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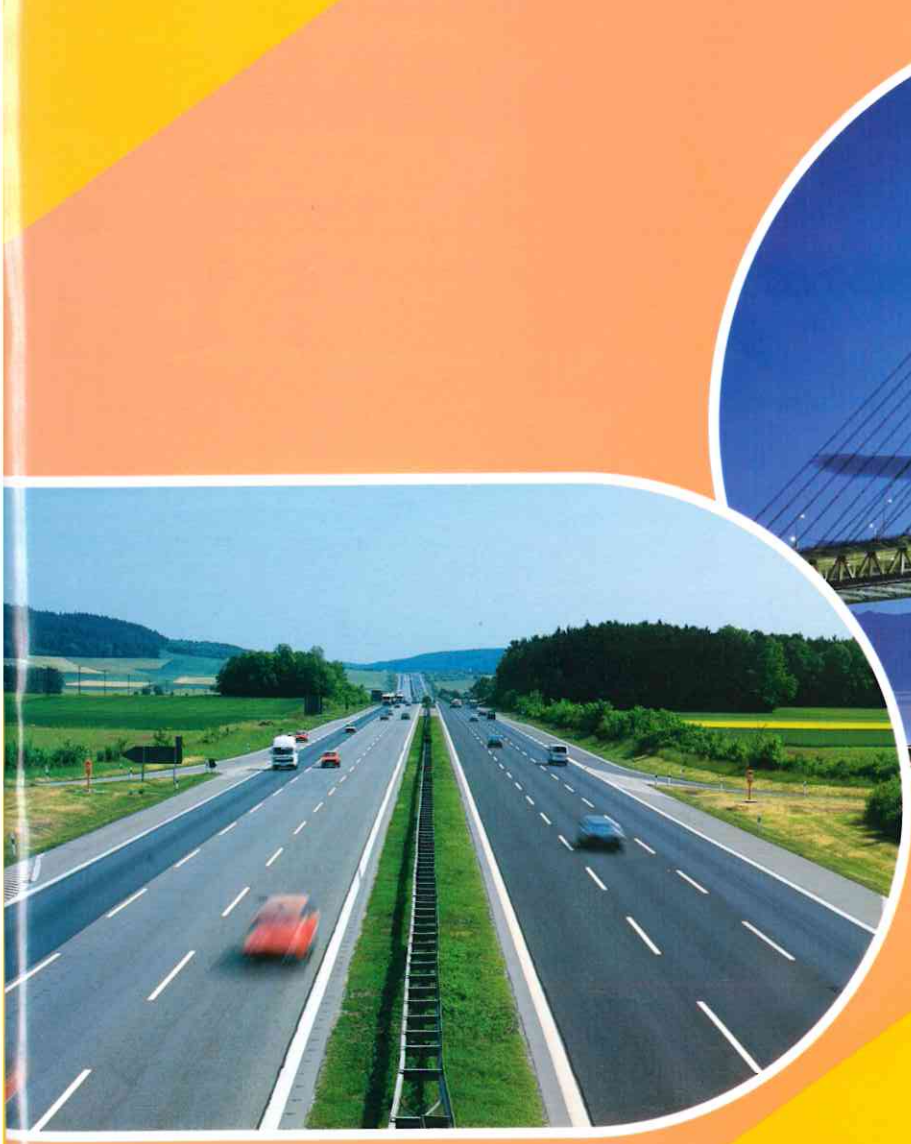
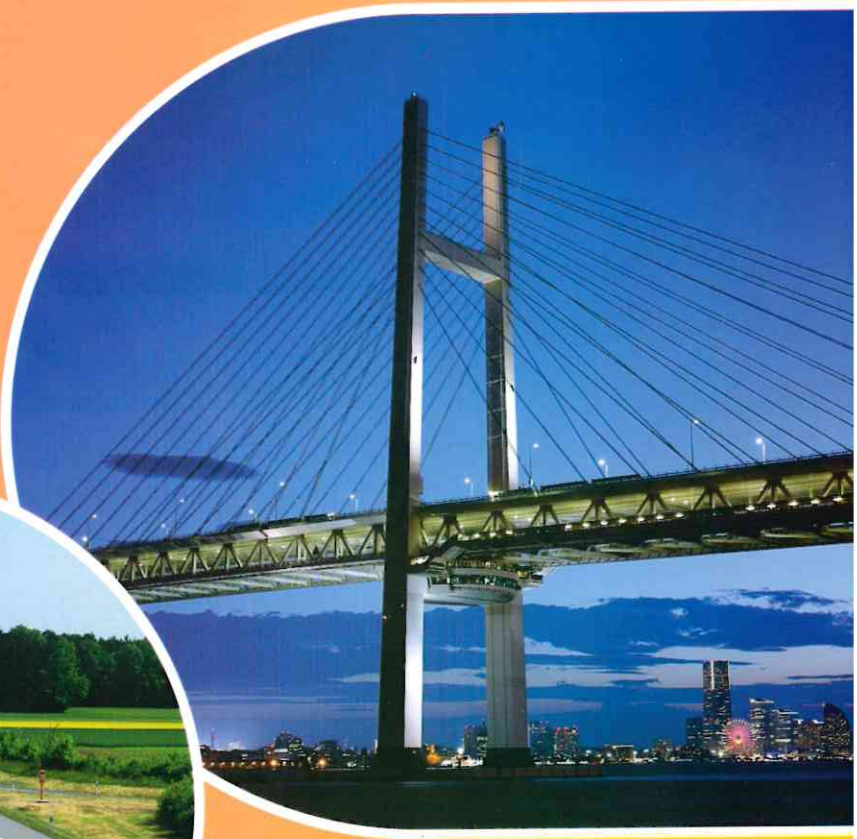
Analysis of Infrastructure Investment in India





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THE ASSOCIATED CHAMBERS OF COMMERCE AND INDUSTRY OF INDIA

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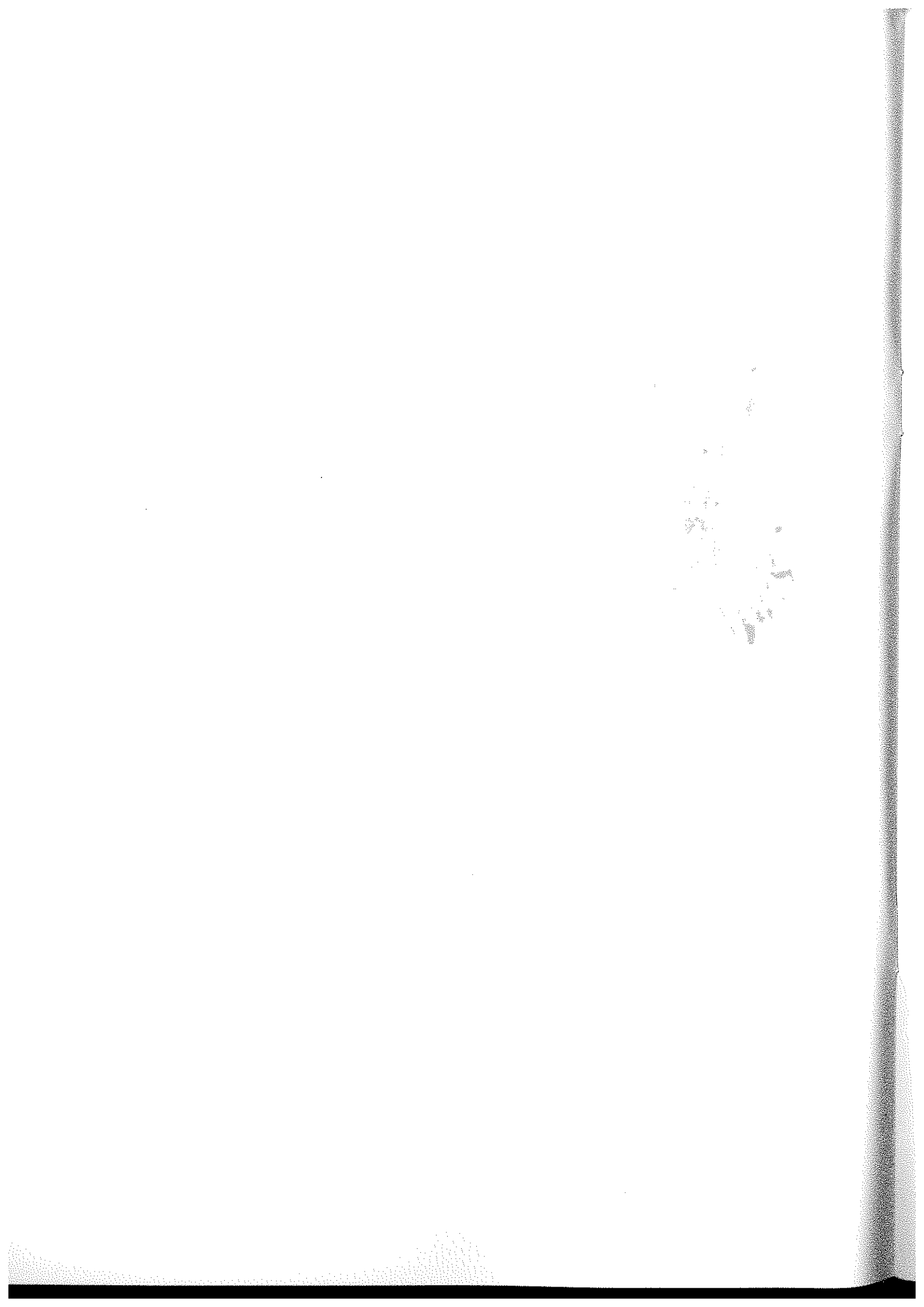

FOREWORD

ASSOCHAM has been acknowledged as the Knowledge Chamber of India and its publications have significantly contributed in creating awareness, dovetailing policies that are conducive for development and found to be extremely useful by the opinion and policy makers.

Investment plays a critical role in the process of infrastructure development of an economy. Along with the central government efforts to attract investments, states are also making various efforts to attract investment for the infrastructural development so that they can accelerate the economic growth. It is in this context that the ASSOCHAM's Economic Research Bureau has brought out the present publication titled "Analysis of Infrastructure Investment in India". The study has made an attempt at broadly studying state level infrastructure investment performances especially on road, ports, airports, railways, hotel, telecom sector etc. The study attempts at analyzing the pattern of infrastructure investments their level of implementation and fructifications across states. The report also makes certain recommendations for enhancement of infrastructure investment in India. I am hopeful this will be a very useful reference to all the readers.

ASSOCHAM also acknowledges the receipt of the support for publishing this report from Bihar Rajya Pul Nirman Nigam Ltd., Manipal University, Bharatiya Mahila Bank Ltd., Mormugao Port Trust and GLA University. We thank them for extending their support. I also appreciate the hard work put in by my colleagues Mr. Nahid Alam and Mr. Ankit Sharma in carrying out this study.

D. S. Rawat
Secretary General ASSOCHAM INDIA

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Chapter I Introduction

Globalization, population growth, and urbanization are placing considerable strains on infrastructure around the world. Advanced industrial economies like the United States and Western Europe are focusing on replacement of their aging infrastructures. But the developing world faces the more difficult task of creating new transportation, communication, water, and energy networks to foster economic growth. The infrastructure both its capacity and its quality is extremely deficient in most of the developing and developed world.

The importance of infrastructure as a key driver of growth, competitiveness and social well-being is well established. Yet, short-term investment horizons, a lack of viable financing structures, inappropriate risk assessment frameworks and a lack of long-term vision mean that much needed investment does not flow to infrastructure development.

The accessibility and quality of infrastructure in a region help shape domestic firms' investment decisions and determines the region's attractiveness to foreign investors. It's no secret that economies poised for rapid growth need robust infrastructure. Without the latter's proper support, expansion will slowdown or might even get stalled.

This need is especially acute in India, where infrastructure development has lagged woefully behind that of the economy. As per World Economic Forum's Global Competitiveness Report 2015–2016, the India's overall infrastructure ranked 81st out of 140 economies. India lags its BRICS countries (Russian Federation, Brazil, China and South Africa) in overall infrastructure. Russian Federation ranked 35th, China ranked 39th, South Africa ranked 68th and Brazil ranked 74th. The neighboring Sri Lanka also was able to capture the 64th spot. The top three rankings in terms of infrastructure went to Hong Kong SAR, Singapore and Netherlands (Appendix Table 1).

A massive investment for the development and modernisation of infrastructure facilities is clearly required not only to cope with the demands of a rapidly expanding economy but also to ensure the country's competitiveness in global markets. There are wide disparities between the levels of development of the different parts of the country. Therefore, the focus also needs to be on providing infrastructure to promote the development of the less developed regions

of the country, including rural areas. Improving the accessibility of these regions to markets is intended to bring about a more balanced development of the country and redress economic disparities.

The challenges ahead for the country are truly formidable, but so are the opportunities. There is little doubt that to meet all these challenges, India will not only need significantly more infrastructure but also better planning and management than available at present. If the infrastructural requirements cannot be met in a timely manner, the country will steadily fall behind other Asian countries such as China, Malaysia, Indonesia and Sri Lanka which have developed, and are likely to continue to develop, their infrastructure at a fast rate.

The fast growth of the Indian economy in recent years has placed increasing stress on physical infrastructure. Sectors such as electricity, railways, roads, ports, airports, irrigation and sanitation, continue to experience the pressure of rising demand for services. The goals of inclusive growth and a double digit growth in GDP can be achieved only if the country's infrastructure deficit is overcome. Infrastructure development will help in creating a better investment climate in India.

The infrastructure development in India will continue to be mainly demand led and therefore efficient use of existing infrastructure and efficient construction of new assets will be critical in the pursuit of higher economic growth.

Infrastructure Investment: The Story so Far[1]

The total investment in infrastructure sectors in the Twelfth Plan is estimated to be Rs. 55.7 lakh crore, which is roughly one trillion dollars at prevailing exchange rates. The share of private investment in the total investment in infrastructure rose from 22 per cent in the Tenth Plan to 36.61 per cent in the Eleventh Plan. It will have to increase to about 48 per cent during the Twelfth Plan if the infrastructure investment target is to be met.

On the basis of the figures of actual investment for the first four years of the Eleventh Plan and provisional figures for the fifth year, it is expected that the total investment in infrastructure during the Eleventh Plan would be Rs. 19,35,058 crore (as against projected investment of Rs. 20,56,150 crore) at 2006–07 prices. The contribution of the private sector would be about 36 per cent compared to 30 per cent originally projected for the Eleventh Plan which is much higher than 22.04 per cent realised in the Tenth Plan. The investment realised during the Eleventh Plan period has been about 94 per cent of the original projections, with the public sector under-performing at 86 per cent of the target and the private sector over performing to reach 113

1 *Twelfth Five Year Plan (2012–2017) Faster, More Inclusive and Sustainable Growth, Volume I, Planning Commission Government of India*

per cent. The achievement was not uniform across all sectors. While Telecommunication, Oil and Gas Pipelines, Roads and Bridges sectors exceeded their investment targets, investment in Ports, Railways, Water Supply and Sanitation and Storage was much below expectations. The details of investment over the Tenth Plan and Eleventh Plan periods are shown in Appendix Table 2.

Considering the need and importance of infrastructure in India, the study will analyse the investment activities into Indian infrastructure sector. The study will analyse four components of infrastructure investment in India. First will be investment pattern than actual realization of investment followed by level of implementation & its impact. The final parts of the study will carry recommendation for policy makers.

