.5	167.0	220.5	337.5	429.6	601.3	733.0	950.8	1244.5	1878.4	2666.0	3309.0	4158.0
b) Tele-communications	19.9	36.4	39.7	41.1	84.1	129.6	184.6	196.2	382.8	503.3	593.6	933.0	940.0	878.0
c) Roads and Ports	19.6	24.6	34.6	51.7	91.6	167.8	197.0	250.5	344.8	470.6	735.7	906.0	1109.0	1313.0
d) Other Infrastructure		-	-	-	-	-	145.5	250.2	375.0	481.6	591.2	709.0	941.0	948.0
Share of Credit to Infrastructure as a percent of total credit to industry	**3.62**	**5.19**	**10.51**	**10.60**	**16.39**	**17.18**	**20.50**	**20.50**	**23.92**	**25.61**	**28.97**	**32.49**	**32.52**	**32.72**
Share of Credit to Infrastructure as a percent of total Bank credit	**1.63**	**2.16**	**3.74**	**4.24**	**5.94**	**6.32**	**7.44**	**7.22**	**8.29**	**9.00**	**10.86**	**12.13**	**12.41**	**12.41**

Source: Handbook of Statistics on the Indian Economy, 2012-13

Annexure 2

Table A2: Credit Ratings by Agency and Country (as on 1 March 2013)

Country	S&P Rating	S&P Outlook	Moody's Rating	Moody's Outlook	Fitch Rating	Fitch Outlook	Country Group
Argentina	B-	NEG	B3	NEG	CC	NEG	G20
Australia	AAA	STA	Aaa	STA	AAA	STA	G20
Brazil	BBB	STA	Baa2	POS	BBB	STA	G20
Canada	AAA	STA	Aaa	STA	AAA	STA	G20
China	AA-	STA	Aa3	POS	A+	STA	G20
France*	AA+	NEG	Aa1	NEG	AAA	NEG	G20
Germany*	AAA	STA	Aaa	NEG	AAA	STA	G20
India	**BBB-**	**NEG**	**Baa3**	**STA**	**BBB-**	**NEG**	**G20**
Indonesia	BB+	POS	Baa3	STA	BBB-	STA	G20
Italy*	BBB+	NEG	Baa2	NEG	A-	NEG	G20
Japan	AA-	NEG	Aa3	STA	A+	NEG	G20
Korea, Rep. of	A+	STA	Aa3	STA			G20
Mexico	BBB	STA	Baa1	STA	BBB	STA	G20
Russia	BBB	STA	Baa1	STA	BBB	STA	G20
Saudi Arabia	AA-	STA	Aa3	STA	AA-	STA	G20
South Africa	BBB	NEG	Baa1	NEG	BBB	STA	G20
Turkey	BB	STA	Ba1	POS	BBB-	STA	G20
United Kingdom*	AAA	NEG	Aa1	STA	AAA	NEG	G20
USA	AA+	NEG	Aaa	NEG			G20
Austria	AA+	STA	Aaa	NEG	AAA	STA	EU
Belgium	AA	NEG	Aa3	NEG	AA	STA	EU
Bulgaria	BBB	STA	Baa2	STA	BBB-	STA	EU
Croatia	BB+	STA	Ba1	STA	BBB-	NEG	EU
Cyprus	CCC+	NEG	Caa3	NEG	B	NEG	EU
Czech Republic	AA-	STA	A1	STA	A+	STA	EU
Denmark	AAA	STA	Aaa	STA	AAA	STA	EU
Estonia	AA-	STA	A1	STA	A+	STA	EU
Finland	AAA	STA	Aaa	STA	AAA	STA	EU
Greece	B-	STA	C		CCC		EU
Hungary	BB	STA	Ba1	NEG	BB+	STA	EU
Ireland	BBB+	STA	Ba1	NEG	BBB+	STA	EU
Latvia	BBB	POS	Baa3	POS	BBB	POS	EU
Lithuania	BBB	STA	Baa1	STA	BBB	STA	EU
Luxembourg	AAA	STA	Aaa	NEG	AAA	STA	EU

Table A2: Credit Ratings by Agency and Country (as on 1 March 2013) (contd)

Country	S&P Rating	S&P Outlook	Moody's Rating	Moody's Outlook	Fitch Rating	Fitch Outlook	Country Group
Malta	BBB+	STA	A3	NEG	A+	STA	EU
Netherlands	AAA	NEG	Aaa	NEG	AAA	NEG	EU
Poland	A-	STA	A2	STA	A-	POS	EU
Portugal	BB	NEG	Ba3	NEG	BB+	NEG	EU
Romania	BB+	STA	Baa3	NEG	BBB-	STA	EU
Slovakia	A	STA	A2	NEG	A+	STA	EU
Slovenia	A-	STA	Baa2	NEG	A-	NEG	EU
Spain	BBB-	NEG	Baa3	NEG	BBB	NEG	EU
Sweden	AAA	STA	Aaa	STA	AAA	STA	EU
Bangladesh	BB-	STA	Ba3	STA			AN
Malaysia	A-	STA	A3	STA	A-	STA	AN
Pakistan	B-	STA	Caa1	NEG			AN
Philippines	BB+	POS	Ba1	STA	BB+	STA	AN
Sri Lanka	B+	STA	B1	POS	BB-	STA	AN
Thailand	BBB+	STA	Baa1	STA	BBB	STA	AN
Vietnam	BB-	STA	B2	STA	B+	STA	AN

Notes: STA - Stable, NEG - Negative, POS - Positive
G20 - individual member in G-20
EU - members in European Union. EU is member of G-20.
AN - Asian Neighbours of India
*- Apart from being member of EU, these countries hold individual membership in G-20
Source: http://www.theguardian.com/news/datablog/2010/apr/30/credit-ratings-country-fitch-moodys-standard#data

Table A3: Details of Ratings

TE	S&P	Moody's	Fitch	
100	AAA	Aaa	AAA	Prime
95	AA+	Aa1	AA+	High grade
90	AA	Aa2	AA	
85	AA-	Aa3	AA-	
80	A+	A1	A+	Upper medium grade
75	A	A2	A	
70	A-	A3	A-	
65	BBB+	Baa1	BBB+	Lower medium grade
60	BBB	Baa2	BBB	
55	BBB-	Baa3	BBB-	
50	BB+	Ba1	BB+	Non-investment grade speculative
45	BB	Ba2	BB	
40	BB-	Ba3	BB-	
35	B+	B1	B+	Highly speculative
30	B	B2	B	
25	B-	B3	B-	
20	CCC+	Caa1	CCC	Substantial risks
15	CCC	Caa2		Extremely speculative
10	CCC-	Caa3		In default with little prospect for recovery
	CC	Ca		
5	C	C		
0	D	/	DDD	In default
		/	DD	
			D	

Source: http://www.tradingeconomics.com/country-list/rating