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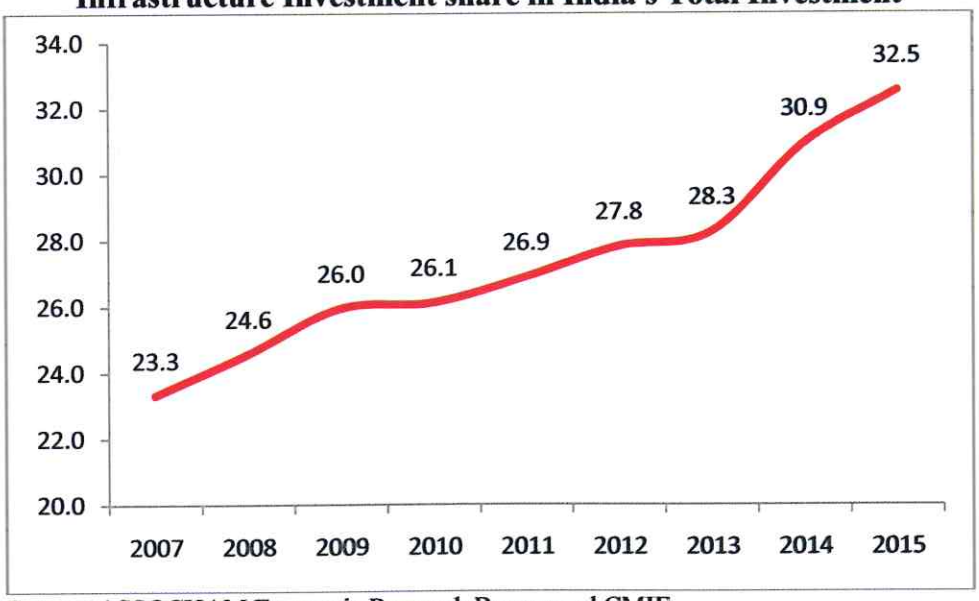
Chapter II Infrastructure Investment pattern in India

Infrastructure investment needs to be substantially increased to meet the country's social needs and support more rapid economic growth. Inadequate infrastructure is increasingly identified as the key bottleneck behind low productivity, insufficient domestic market integration, and weak growth potential. The ability of India to grow at high rate will depend largely on how much infrastructure can be delivered in the coming years. Well functioning infrastructure is critical to driving sustainable long term economic growth.

In the last decade, India has realized a strong need for infrastructure investment for infrastructure development. This has resulted in strong push for infrastructure investment requirement and therefore many policy initiatives have taken place at Centre as well as State level. As a result of these efforts, India has been able to get significant attention of investors for Indian infrastructure development.

We can see from the data that the infrastructure investment's share in India's total investment has been continuously increasing over the years. The share has increased from 23.3 percent in 2007 to 32.5 percent in 2015. Thus atleast the data seems to indicate that investments are being made in the infrastructure sector.

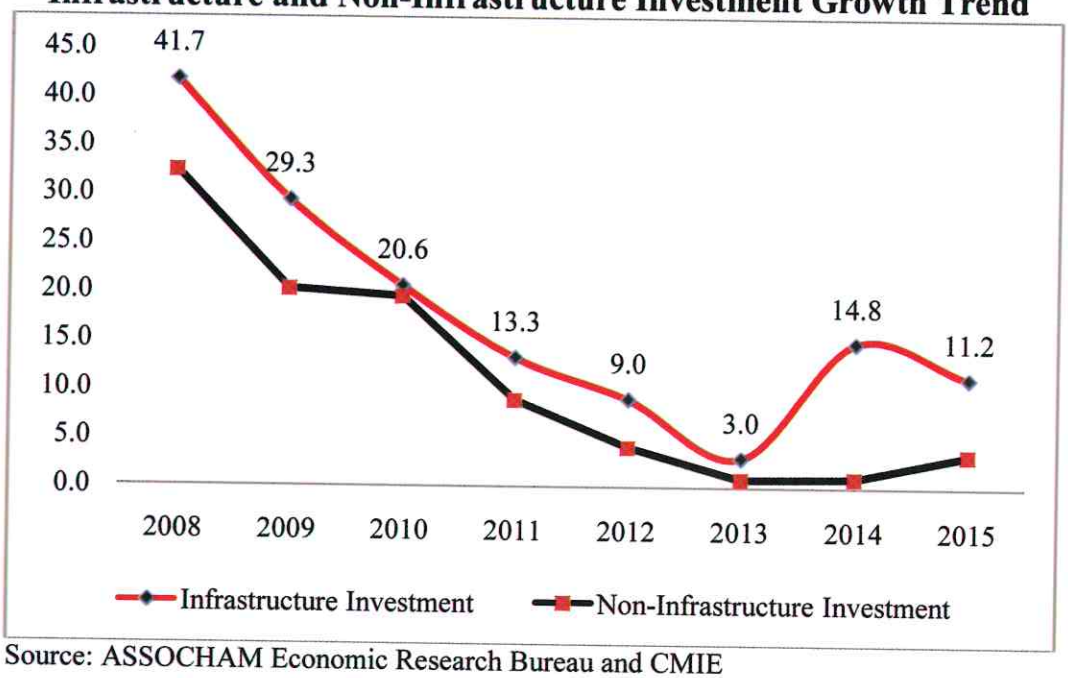
Infrastructure Investment share in India's Total Investment



Source: ASSOCHAM Economic Research Bureau and CMIE

The growth pattern of infrastructure investment indicates a downward trend over the years from its peak of 41.7 percent in 2008 to the lowest level of 3.0 percent in 2013. The recent growth figures are 14.8 percent in 2014 and 11.2 percent in 2015. The prominent question is whether this downward trend is only there for infrastructure investment growth or other sectors also have recorded a similar pattern. For this we compare it with non-infrastructure investment growth during the same period. We see that the general trend for both the sectors has been that of a declining one. However, we see that the growth rate of non infrastructure sector is always lower than the infrastructure sector for the period 2008 to 2015. It suggests that infrastructure sector has been given higher priority by the investors even in the slowdown period. The growth for the infrastructure investments in 2015 was 11.2 percent whereas that of non infrastructure was 3.4 percent.

Infrastructure and Non-Infrastructure Investment Growth Trend



Source: ASSOCHAM Economic Research Bureau and CMIE

The role of infrastructure is critical to improving connectivity and promoting sustainable growth within the Indian economy. While much progress has been made in infrastructure development over the past few decades, a lot more needs to be done to provide adequate facilities for the people and to support greater flow of trade and investments. Road transport is the backbone of the Indian transport infrastructure; it is inadequate in terms of quality, quantity, and connectivity. Also in the overall transport sector, civil aviation and ports desperately need modernization. What is also required is a solid and extensive communications network which allows for rapid and free flow of information, which increases overall economic efficiency by helping to ensure that businesses can communicate and decisions are made taking into account

available relevant information. These are just some of the infrastructure segments that need to be further strengthened, similarly, there will be others whose growth needs to be facilitated as well. We next look at the distribution of infrastructure investments amongst its various segments and the progress that has been made in the same.

That data reveals that Transport services has the highest share (71.4 percent) in terms of infrastructure investments followed by Miscellaneous services (12.7 percent), communication services (4.8 percent), Wholesale & retail trading (4.6 percent), Information technology (4.3 percent) and Hotels & tourism (2.1 percent).

Looking at the different categories of infrastructure investment, the data suggests that transports services has been given more priority by the investors as it has recorded the highest investment share in both the periods as well as it has recorded an increase in investment share in 2015 as compared to 2010. While information technology, wholesale & retail trading, communication services, hotels & tourism and miscellaneous services have recorded a decline in their share in 2015 as compared to 2010.

If we look in terms of growth between the period 2010 and 2015 we see that the top three sectors are Transport services (13.3 percent), Miscellaneous services (6.5 percent) and Communication services (4.8 percent).

Categories of Infrastructure Investment in India

	2010	2015	Share in 2010	Share in 2015	CAGR
	RS. Million		Percent		
Hotels & tourism	1054773	1145828	3.2	2.1	1.7
Wholesale & retail trading	2202348	2459979	6.7	4.6	2.2
Transport services	20437782	38099095	62.2	71.4	13.3
Communication services	2016170	2550266	6.1	4.8	4.8
Information technology	2178194	2296245	6.6	4.3	1.1
Miscellaneous services	4962032	6799211	15.1	12.7	6.5
Total Infrastructure Investment	32851299	53350624	100.0	100.0	10.2

Source: ASSOCHAM Economic Research Bureau and CMIE

With Transport services having the highest share as well as the best growth rate amongst the infrastructure sectors we next look at the sub-category wise performance of the Transport services to determine where is the investment flowing to. The Table below shows that Railway transport infrastructure services has the highest share of 42.2 percent in 2015, followed by the 29.8 percent share of Road transport infrastructure services, 14.0 percent of the Air transport infrastructure services, 12.0 percent share of Shipping transport infrastructure Services and 2.0 percent of Transport logistics services. The CAGR for the period 2010 to 2015 also indicates that Railway transport infrastructure services grew the fastest (17.6 percent), followed by Air transport infrastructure services (13.5 percent and Road transport infrastructure services (11.8 percent) to complete the top three sub categories within the Transport Services segment.

Sub-Category of Transport Services Investment

	2010	2015	Share in 2010	Share in 2015	CAGR
	Rs. Million		Percent		
Air transport infrastructure services	2835356	5333317	13.9	14.0	13.5
Railway transport infrastructure Services	7155783	16074592	35.0	42.2	17.6
Road transport infrastructure services	6494808	11366103	31.8	29.8	11.8
Shipping transport infrastructure Services	3337580	4556322	16.3	12.0	6.4
Transport logistics services	614256	768761	3.0	2.0	4.6
Total Transport services Investment	20437782	38099095	100.0	100.0	13.3

Source: ASSOCHAM Economic Research Bureau and CMIE

The miscellaneous services investment is the second most important infrastructure investment sector. Looking at the sub category of this sector suggests that storage & distribution infrastructure services has the highest share of 39.1 percent in 2015, followed by the 29.1 percent share of education infrastructure services, 12.4 percent of the health infrastructure services, 11.2 percent share of Other recreational infrastructure Services and 8.0 percent of Other miscellaneous services.

Sub-Category of Miscellaneous Services Investment

	2010	2015	Share in 2010	Share in 2015	CAGR
	Rs. Million		Percent		
Storage & distribution	1,169,699	2,655,445	23.6	39.1	17.8
Education	2,233,025	1,976,424	45.0	29.1	-2.4
Health services	745,789	845,613	15.0	12.4	2.5
Other recreational services	615,674	761,888	12.4	11.2	4.4
Other miscellaneous services	197,844	559,897	4.0	8.2	23.1
Total	4,962,032	6,799,267	100.0	100.0	6.5

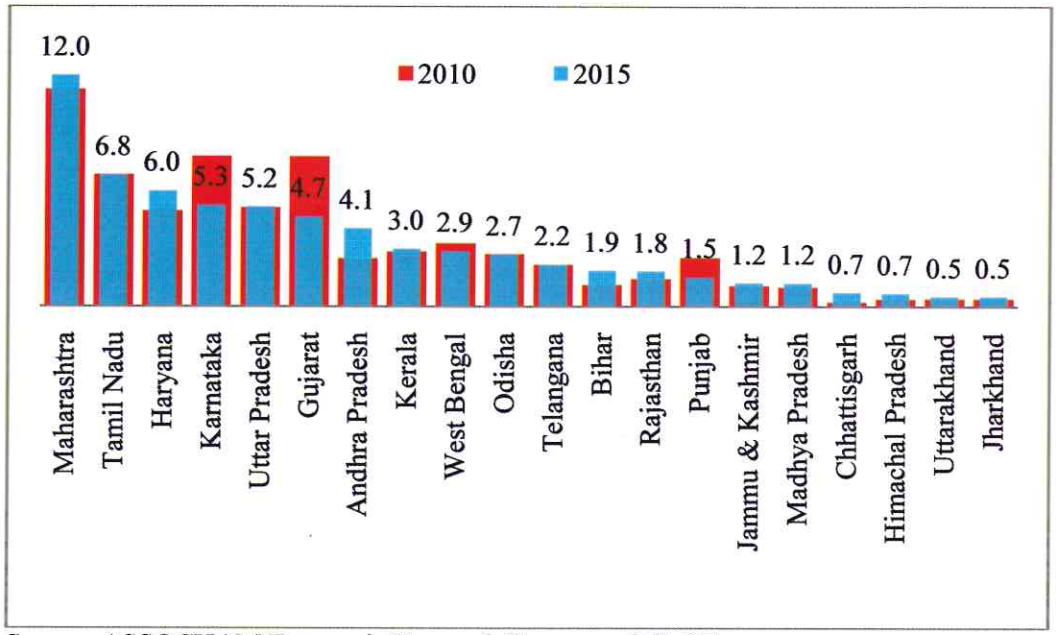
Source: ASSOCHAM Economic Research Bureau and CMIE

In India, State governments play major role in developing infrastructure needed for accelerating growth. Differences in growth across states are also resulted by differences in management. Some states are better managed and therefore able to create a suitable environment for higher growth. In the liberalised policy era, variations in the quality of economic management have been resulting in greater inter-state variation in management performance than in the pre-liberalised era.

We see that Statewise share of infrastructure investment reveals that Maharashtra has the highest (12.0 percent) share in 2015. The other states that feature in the top five are Tamil Nadu (6.8 percent), Haryana (6.0 percent), Karnataka (5.3 percent) and Uttar Pradesh (5.2 percent). Similarly, the five States that had the least share in India's infrastructure investment are Madhya Pradesh (1.2 percent), Chhattisgarh (0.7 percent), Himachal Pradesh (0.7 percent), Uttarakhand and Jharkhand both having a share of 0.5 percent.

Interestingly, if we look at the State wise investment share we see that between 2010 and 2015 there are some states whose share has increased whereas there are a few wherein the share has declined. The States whose share has increased are Maharashtra, Haryana, Uttar Pradesh, Andhra Pradesh, Kerala, Bihar, Rajasthan, Jammu & Kashmir, Madhya Pradesh, Chhattisgarh, Himachal Pradesh, Uttarakhand and Jharkhand. Whereas the states whose share has declined are Tamil Nadu, Karnataka, Gujarat (its share has declined the most), West Bengal and Punjab. There were two states whose shares remained unchanged, namely, Odisha and Telangana.

State-wise Infrastructure Investment share in India's Infrastructure Investment



Source: ASSOCHAM Economic Research Bureau and CMIE

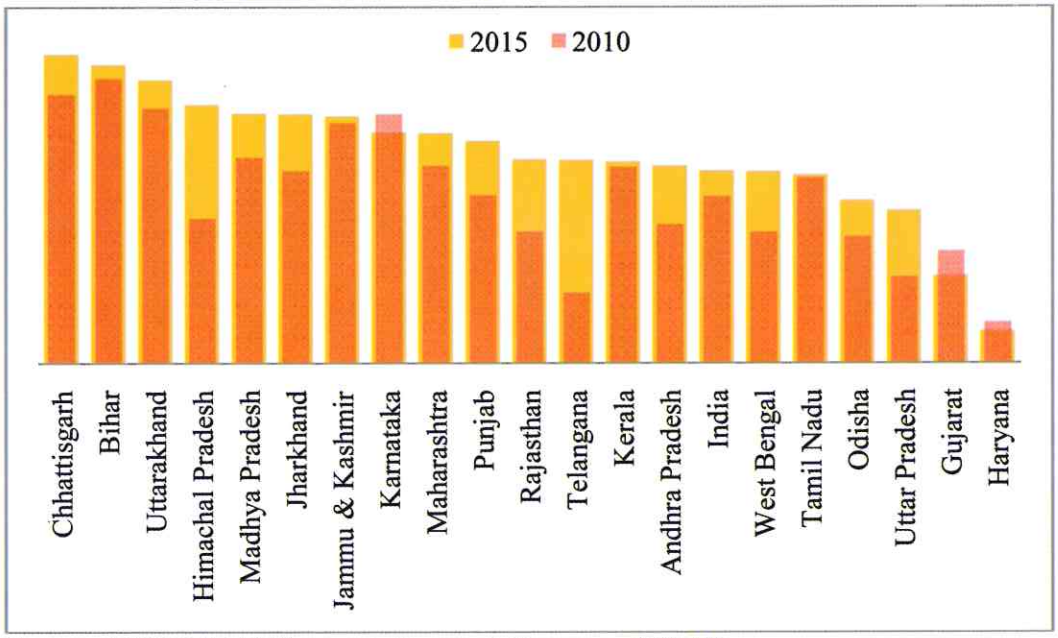
Public investments in infrastructure have been the dominant form of infrastructure financing in India, but this is expected to change and the private sector will be expected to invest more in infrastructure in the future. As large deficits and other commitments and social obligations will constrain government's financial flexibility, there will be a greater need to mobilise private sector capital that can be invested into infrastructure.

The development in India so far indicates that public sector investment still plays larger role in India's infrastructure sector investment. As on 2015, public sector investment share in the infrastructure sector is 59.3 percent in India which was 51.3 percent in 2010. This is indicating a worrisome situation wherein India is looking for more private investments participation into the infrastructure sector but over the period of time India's reliance on public sector investment has increased.

At the State level, public sector investment shows that in 2015 Chhattisgarh State had the highest public investment share amongst the major states of India. The public sectors share for Chhattisgarh stood at 95.2 percent. Bihar (91.9 percent), Uttarakhand (87.2 percent), Himachal Pradesh (79.7 percent) and Madhya Pradesh (77.0 percent) complete the list of top five states in terms of public investments. The figure for All India was 59.3 percent. The states of West Bengal (59.0 percent), Tamil Nadu (58.1 percent), Odisha (50.2 percent), Uttar Pradesh (47.3 percent), Gujarat (27.0 percent) and Haryana (10.0 percent) had a public investment share that was less than that of All India. This also implies that these 6 states would be leading in terms of the private sectors contribution to the infrastructure sectors.

If we look at state-wise public sector investment in 2015 against 2010, the analysis suggests that most of the states have recorded an increase in dependency on public sector investment for infrastructure development whereas only Haryana, Gujarat and Karnataka have recorded a decline of public sector investment in infrastructure investment.

Public sector infrastructure Investment in States



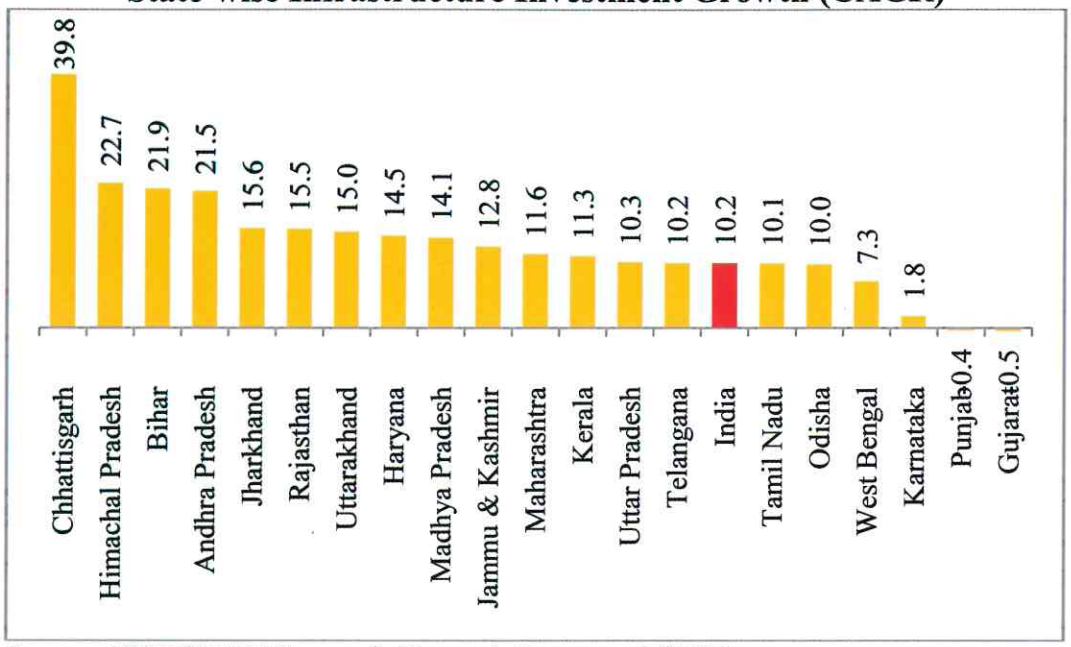
Source: ASSOCHAM Economic Research Bureau and CMIE

Infrastructure Investment Growth

At All India level, infrastructure investment has recorded a compound annual growth rate of 10.2 percent during the last five years. Comparing with the state's growth rate, 13 states have a better growth rate than All India while six states have a growth rate worse than All India.

In terms of State-wise growth observed in infrastructure investment during 2010 and 2015, Chhattisgarh with 39.8 percent leads the way. It is followed by Himachal Pradesh (22.7 percent) and Bihar's (21.9 percent) which round up the top three states. Whereas Tamil Nadu (10.1 percent), Odisha (10.0 percent), West Bengal (7.3 percent), Karnataka (1.8 percent), Punjab (-0.4 percent) and Gujarat (-0.5 percent) had a lower growth rate than All India. In fact Punjab and Gujarat saw their infrastructure investments decline or contract during 2010 and 2015. Telangana had the same growth rate as that of All India i.e. 10.2 percent.

State-wise Infrastructure Investment Growth (CAGR)



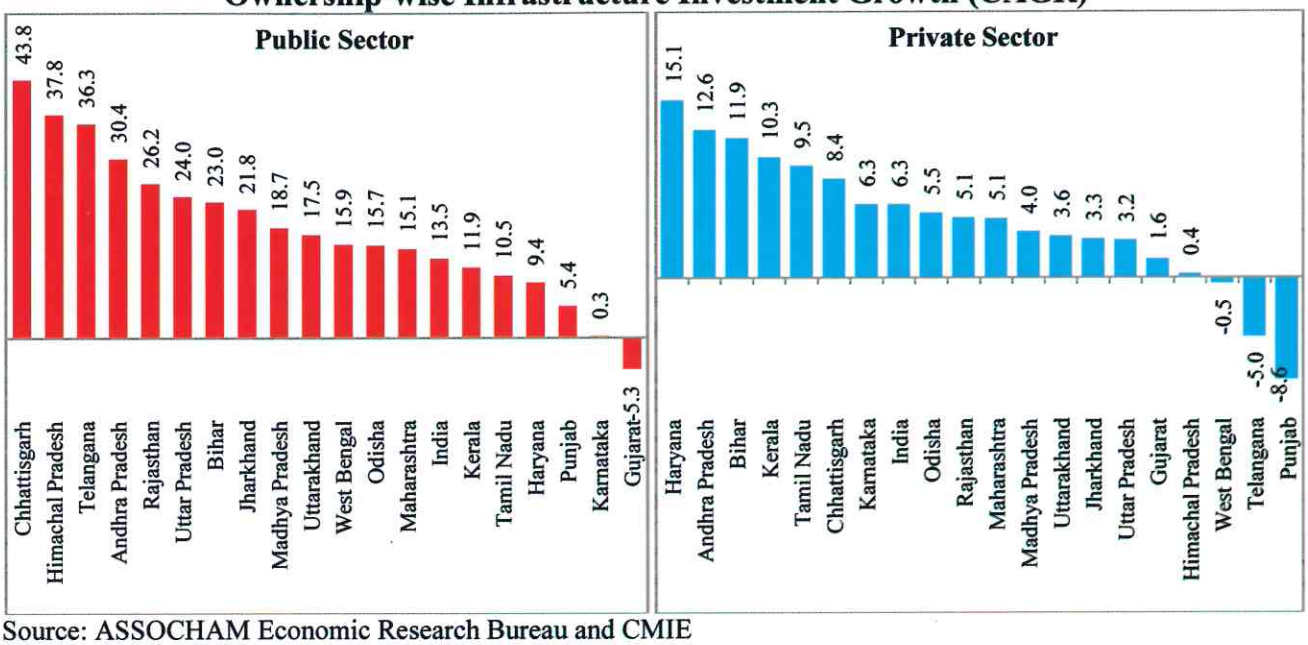
Source: ASSOCHAM Economic Research Bureau and CMIE

Ownership wise investment growth rate suggests that at all India level; public sector investment growth rate is more than double of private sector investment growth rate during 2010 to 2015. Public sector investment growth rate is 13.5 percent whereas private sector investment growth rate is 6.3 percent. The analysis has recorded that 13 states have a public investment growth rate that is higher than all India while only seven states have a private investment growth rate that is more than all India.

Further looking at the growth figures for States based upon ownership wise investments made we see that in terms of public investments Chhattisgarh (43.8 percent), Himachal Pradesh (37.8 percent) and Telangana (36.3 percent) are the top three states. Whereas Punjab (5.4 percent), Karnataka (0.3 percent) and Gujarat (-5.3 percent) are the states wherein the public sector investments into infrastructure saw the slowest growth.

In terms of private investments into infrastructure, Haryana leads the way with 15.1 percent growth. It is followed by Andhra Pradesh (12.6 percent), Bihar (11.9 percent), Kerala (10.3 percent) and Tamil Nadu (9.5 percent) that completes the list of top five states in terms of private sectors infrastructure investment growth. The bottom five states are Gujarat (1.6 percent), Himachal Pradesh (0.4 percent), West Bengal (-0.5 percent), Telangana (-5.0 percent) and Punjab (-8.6 percent).

Ownership-wise Infrastructure Investment Growth (CAGR)



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Chapter III

Realization of Announced Infrastructure Investment

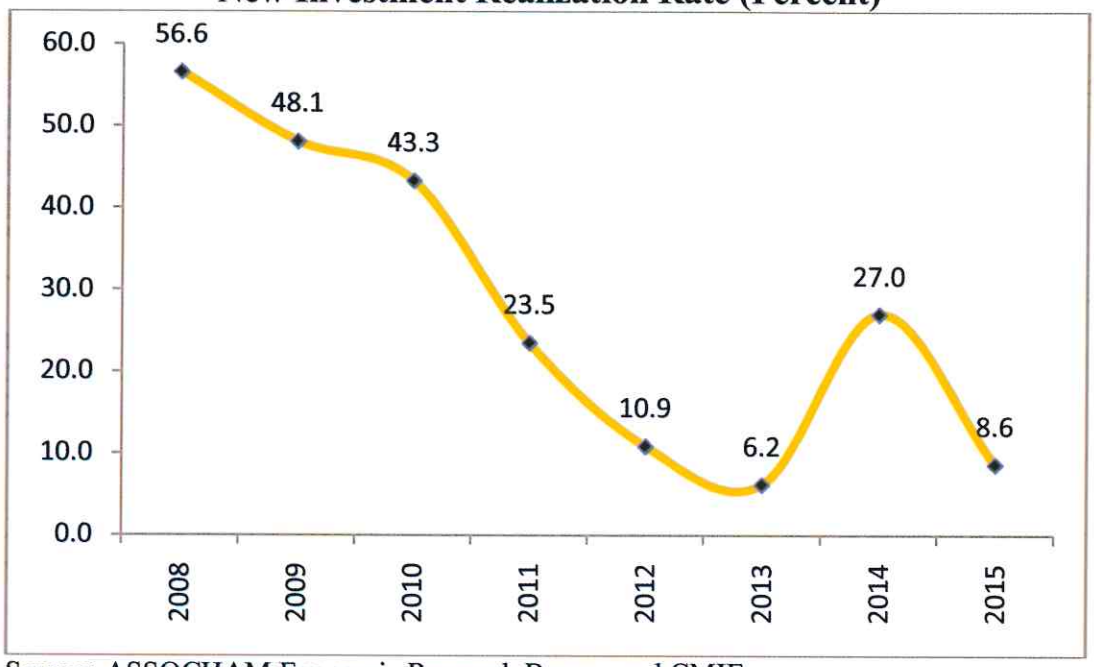
An announced project is when the project is in its initial stages. Promoters of the project have merely made an announcement of an intention to invest. Usually in such cases, the project will have not received important clearances, no land will have been acquired or contractors appointed. Often, the precise location may not have been finalised, the sources of funds or collaborators may not have been finalised. Whereas new investment is when some sort of initiation has taken place be it in terms of applying for various clearances etc.

Thus mere announcement does not mean that the investment has been realized. We next try and look as to what is the trend of announcements and actual new investments taking place in the country.

In order to see how many of the announced investments are actually being initiated we look at the new investments realization rate. This is important because mere announcement is not going to help build infrastructure some visible outcome can only be derived if we see the announcements being converted into project initiation. ***The realization rate is taken to be new investments divided by the announced investments.*** The trend for the new investments realization rate seems to indicate that it has been falling during the period 2008-2015, barring an exceptional rise in 2014. For the period 2008-2015, the new investment realization rate was at its highest in 2008 (56.6 percent) and at its lowest in 2013 (6.2 percent). The new investments realization rate stands at 8.6 percent in 2015.

The fall in realization rate indicates that less number of projects are being sent for clearances or for other operational formalities as compared to the announcements that are being made for investing in the infrastructure sectors. On the other hand what actually is required is more realization of the intentions that have been shown by the investors.

New Investment Realization Rate (Percent)

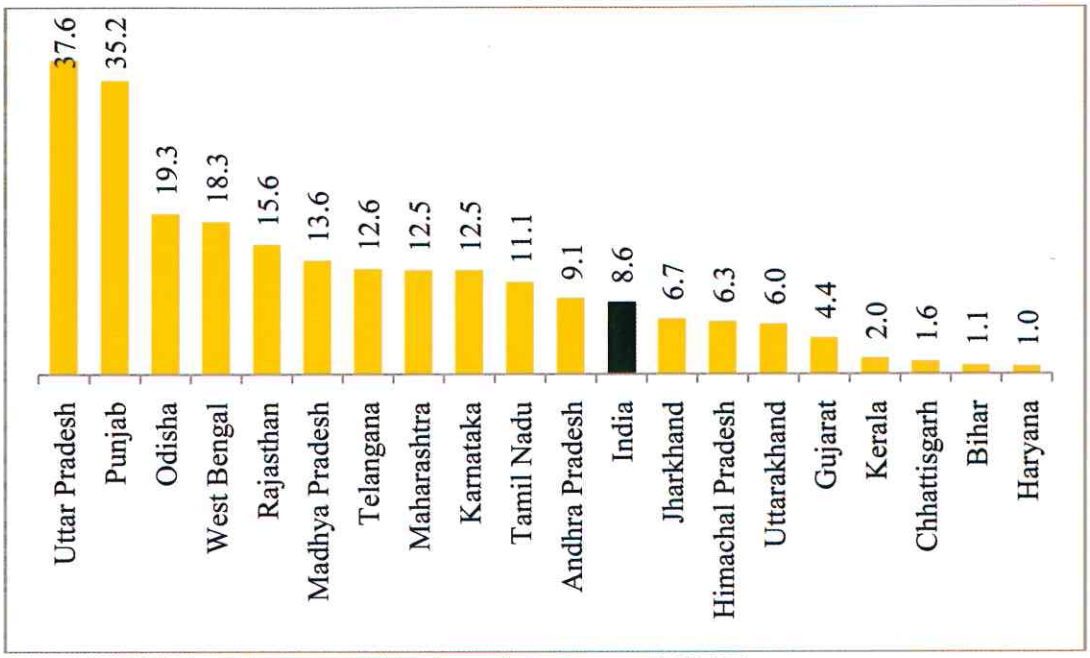


Source: ASSOCHAM Economic Research Bureau and CMIE

Having seen the trend in the new investment realization rate let us see as to what has been the state performance in this aspect as national performance is nothing but an aggregation of state performances. As of 2015 the state of Uttar Pradesh has the best realization rate of 37.6 percent, followed by Punjab (35.2 percent), Odisha (19.3 percent), West Bengal (18.3 percent) and Rajasthan (15.6 percent) that complete the top five lists. The realization rate for All India is 8.6 percent. Other states that have a realization rate better than All India are Madhya Pradesh, Telangana, Maharashtra, Karnataka, Tamil Nadu and Andhra Pradesh.

The worst five states in terms of realization rate are Haryana (1.0 percent), Bihar (1.1 percent), Chhattisgarh (1.6 percent), Kerala (2.0 percent) and Gujarat (4.4 percent). Apart from these states, Jharkhand, Himachal Pradesh and Uttarakhand too had a realization rate that was poorer than that of All India.

State-wise New Investment Realization Rate

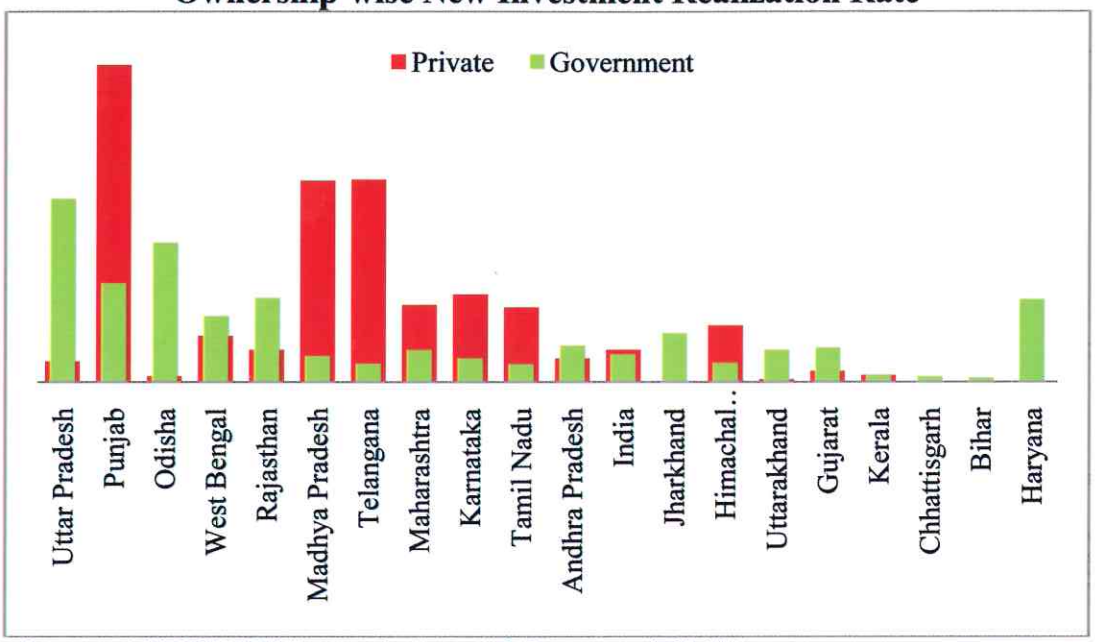


Source: ASSOCHAM Economic Research Bureau and CMIE

In terms of ownership wise realization rate we see that in terms of public sector investments, Uttar Pradesh has the highest realization rate (54.0 percent) followed by Odisha (41.1 percent), Punjab (29.2 percent), Rajasthan (24.8 percent) and Haryana (24.3 percent) that round up the list of top five states. The bottom five states in terms of new investments realization accruing to public sector are Telangana (5.5 percent), Tamil Nadu (5.3 percent), Kerala (2.0 percent), Chhattisgarh (1.6 percent) and Bihar (1.2 percent). The figure for All India is 8.2 percent.

In terms of private sector investment realization Punjab is the leader with a 93.5 percent realization rate. Telangana (59.7 percent), Madhya Pradesh (59.3 percent), Karnataka (25.8 percent and Maharashtra (22.7 percent) complete the list of top five states. Chhattisgarh state has got no new investment realized accruing to the private sector. The other bottom four states are Uttarakhand (0.8 percent), Haryana (0.2 percent), Jharkhand and Bihar recorded a 0 percent private sector new investment realization rate. The figure for All India is 9.4 percent.

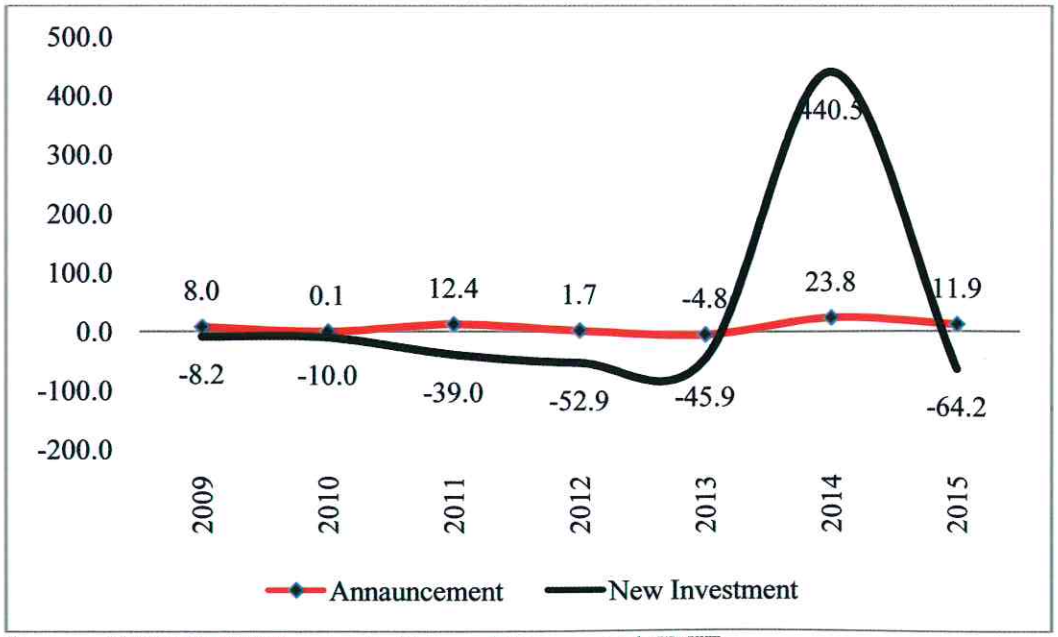
Ownership-wise New Investment Realization Rate



Source: ASSOCHAM Economic Research Bureau and CMIE

The graph below seems to suggest that the announced investments have more or less had the same growth rate or a minor increase. On the other hand the new investments have had a fall between 2010 and 2013, then it had a meteoric rise in 2014 before falling again into the negative zone in 2015. The 2015 growth rate for announced investments was 11.9 percent whereas that for new investments was -64.2 percent.

Announcement and New Investment Growth

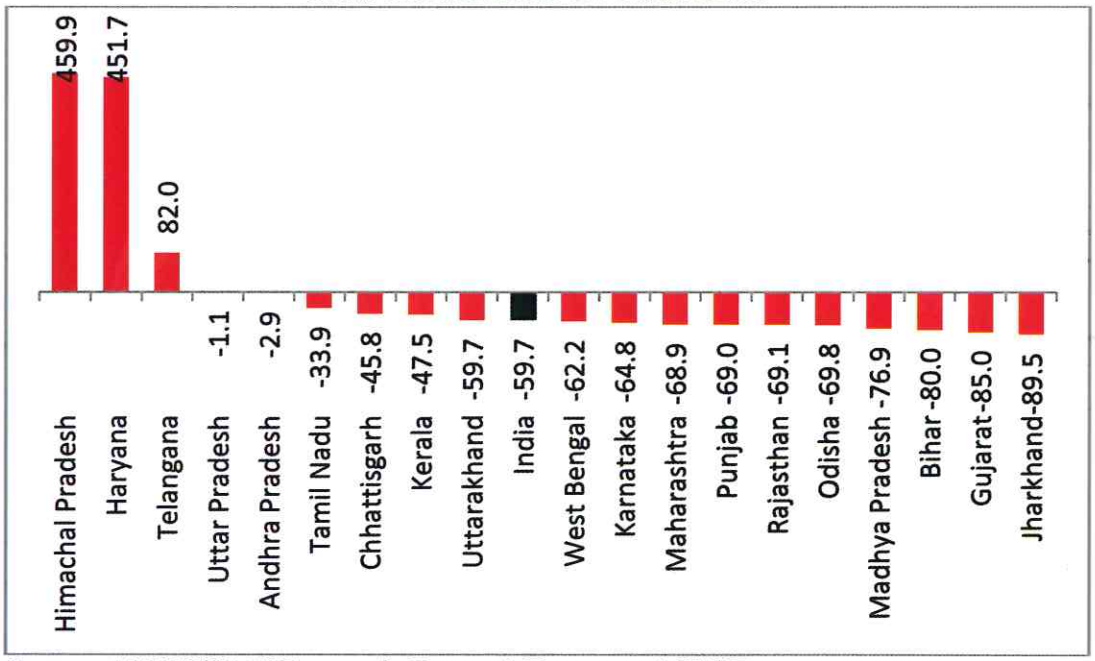


Source: ASSOCHAM Economic Research Bureau and CMIE

To see how the states have progressed over the years in terms of new investments being made into the infrastructure sectors we have clubbed the period 2008 to 2015 into two time periods to make a comparison. The first time period is 2008-2011 and the second one is 2012-2015. The simple growth rate for the two time periods seems to indicate that Uttar Pradesh has the highest growth rate in terms of new investments that are being made into infrastructure. Its growth rate is recorded at 459.9 percent. Haryana and Telangana occupy the second and third place with 451.7 and 82.0 being the growth rates respectively.

Interestingly barring these three states no other state has recorded a positive growth in terms of the new investments. Bihar, Gujarat and Jharkhand with -80.0, -85.0 and -89.5 percent are the bottom three states in terms of new investments growth between the two time frames. The figure for All India was -59.7 percent.

New Investment Growth Rate*



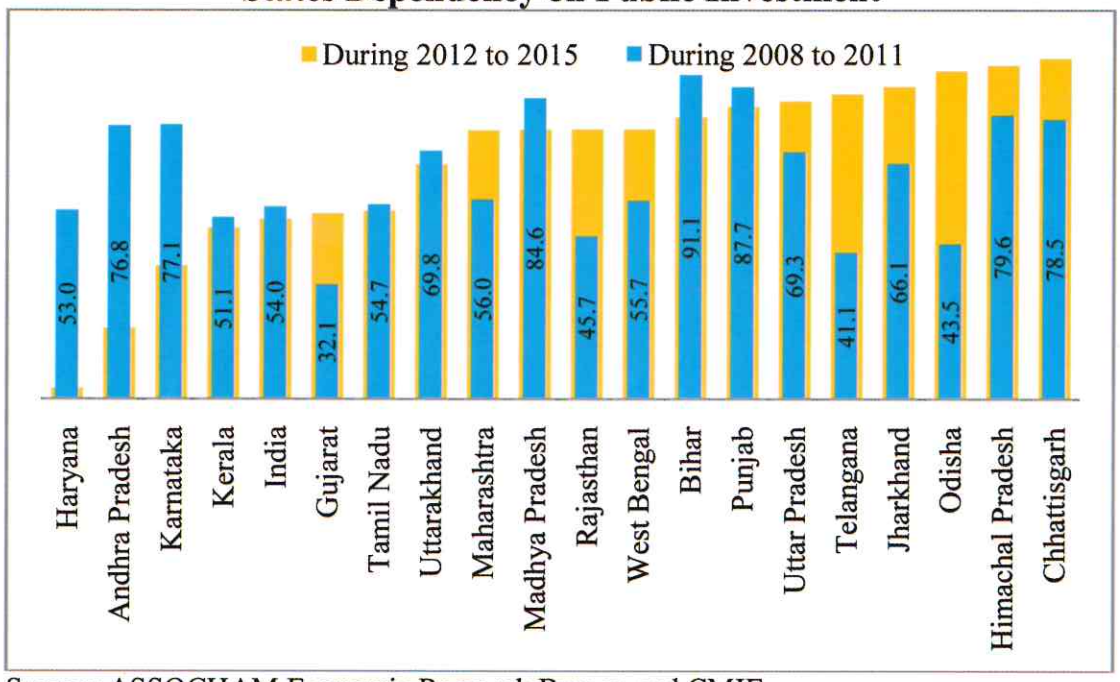
Source: ASSOCHAM Economic Research Bureau and CMIE
Note: *Simple Growth rate for the period of 2008-2011 to 2012-2015

Looking at as to what has been the public sectors role in terms of new investments we see that during 2012-2015 Haryana with 3.2 percent has the least amount of dependency on public investments in terms of the new investments that have been made into the State. Andhra Pradesh, Karnataka and Kerala with 20.0, 37.6 and 48.2 percent are the only other states that have public sector dependency that is less than that of All India in terms of new investments. The figure for All India is 50.8 percent. Telangana (85.7 percent, Jharkhand (87.9 percent), Odisha (92.3 percent), Himachal Pradesh (93.8 percent) and Chhattisgarh (95.8 percent) are the top five states wherein most of the new investments is being done by public sector.

Remaining other major states namely Gujarat, Tamil Nadu, Uttarakhand, Maharashtra, Madhya Pradesh, Rajasthan, West Bengal, Bihar, Punjab, Uttar Pradesh all have a higher dependency on public sector for new investments to be made into the infrastructure sector than the All India level.

In terms of the change in dependency between 2008-2011 and 2012-2015 time frames we see that the states of Haryana, Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Uttarakhand, Madhya Pradesh, Bihar and Punjab saw their dependency on public sector for new investments decline. Whereas dependency for the states of Gujarat, Maharashtra, Rajasthan, West Bengal, Uttar Pradesh, Telangana, Jharkhand, Odisha, Himachal Pradesh and Chhattisgarh has increased.

States Dependency on Public Investment



Source: ASSOCHAM Economic Research Bureau and CMIE

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Mormugao Port has drawn up an ambitious proposal to diversify the port from Mono-commodity to Multi-commodity in near future rather than depending only on iron ore and coke / coal.

The growth momentum which the Port has witnessed in recent years is expected to continue in the coming years with the measures taken by the Port in upgrading its infrastructural facilities and various development projects which include :

- Capital dredging of approach channel and inner basin for cape size vessel.
- Construction of Cruise Terminal Building.
- Construction of 4-lane road from the port to Verna Junction on NH 17.
- Re-development of Berths 8,9 and Barge berths.

Priority to Environmental Protection :

Mormugao Port accords top priority to environmental protection and corporate social responsibility. Several measures have been adopted for sustaining the ecological balance which are periodically reviewed. These measures include :

- Construction of dedicated elevated roads for truck movements.
- Covering of trucks / rail wagons carrying cargo with silpaulin before leaving the port area.
- Covering of coal / coke stacks with silpaulin.
- Plantation of trees annually on the periphery of the port operational area.
- Monitoring of Ambient Air Quality (AAQ) through an approved laboratory.
- Installation of 8 nos. high mast water sprinkling system with nozzle arrangements for spraying on stacks and roads.
- Installation of 8.1 mtrs, high.wind screens / shields.

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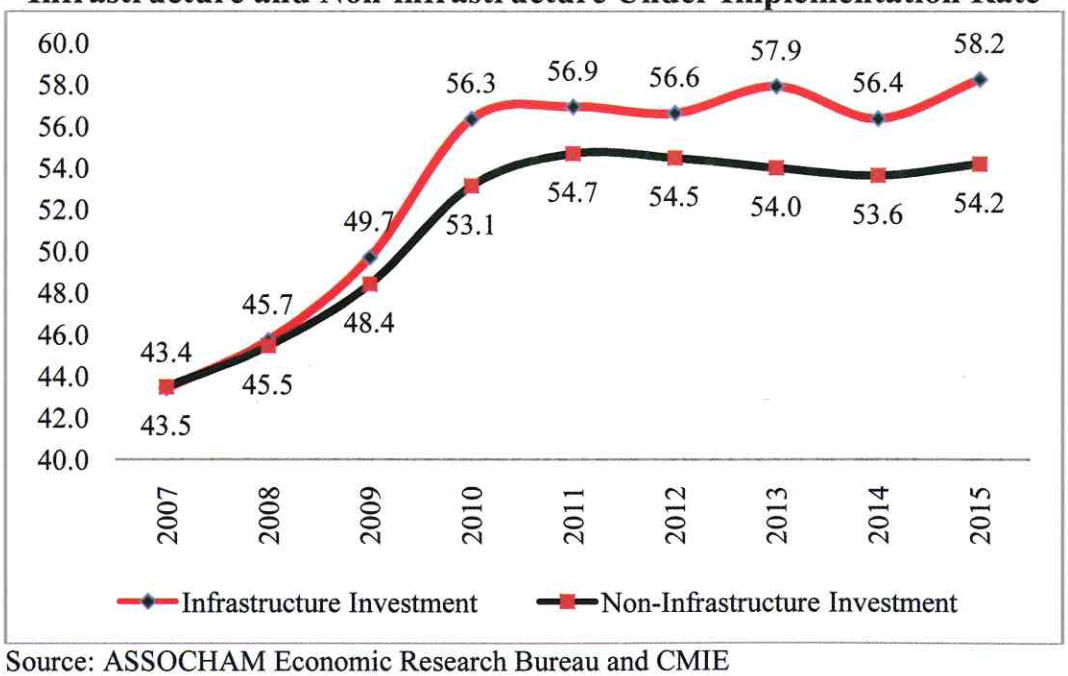
Chapter IV Under Implementation Status of Infrastructure Investment

Having looked at the new investments trend and pattern we try and see as to what is the situation in terms of total outstanding investments and their successful implementation. A higher under implementation implies that most of the projects or outstanding investments are in process and yet not completed. Therefore a higher under implementation rate does not augur well as actual benefits of an investment are only derived upon completion.

The pattern of under implementation rate of infrastructure and non-infrastructure projects shows that post 2008 the under implementation rate for infrastructure projects has been higher than that for non-infrastructure projects. The under implementation rate for infrastructure and non-infrastructure projects was 45.7 and 45.5 percent respectively in 2008. Whereas in 2015 where on the one hand the under implementation rate for non-infrastructure projects is 54.2 percent on the other the under implementation rate for infrastructure projects is 58.2 percent.

Infrastructure and Non-infrastructure Under Implementation Rate

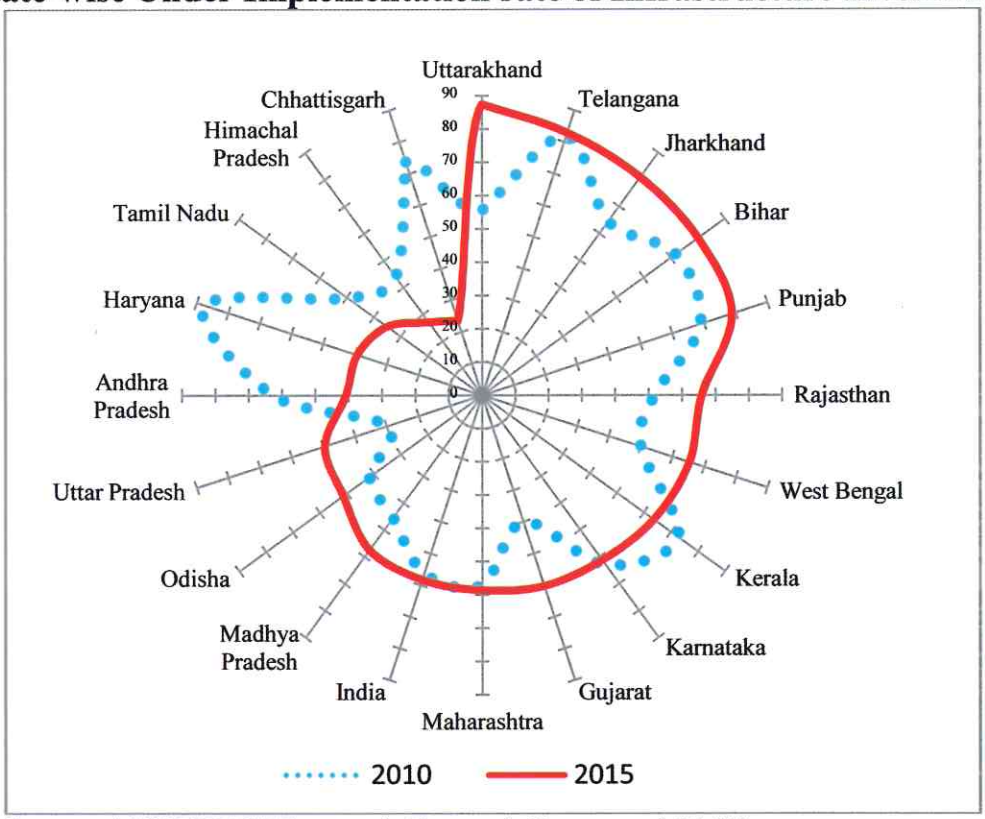


Source: ASSOCHAM Economic Research Bureau and CMIE

As on 2015, State-wise under implementation rate indicates that Uttarakhand has the highest under implementation rate. Telangana, Jharkhand, Bihar and Punjab constitute the top five states in terms of under implementation rate. On the other hand the five states with the least under implementation rate are Chhattisgarh, Himachal Pradesh, Tamil Nadu, Haryana and Andhra Pradesh. The under implementation rate for All India is 58.2 percent.

Between 2010 and 2015 the under implementation rate has increased for the states of Uttarakhand, Jharkhand, Bihar, Punjab, Rajasthan, West Bengal, Gujarat, Madhya Pradesh ,Odisha and Uttar Pradesh. Whereas, the under implementation rate has declined for the states of Kerala, Andhra Pradesh, Haryana, Tamil Nadu, Himachal Pradesh and Chhattisgarh.

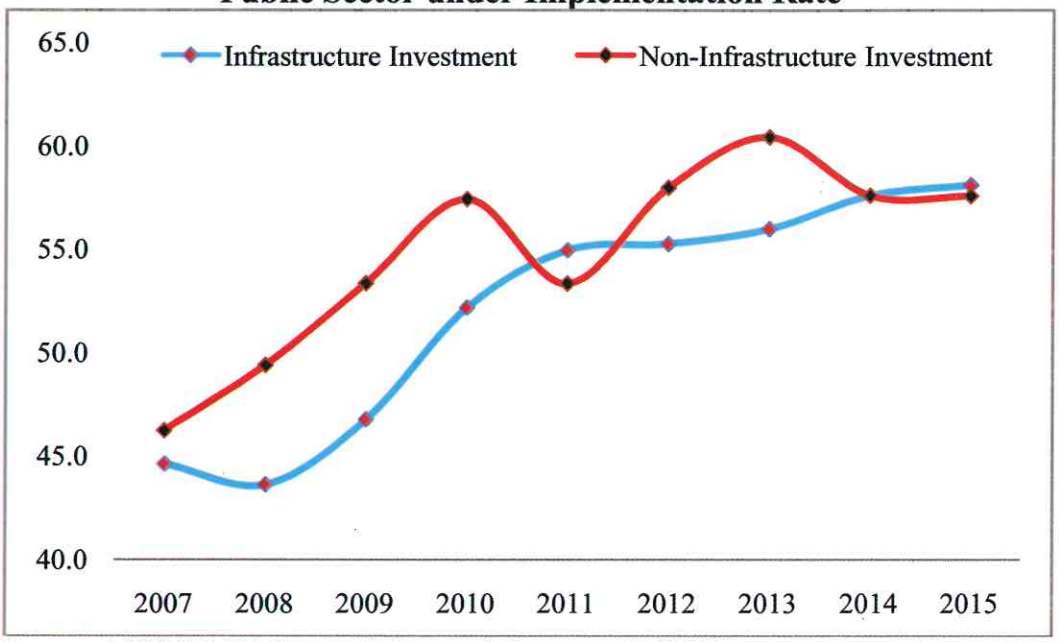
State-wise Under Implementation rate of Infrastructure Investment



Source: ASSOCHAM Economic Research Bureau and CMIE

The public sector under implementation rate for infrastructure and non infrastructure sectors indicate that for the period 2007-2015 the under implementation rate for the non-infrastructure sector has mostly been more than that for the infrastructure sector. However in 2015 the under implementation rate for infrastructure sector is marginally higher than that for non infrastructure sector. The under implementation rate for the non infrastructure sector in 2015 is at 57.6 percent whereas that for the infrastructure sector is at 58.1 percent. Though the under implementation rate for the infrastructure sector is mostly lower than that of non infrastructure sector its trend or pattern has been that of increasing or rising.

Public Sector under Implementation Rate

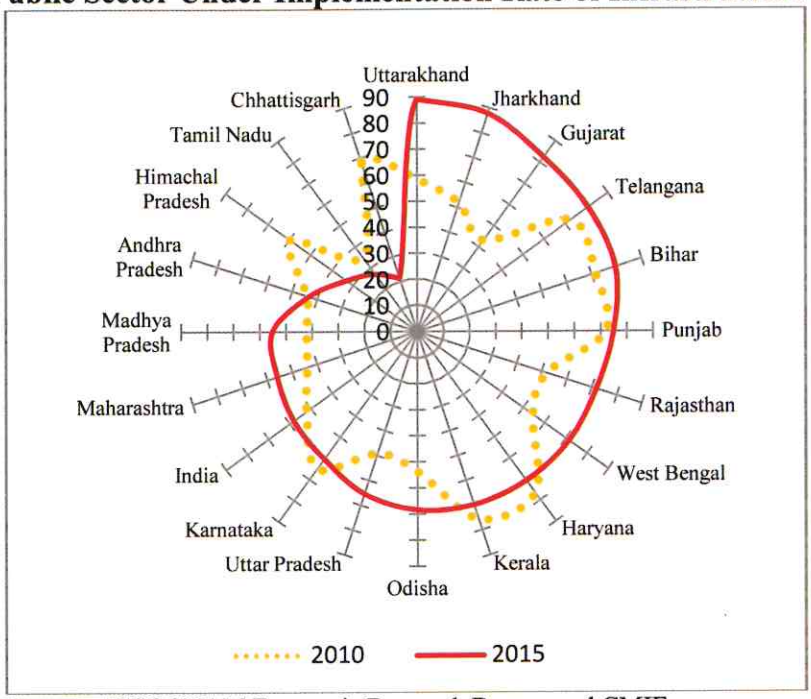


Source: ASSOCHAM Economic Research Bureau and CMIE

As on 2015, State-wise public sector under implementation rate indicates that Uttarakhand has the highest under implementation rate. Jharkhand, Gujarat, Telangana and Bihar constitute the top five states in terms of public sector under implementation rate. On the other hand the five states with the least under implementation rate are Chhattisgarh, Tamil Nadu, Himachal Pradesh, Andhra Pradesh and Madhya Pradesh.

Between 2010 and 2015 the public sector under implementation rate has increased for the states of Uttarakhand, Jharkhand, Gujarat, Telangana, Bihar, Rajasthan, West Bengal, Gujarat, Odisha, Uttar Pradesh, Maharashtra and Madhya Pradesh. Whereas, the under implementation rate has declined for the states of Haryana, Kerala, Karnataka, Tamil Nadu, Himachal Pradesh and Chhattisgarh.

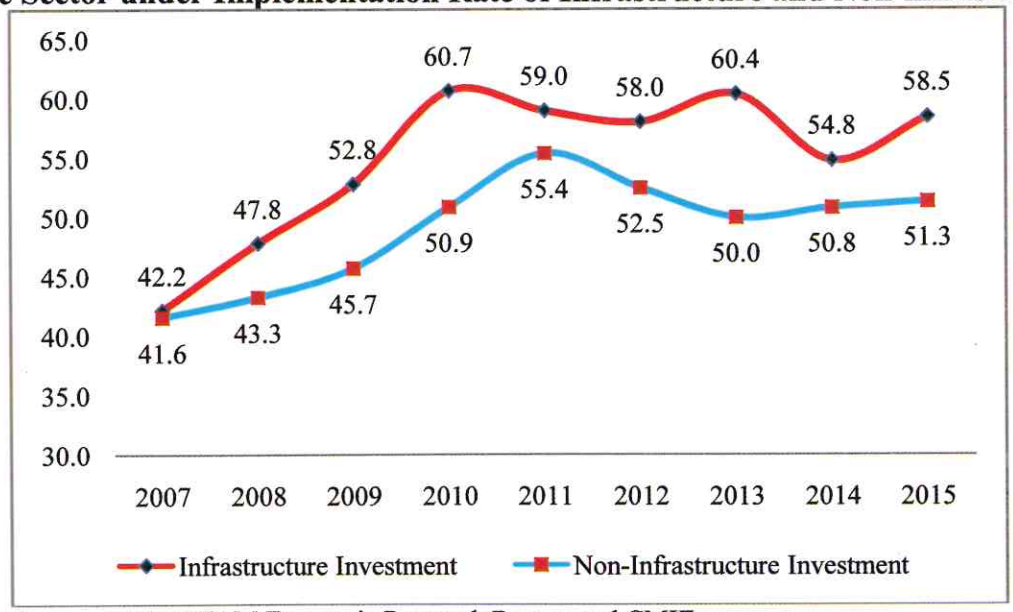
State-wise Public Sector Under Implementation Rate of Infrastructure Investment



Source: ASSOCHAM Economic Research Bureau and CMIE

The private sector under implementation rate for infrastructure and non infrastructure sectors indicate that for the period 2007-2015 the under implementation rate for both the infrastructure sector as well as the non-infrastructure sector shows an increasing trend or pattern. However, amongst the two sectors it is the infrastructure sector that has a higher implementation rate from 2008 onwards. The under implementation rate for the non infrastructure sector in 2015 is at 51.3 percent whereas that for the infrastructure sector is at 58.5 percent.

Private Sector under Implementation Rate of Infrastructure and Non-infrastructure

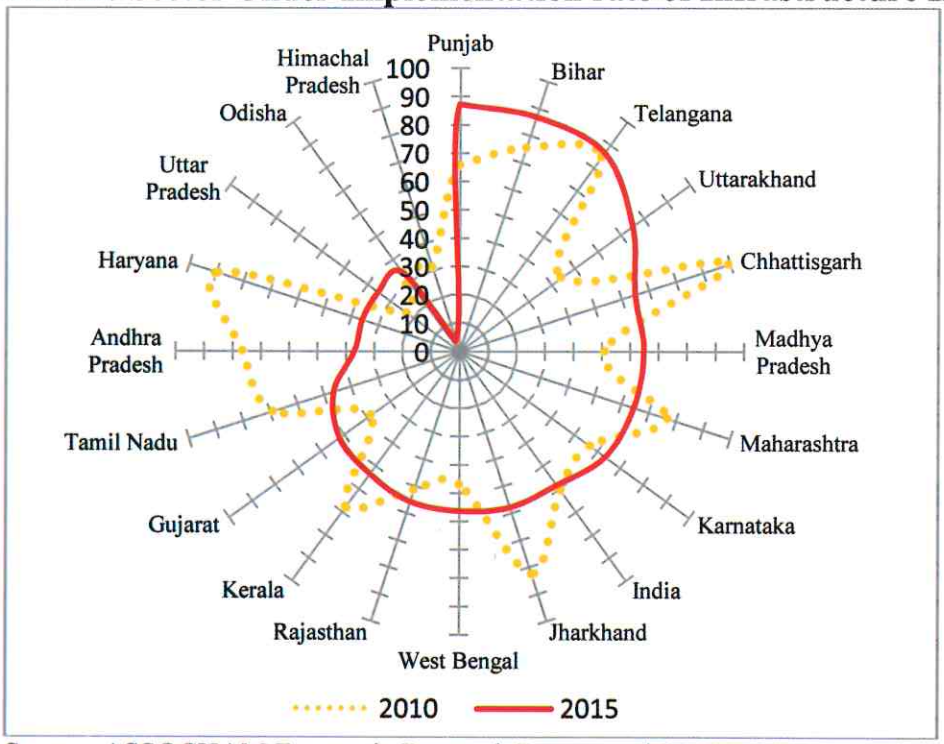


Source: ASSOCHAM Economic Research Bureau and CMIE

As on 2015, State-wise private sector under implementation rate indicates that Punjab has the highest under implementation rate. It is followed by Bihar, Telangana, Uttarakhand and Chhattisgarh to complete the list of top five states with the highest private sector under implementation rate. On the other hand the five states with the least private under implementation rate are Himachal Pradesh, Odisha, Uttar Pradesh, Haryana and Andhra Pradesh.

Between 2010 and 2015 the private sector under implementation rate has increased for the states of Punjab, Bihar, Uttarakhand, Madhya Pradesh, Karnataka, West Bengal, Rajasthan, Gujarat, Uttar Pradesh and Odisha. Whereas, the under implementation rate has declined for the states of Chhattisgarh, Maharashtra, Jharkhand, Kerala, Tamil Nadu, Andhra Pradesh, Haryana and Himachal Pradesh.

State-wise Private Sector Under Implementation rate of Infrastructure Investment



Source: ASSOCHAM Economic Research Bureau and CMIE

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Chapter V

Impact of Delay in Under Implementation

As we have seen in the above section investments in infrastructure sector has moderated during the last five years despite putting many efforts, under implementation rate has been worsening especially for infrastructure projects. At the same time, announced investment realization rate has also been worsening over the period of time. Worsening of investments activities in the infrastructure sector would largely impact in slow implementation or worsening of under implementation rate over a period of time. Therefore in this section we will analyse the impact of long delay in implementation of infrastructure projects.

Higher under implementation rate and long time delay in implementation cost the investors as well as hurts the sentiment of investors towards the particular economy. The delay in implementation could have many reasons. Several concerned departments of the state government play a rather crucial role in project implementation. After all, activities like land acquisition, shifting of utilities etc. are performed by the concerned state government. Moreover, economic and geographical features of the state may affect the project time and costs.

The analysis has observed 573 infrastructure projects and the most important factors which are affecting the implementation of infrastructure projects are land acquisition problem, non environment clearance, environment clearance, lack of finances, lack of promoter interest, unfavourable market conditions. Almost 33.5 percent of projects are delayed due to land acquisition problem followed by non environment clearance (21.5 percent), environment clearance (13.3 percent), lack of finances (12.6 percent) and unfavourable market conditions (3.7 percent).

The most important question is that what could be the possible impact of delay in implementation to the investors and economy. The delay in implementation cost to the economy is that it restricts to gain the full benefit directly and indirectly, it also hampers the economic growth. The analysis has observed that many projects are running over the time frame however many of them have not yet declared the cost escalation but some of them have declared the impact of overrun of the projects.

As Transport services and miscellaneous infrastructure are major infrastructure investments in India. Therefore the study next tries to assess the impact of delay for these sectors.

A Case of Transport Infrastructure Investment

Transport Infrastructure has highest share in India's infrastructure investment sector. Air, railway, road and shipping transport infrastructure services comes under transport Infrastructure sector.

Delay of Transport Infrastructure Projects

The study has observed that there are 1702 transport infrastructure projects that are in under implementation stage and out of these 832 projects have reported either time overrun or cost escalation. Amongst the delay/ time overrun projects, 438 projects have reported time overrun. The analysis has observed that 103 projects have been delayed by between one to twenty months whereas for rest of the projects time overrun is more than twenty months. The number of projects that have reported delay between 20 months to 50 months are 190 and 122 projects have reported delay that is between 50 months to 100 months. Noticeable point is that 23 projects have reported delay of more than 100 months.

If we look at the on an average delays of transport infrastructure projects, it suggests that in India on an average transport infrastructure projects are delayed by 44.2 months.

The sector-wise time overrun indicates that railway transport infrastructure services has the highest delay of 85.2 months followed by air transport infrastructure services, transport

logistics services, road transport infrastructure services and shipping transport infrastructure services.

Sector-wise Delay of transport infrastructure Projects

	Delays (In Months)
Railway transport infrastructure services	85.2
Air transport infrastructure services	65.4
Transport logistics services	38.3
Road transport infrastructure services	35.8
Shipping transport infrastructure services	34.9
All India	44.2

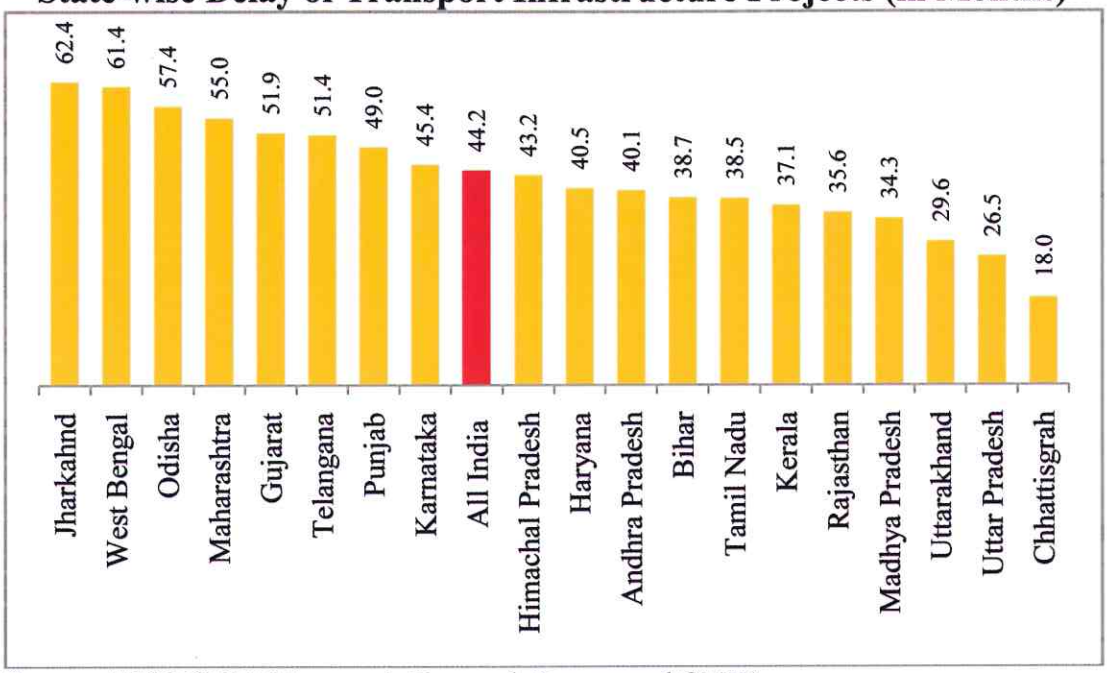
Source: ASSOCHAM Economic Research Bureau and CMIE

As we have seen in the above section, infrastructure development is largely dominated by the public sector players and private sector has very limited stake in infrastructure development. The analysis has observed that central government transport infrastructure projects delay is much higher than the private sector projects as well as state government projects. Central Government projects have been delayed by 59.0 months whereas private sector projects are delayed by 40.1 months and state government projects are delayed by 37.7 months.

If we look at the state wise delay of transport infrastructure projects, the analysis suggests that amongst the major states, eight states have delay that is more than all India average delay. The states which have recorded delay more than all India average are Jharkhand (62.4 months), West Bengal (61.4 months), Odisha (57.2 months), Maharashtra (55.0 months), Gujarat (51.9 months), Telangana (51.4 months), Punjab (49.0 months) and Karnataka (45.4 months).

On the other hand, Himachal Pradesh (43.2 months), Haryana (40.5 months), Andhra Pradesh (40.1 months), Bihar (38.7 months), Tamil Nadu (38.5 months), Kerala (37.1 months), Rajasthan (36.6 months), Madhya Pradesh (34.3 months), Uttarakhand (29.6 months), Uttar Pradesh (26.5 months) and Chhattisgrah (18.0 months) have recorded delay that is less than all India delay of transport infrastructure projects during the same time.

State-wise Delay of Transport Infrastructure Projects (in Months)



Source: ASSOCHAM Economic Research Bureau and CMIE

Cost Escalation of Transport Infrastructure Projects

In terms of cost escalation of transport infrastructure projects in India, 674 projects have reported a cost escalation. The ASSOCHAM analysis has observed that due to long time delay in implementation, the cost of projects has increased by 4.8 lakh crore while actual cost of the cost escalated projects is Rs. 1.02 lakh crore. The cost escalation as percent of actual cost of escalated projects is 47.0 percent.

Summary of Cost Escalation of Transport Infrastructure Projects

	Amount (Rs. Million)	Number
Under Implementation projects	20969062.0	1703
Actual cost of Delay and escalated projects	11268874.6	832
Actual Cost of Cost Escalated Projects	10206318.8	674
Cost Escalation reported projects	4801096.4	
Cost escalation as percent of actual Cost of cost Escalated Projects	47.0 percent	

Source: ASSOCHAM Economic Research Bureau and CMIE

The sectoral pattern of cost escalation indicates that railway transport infrastructure has the highest share in total cost escalation followed by road transport infrastructure, shipping transport infrastructure, air transport infrastructure and transport logistics services.

Railway transport infrastructure services cost escalation share in total cost escalation is 42.4 percent, road transport infrastructure share is 27.4 percent, shipping transport infrastructure share is 17.8 percent, air transport infrastructure share is 11.9 percent and transport logistics share is 0.4 percent.

If we look at sector wise cost escalation rate of transport infrastructure projects (cost escalation rate is proportional relation of escalated cost and actual cost of the projects which have reported cost escalation), the sector that has recorded highest cost escalation rate is shipping transport infrastructure (57.7 percent of actual cost) followed by railway (57.2 percent of actual cost), road (37.5 percent of actual cost), airport (36.0 percent of actual cost) and logistics (34.4 percent of actual cost).

Sector-wise Cost Escalation Share and Escalation Rate

Sector	Cost Escalation (Rs. Million)	Share in Cost Escalation	Cost Escalation Rate
Railway transport infrastructure services	2,036,048.20	42.4	57.2
Road transport infrastructure services	1,315,289.40	27.4	37.5
Shipping transport infrastructure services	856,140.70	17.8	57.7
Air transport infrastructure services	573,305.90	11.9	36.0
Transport logistics services	20,312.20	0.4	34.4
Total	4,801,096.40	100.0	47.0

Source: CMIE and ASSOCHAM Economic Research Bureau

As we have seen that public sector investment is the largest contributor of infrastructure investment in India. However, the noticeable point is that private sector cost escalation share for transport infrastructure in India's total cost escalation is much higher than central and state government cost escalation. Private sector share in India's cost escalation is 39.4 percent while central government share is 28.6 percent and state government is 26.2 percent.

The ownership-wise cost escalation rate for transport infrastructure suggests that state government projects have recorded highest cost escalation rate followed by central government and private sector. State government ownership projects cost escalation as percent of actual cost of state government ownership projects is 51.5 percent while central government ownership has 50.3 percent and private sector ownership has 42.9 percent.

Ownership-wise Cost Escalation Share and Cost Escalation Rate

Ownership	Cost Escalation (Rs. Million)	Share in Cost Escalation	Cost Escalation Rate
Private (Indian)	1,890,029.40	39.4	42.9
Central Government	1,373,242.10	28.6	50.3
State Government	1,256,181.40	26.2	51.5
Total	4,801,096.40	100.0	47.0

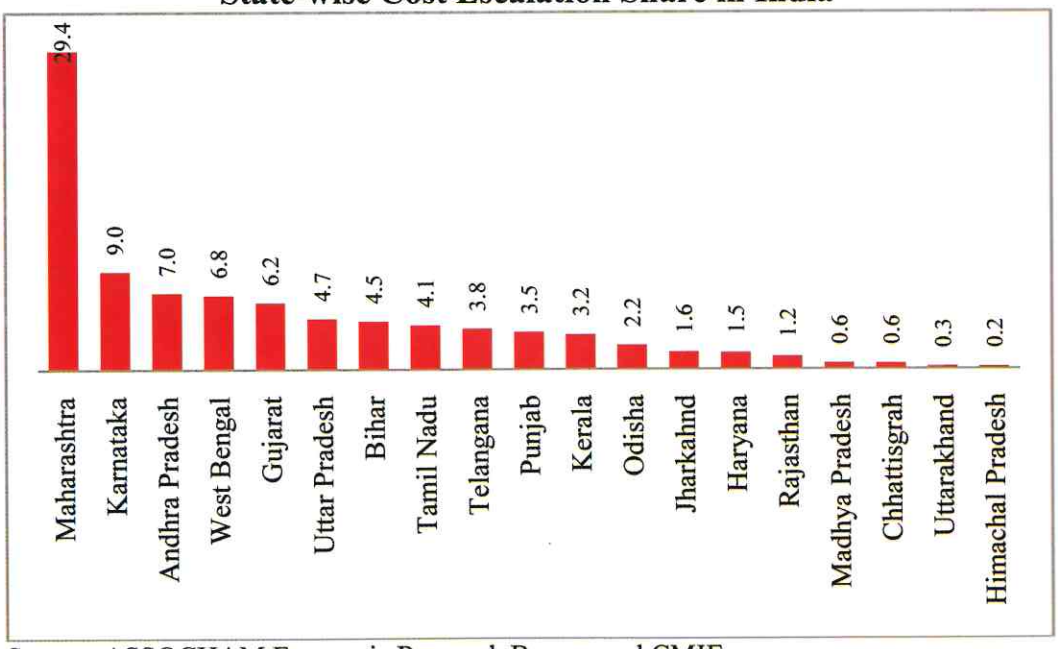
Source: ASSOCHAM Economic Research Bureau and CMIE

Amongst the major states, Maharashtra has recorded share highest in overall cost escalation in India which is 29.4 percent followed by Karnataka (9.0 percent), Andhra Pradesh (7.0 percent), West Bengal (6.8 percent) and Gujarat (6.2 percent). The top five states combined share in India's cost escalation is 58.5 percent.

Other than these top five states the other states that have recorded significant share in total cost escalation is Uttar Pradesh with a share of 4.7 percent, Bihar (4.5 percent), Tamil Nadu (4.1 percent), Telangana (3.8 percent), Punjab (3.5 percent), Kerala (3.2 percent), Odisha (2.2 percent), Jharkhand (1.6 percent) and Haryana (1.5 percent).

The bottom five states in terms of cost escalation are Himachal Pradesh (0.2 percent), Uttarakhand (0.3 percent), Chhattisgarh (0.6 percent), Madhya Pradesh (0.6 percent) and Rajasthan (1.2 percent).

State-wise Cost Escalation Share in India



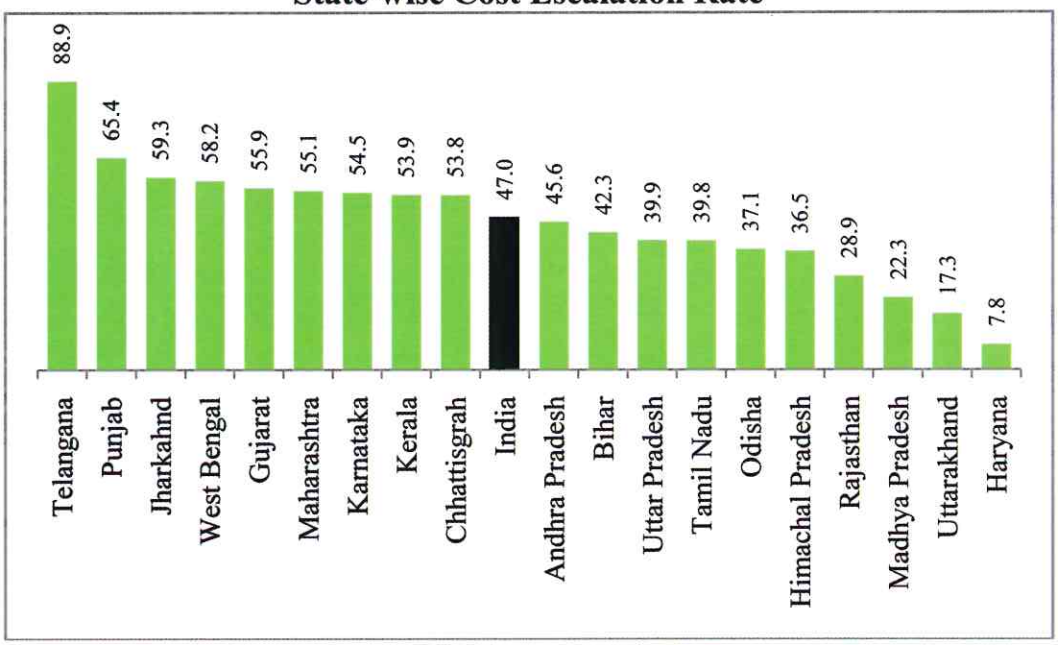
Source: ASSOCHAM Economic Research Bureau and CMIE

State-wise cost escalation rate suggests that nine states cost escalation rate is more than all India cost escalation. These states are Telangana (88.9 percent), Punjab (65.4 percent), Jharkhand (59.3 percent), West Bengal (58.2 percent), Gujarat (55.9 percent), Maharashtra (55.1 percent), Karnataka (54.5 percent), Kerala (53.9 percent) and Chhattisgrah (53.8 percent).

At the same time, states that have recorded cost escalation rate that is less than all India are Andhra Pradesh (45.6 percent), Bihar (42.3 percent), Uttar Pradesh (39.9 percent), Tamil Nadu (39.8 percent), Odisha (37.1 percent), Himachal Pradesh (36.5 percent), Rajasthan (28.9 percent), Madhya Pradesh (22.3 percent), Uttarakhand (17.3 percent) and Haryana (7.8 percent).

Amongst the major states, Telangana's cost escalation rate is highest while Haryana's cost escalation rate is least.

State-wise Cost Escalation Rate



Source: ASSOCHAM Economic Research Bureau and CMIE

Case of Miscellaneous Infrastructure Investment

The miscellaneous services investment is the second most important infrastructure investment sector. Storage & distribution, education, health, recreational services and other miscellaneous services come under miscellaneous services.

Delay of Miscellaneous Infrastructure Investment

The study has observed that there are 1531 miscellaneous infrastructure projects that are in

under implementation stage and out of these 526 projects have reported either time overrun or cost escalation. Amongst the delay/time overrun projects, 336 projects have reported time overrun. The analysis has observed that 110 projects have been delayed by between one to twenty months whereas for rest of the projects time overrun is more than twenty months. The number of projects that have reported delay between 20 months to 50 months are 122 and 92 projects have reported delay that is between 50 months to 100 months. Noticeable point is that 6 projects have reported delay of more than 100 months.

If we look at the on an average delays of miscellaneous infrastructure projects, it suggests that in India on an average miscellaneous infrastructure projects are delayed by 38.9 months.

The sector-wise time overrun indicates that exhibition of films has the highest delay of 52.0 months followed by other recreational services (44.9 months), education (44.7 months), other miscellaneous services (40.4 months), storage & distribution (36.9 months) and Health services (33.0 months).

Sector-wise Delay of Miscellaneous infrastructure Projects

Sector	Delays (In Months)
Exhibition of films	52.0
Other recreational services	44.9
Education	44.7
Other miscellaneous services	40.4
Storage & distribution	36.9
Health services	33.0
All India	38.9

Source: ASSOCHAM Economic Research Bureau and CMIE

The analysis has observed that central government miscellaneous infrastructure projects delay is much higher than the private sector projects as well as state government projects. Central Government projects have been delayed by 39.8 months whereas state government projects are delayed by 36.3 months and private projects are delayed by 27.4 months.

Ownership-wise Delay of Miscellaneous infrastructure Projects

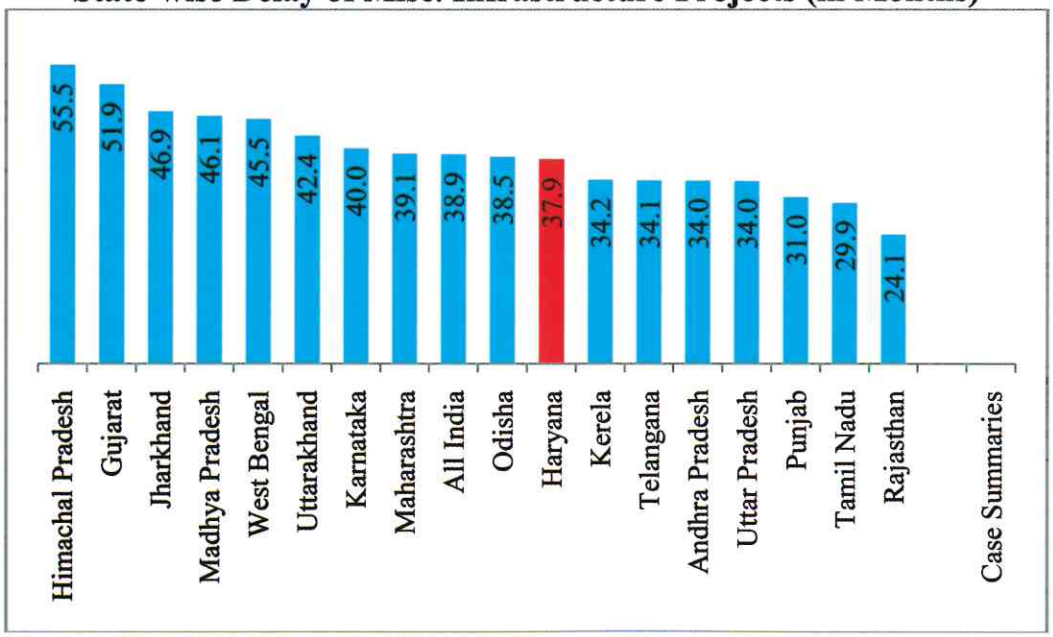
Ownership	Delays (In Months)
Central Government	39.8
State Government	36.3
Private	27.4

Source: ASSOCHAM Economic Research Bureau and CMIE

If we look at the state wise delay of miscellaneous infrastructure projects, the analysis suggests that amongst the major states, ten states have delay that is more than all India average delay. The states which have recorded delay more than all India average are Chhattisgarh (90.0 months), Bihar (74.4 months), Himachal Pradesh (55.5 months), Gujarat (51.9 months), Jharkhand (46.9 months), Madhya Pradesh (46.1 months), West Bengal (45.5 months), Uttarakhand (42.4 months), Karnataka (40.0 months) and Maharashtra (39.1 months).

On the other hand, Odisha (38.5 months), Haryana (37.9 months), Kerala (34.2 months), Telangana (34.1 months), Andhra Pradesh (34.0 months), Uttar Pradesh (34.0 months), Punjab (31.0 months), Tamil Nadu (29.9 months) and Rajasthan (24.1 months) have recorded delay that is less than all India delay of miscellaneous infrastructure projects during the same time.

State-wise Delay of Misc. Infrastructure Projects (in Months)



Source: ASSOCHAM Economic Research Bureau and CMIE

Cost Escalation of Miscellaneous Infrastructure Projects

In terms of cost escalation of miscellaneous infrastructure projects, in India 336 projects have reported a cost escalation. The ASSOCHAM analysis has observed that due to long time delay in implementation, the cost of projects has increased by 1.27 lakh crore while actual cost of the cost escalated projects is Rs. 2.43 lakh crore. The cost escalation as percent of actual cost of escalated projects is 52.4 percent.

Summary of Cost Escalation of Miscellaneous Infrastructure Projects

	Amount (Rs. Million)	Number
Under Implementation projects	4464573.3	1531
Actual Cost of Delay and escalated projects	2954282	526
Actual Cost of Cost Escalated Projects	2432785.3	336
Cost Escalation reported projects	1275409.2	
Cost escalation as percent of actual Cost of cost Escalated Projects	52.4 percent	

Source: ASSOCHAM Economic Research Bureau and CMIE

The sectoral pattern of cost escalation indicates that storage & distribution infrastructure has the highest share in total cost escalation followed by other recreational services, education, health services and other miscellaneous services.

Storage & distribution infrastructure services cost escalation share in total cost escalation is 38.6 percent, recreational services share is 35.6 percent, education share is 13.2 percent, health services share is 6.5 percent and other miscellaneous services share is 6.2 percent.

If we look at sector wise cost escalation rate of miscellaneous infrastructure projects (cost escalation rate is proportional relation of escalated cost and actual cost of the projects which have reported cost escalation), the sector that has recorded highest cost escalation rate is recreational services (81.9 percent of actual cost) followed by education (51.3 percent of actual cost), Other miscellaneous services (44.0 percent of actual cost), storage & distribution (42.1 percent of actual cost) and health services (40.6 percent of actual cost).

Sector-wise Cost Escalation Share and Escalation Rate

Sector	Cost Escalation (Rs. Million)	Share in Cost Escalation	Cost Escalation Rate
Storage & distribution	492,338.7	38.6	42.1
Other recreational services	453,413.5	35.6	81.9
Education	168,602.5	13.2	51.3
Health services	82,548.9	6.5	40.6
Other miscellaneous services	78,505.6	6.2	44.0
Total	1,275,409.2	100.0	52.4

Source: CMIE and ASSOCHAM Economic Research Bureau

The analysis has observed that state government share in cost escalation of miscellaneous infrastructure investment are more than two third of cost escalation in India. State government has a share of 67.0 percent in India followed by private with a share of 19.9 percent and central government with a share of 13.0 percent.

The ownership-wise cost escalation rate for miscellaneous infrastructure suggests that state government projects have recorded highest cost escalation rate followed by central government and private sector. State government ownership projects cost escalation as percent of actual cost of state government ownership projects is 60.8 percent while central government ownership has 46.5 percent and private sector ownership has 37.9 percent.

Ownership-wise Cost Escalation Share and Cost Escalation Rate

	Cost Escalation (Rs. Million)	Share in Cost Escalation	Cost Escalation Rate
State Government	855,143.6	67.0	60.8
Private	254,158.2	19.9	37.9
Central Government	166,107.4	13.0	46.5
Total	1,275,409.2	100.0	52.4

Source: ASSOCHAM Economic Research Bureau and CMIE

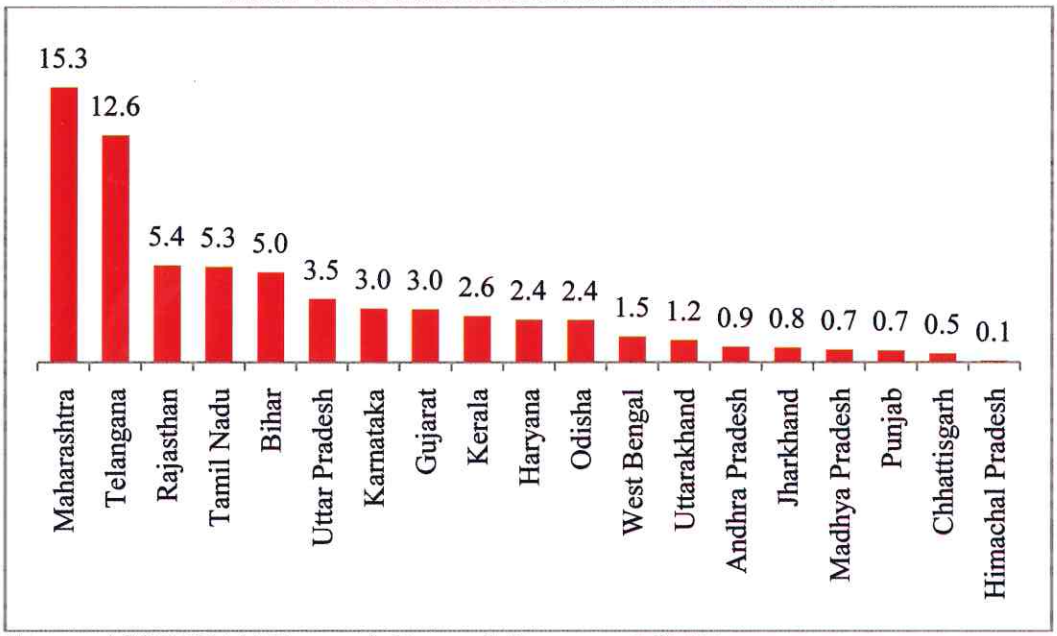
Amongst the major states, Maharashtra has recorded share highest in overall cost escalation in India which is 15.3 percent followed by Telangana (12.6 percent), Rajasthan (5.4 percent),

Tamil Nadu (5.3 percent) and Bihar (5.0 percent). The top five states combined share in India's cost escalation is 47.3 percent.

Other than these top five states the other states that have recorded significant share in total cost escalation is Uttar Pradesh with a share of 3.5 percent, Karnataka (3.0 percent), Gujarat (3.0 percent), Kerala (2.6 percent), Haryana (2.4 percent), Odisha (2.4 percent), West Bengal (1.5 percent), Uttarakhand (1.2 percent) and Andhra Pradesh (0.9 percent).

The bottom five states in terms of cost escalation are Jharkhand (0.8 percent), Madhya Pradesh (0.7 percent), Punjab (0.7 percent), Chhattisgarh (0.5 percent) and Himachal Pradesh (0.1 percent).

State-wise Cost Escalation Share in India

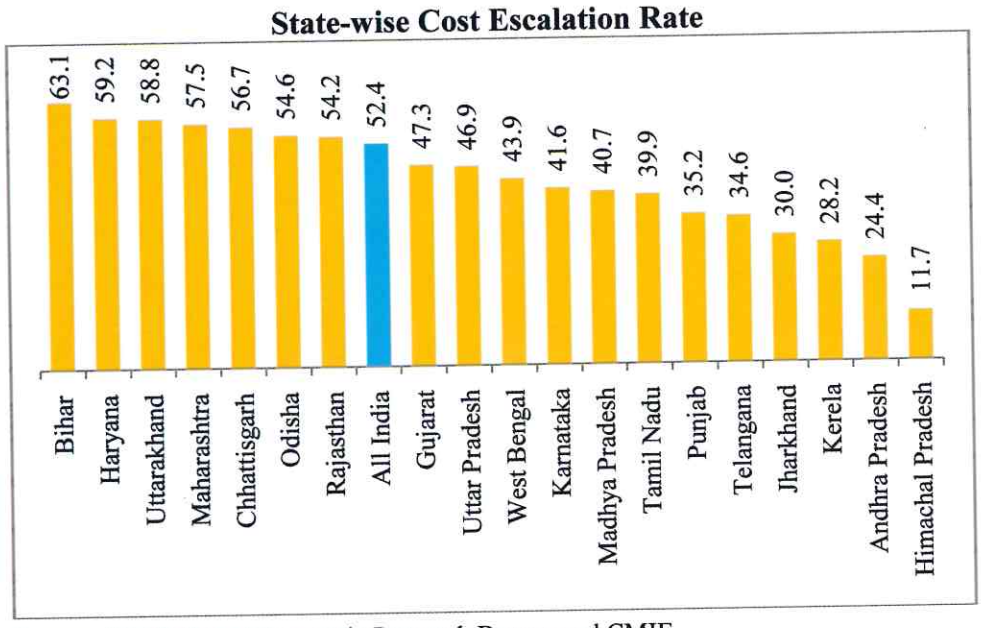


Source: ASSOCHAM Economic Research Bureau and CMIE

State-wise cost escalation rate suggests that seven states cost escalation rate is more than all India cost escalation. These states are Bihar (63.1 percent), Haryana (59.2 percent), Uttarakhand (58.8 percent), Maharashtra (57.5 percent), Chhattisgarh (56.7 percent), Odisha (54.6 percent) and Rajasthan (54.2 percent).

At the same time, states that have recorded cost escalation rate that is less than all India are Gujarat (47.3 percent), Uttar Pradesh (46.9 percent), West Bengal (43.9 percent), Karnataka (41.6 percent), Madhya Pradesh (40.7 percent), Tamil Nadu (39.9 percent), Punjab (35.2 percent), Telangana (34.6 percent), Jharkhand (30.0 percent), Kerala (28.2 percent), Andhra Pradesh (24.4 percent) and Himachal Pradesh (11.7 percent).

Amongst the major states, Bihar's cost escalation rate is highest while Himachal Pradesh's cost escalation rate is least.



Source: ASSOCHAM Economic Research Bureau and CMIE

Snapshot: Completed Infrastructure Projects

Total number of infrastructure projects that have been completed during 2015 are 577. Out of these projects 363 projects have not declared their amount of investment therefore the analysis is based on only those projects that have declared the amount of investment.

The sector wise infrastructure projects completed within the time frame or delay are as follows:

- Air transport infrastructure services: Seven projects completed but all projects completed with delays.
- Road transport infrastructure services: 91 projects completed out of which 16 projects completed on time and rest projects completed with delays.
- Railway transport infrastructure services: 15 projects completed out of which 3 projects completed on time and rest projects completed with delays.
- Shipping transport infrastructure services: 21 projects completed out of which 5 projects completed on time and rest projects completed with delays.
- Transport logistics services: 19 projects completed out of which 4 projects completed on time and rest projects completed with delays.
- Tourism: 12 projects completed out of which 5 projects completed on time and rest projects completed with delays.
- Storage & distribution: 33 projects completed out of which 9 projects completed on time and rest projects completed with delays.
- Education: 37 projects completed out of which 18 projects completed on time and rest projects completed with delays.
- Health services: 19 projects completed out of which 7 projects completed on time and rest projects completed with delays.
- Hotels & restaurants: 24 projects completed out of which 8 projects completed on time and rest projects completed with delays.
- Retail trading: 12 projects completed out of which 4 projects completed on time and rest projects completed with delays.
- Recreational services: 48 projects completed out of which 16 projects completed on time and rest projects completed with delays.

ASSOCHAM INDIA

Summary of Top Three Projects Completed			
Project Name	**On Time/ Delay**	**Project Name**	**On Time/ Delay**
Air transport infrastructure services		**Storage & distribution**	
Renigunta (Tirupati) Airport Upgradation Project	Delayed by 23 months	Malviya Nagar-Chirag Dilli Peripheral Water Line Project	On Time
Lohegaon (Pune) Airport Modernisation Project	Delayed by 30 months	Gadkhol-Dadhal Regional Water Supply Project	On Time
Chandigarh (Mohali) International Airport Project	Delayed 35 months	Tiruchendur Underground Sewage Canal Project	On Time
Road transport infrastructure services		**Education**	
Jalloothupatti Bridge Project	On Time	Kollam Community Skill Park Project	On Time
Ramanayakkanpalayam Bridge Project	On Time	Puducherry Energy Education Park Project	On Time
Vellakkalpatti Bridge Project	On Time	Bengaluru Next Generation Sequencing (NGS) Facility Project	On Time
Railway transport infrastructure services		**Health services**	
Coimbatore-Mettupalayam Electrification Project	On Time	Bopal Community Health Centre Project	On Time
Ernakulam-Mulanturutti Doubling Project	On Time	Pampore Sub District Hospital Project	On Time
Gandhidham-Tuna-Tekra Broad Guage Rail Line Project	On Time	Mohali Mother-Child Health Civil Hospital Project	On Time
Shipping transport infrastructure services		**Hotels & restaurants**	
Haldia Riverine Barge Jetty for Handling Fly Ash Project	On Time	Virugambakkam Fast Food Parlour Project	On Time
Cochin Port Dedicated Wharf Project	On Time	Mumbai Pan-Asian Bistro Restaurant Project	On Time
Two Vessels Acquisition Project	On Time	Dharmapuri Hotel Project	On Time
Transport logistics services		**Retail trading**	
Medchal Germplasm Bank Project	On Time	Andhra Pradesh & Telangana Retail Stores Project	On Time
Azadpur Mandi Perishable Cargo Centre Project	On Time	M & J Mall Project	On Time
Dabgram Cold Storage Unit (Bananas) Project	On Time	Chennai Diamond Jewellery Showroom Project	On Time
Tourism		**Recreational services**	
Belagavi Fort Laser Park & Musical Fountain Project	On Time	Ariyalur New Park Project	On Time
Vandalur Zoo Butterfly Park Project	On Time	Chotipora Tourist Interpretation Centre	On Time
Kakinada Beach Park Project	On Time	Kolkata Lake Town Waterbody Beautification Project	On Time

Snapshot: Abandoned/stalled Infrastructure Projects

Total numbers of infrastructure project abandoned/stalled are 220 during 2015. Highest projects abandoned/stalled are in SEZ development followed by hotels & restaurants, air transport infrastructure services, education, road transport infrastructure services, transport logistics services, health services, recreational services, retail trading, shipping transport infrastructure services, tourism, railway transport infrastructure services and storage & distribution.

Sector wise list of abandoned/stalled projects

Sector	Number of Projects
SEZ Development	66
Hotels & restaurants	36
Air transport infrastructure services	34
Education	17
Road transport infrastructure services	14
Transport logistics services	10
Health services	9
Other recreational services	7
Retail trading	7
Shipping transport infrastructure services	6
Other miscellaneous services	6
Tourism	5
Railway transport infrastructure services	2
Storage & distribution	1

MANIPAL UNIVERSITY JAIPUR

INSPIRED BY LIFE

ECO-FRIENDLY INFRASTRUCTURE

Manipal University Jaipur established in 2011 has a sprawling campus of 122 acre. It has a total constructed area of 2.0 million sqft and has a plan for further expansion when the total constructed area will reach 4.0 million sqft by 2020-21.

The entire campus which includes the administrative building, academic blocks, hostel buildings, food courts, gardens and sports complex, is designed on modern lines providing state of the art facilities to the students and the faculty.

As the first digital campus of the country, it is fully wi-fi enabled with 10Gbps optical fiber backbone. The connectivity in the campus is ensured at all times. The campus is under constant surveillance through 430 CCTV cameras which includes the hostel premises also. The recording is being monitored 24 x 7 by the team of Chief Security Officer. The campus is monitored at all times through a team of security guards which has helped in curbing theft and mishap of any nature on the campus.

Manipal University Jaipur is the first LEED Platinum & GRIHA (Five Star) rated Educational Campus in India. The university endeavor to adhere to the bench marks of these accreditations (which are constantly monitored by the certification agency.

Manipal University takes pride in being Zero discharge Campus through rain water harvesting, waste water recycling and reuse, ground water recharging. 50,000 saplings of native species planted with drip irrigation, along with lawns and other exotic fruit and herbal plants, are being maintained on regular basis by the University. Bio gas generation using kitchen wastes is being done.

The University monitors the water and electricity consumption on the campus through smart metering to minimize the losses and arrive at optimum consumption levels.

Convex mirrors and speed breakers are in place at vantage points to avoid mishaps.

The University boasts of modern hostel facilities provided to the students. There are 3500 students staying in ten hostels fitted with all latest fittings and fixtures. Catering facilities to 3500 hostellers 24 x7 is provided through state of the art kitchens fitted with modern appliances. Laundry services and hi-tech Gymnasium facilities are also provided to the students.

The university boasts of two state of the art auditoriums with the technologically advanced equipment installed in both.

The academic block consists of class rooms fitted with the smart boards, overhead projectors and furniture and fixtures conducive to teaching and learning.

The University Campus has the best of sporting facilities for the students. Cricket ground designed on international levels, football ground, hockey ground, basketball courts, tennis courts etc. are pride of the campus with national level competitions being organized regularly.

The Campus provides best of medical facilities to students and faculty through a well-equipped Medical Centre. Specialist doctors are present to provide best medical aid to the students. Hygiene and sanitation facilities are constantly monitored to ensure that the students and staff get the best of services in this regard.

Chapter VI Recommendations

A. **Political and Regulatory Certainty:** India presents numerous opportunities for infrastructure investors with developing economies that need infrastructure investment. However, a number of challenges remain, reforms are needed to:

- Reduce delay in creating businesses, obtaining approvals and enforcing contracts.
- Provide sufficient legal protection for investors, including strengthening private property rights and reducing corruption.
- Ensure more transparent and predictable government decision-making.
- Minimize political and regulatory risk, especially retroactive changes to policy.
- Facilitate the development of projects that meet investors' financial targets.
- Increase contractual and structural certainty through consistent legal enforceability.

Sovereign political risk, particularly the risk of short-term political decision making, can severely undermine the certainty that infrastructure investors require. Without structural certainty regarding the investment and the regulatory framework within which projects exist, a projected investment return may have little resemblance to reality. Develop a stable and consistent regulatory environment for infrastructure investment. Build a long-term decision making process for governments.

B. **Co-ordination between Government Agencies:** A single window clearance system should be implemented with specific guidelines for time bound approvals. The actions and policies of different Centre and State government bodies and even central ministries need to be better coordinated. Execution of some of the projects like airport development, road, etc., are delayed due to disagreement between the Centre and the State Governments in various aspects, particularly locational choice, cost sharing structure, political disagreement, etc., which are to be avoided with appropriate policies, political will, cooperation, coordination, dedication and determination

C. **Speedy Implementation of Projects:** Land acquisition and environmental clearances continue to remain critical concerns for infrastructure developers. Due to lack of proper

implementation of Acts and Rules relating to land acquisition as well as difficulty in approaching the concerned Department at the right time, it becomes difficult to acquire required land. Developers in spite of having spent considerable funds and time on the development of the project have had to in the past move to another site because of extreme resistance. Similarly, environmental clearances have become a major hurdle. The Government needs to break down all the conditionalities imposed into easily understood criteria and the compliance or likelihood of compliance should be easily judgeable. Environmental and land acquisition issues should be addressed proactively to balance the interests of all the stakeholders.

D. **Capacity Building of private players:** Another emerging challenge for achievement of the targets set by the Twelfth Plan (of INR 40 trillion) will be the capacity of the private sector to undertake or implement projects. This includes project developers or investors and EPC contractors. However, the total number of such players is low and they have already secured several projects, which limits their capacity to undertake new ones. This current investment target, although considerable, is achievable, provided prompt actions and active monitoring is carried out. This needs to be supported by initiating policy measures and other reforms that create an environment conducive to private investment in infrastructure and thus impact infrastructure development in long-run.

E. **Skills gap in handling infrastructure projects:** Lackluster project planning and monitoring is one of major root cause of time and cost overruns. It's challenging to locate an adequate number of skilled project managers in the country to handle current and planned infrastructure projects. Therefore need of the hour is to create a skills ecosystem with partnerships to ensure mutual support and enhancement of collective benefits. Also to fill the gap, government reform needed in its vocational education and training system to better respond to market needs. There is a need to formalize professional training for project managers, both in schools and at companies, where in-house academies could ensure employees have the skills to get the job done right.

F. **Government should specialize in Planning, Structuring, and Regulation while the private sector should specialize in Management, Investment, Construction, and Financing; Long-term domestic financing sources must be developed.** Easy availability of long-term private capital is an essential requirement to promote PPP Investments in Indian Infrastructure. Fostering the green-field investments in the public infrastructure with appropriate user charges, transparent revenue and risk sharing agreements would transform the international capital inflows into productive ventures. However, in the present scenario, the government should increase budget spending to kick start

infrastructure investments by recognizing that the stressed private sector needs to get back financial health before it can invest.

G. **Infrastructure needs Reliable and Responsive Development Partners. Infrastructure is a long-term asset, so development partners need to stay for the long haul. Reliable partnership is needed to ensure financing, guarantees, policy advice and capacity building.** Long term investment and financing plans for each infrastructure sector need to be prepared identifying various revenue sources as well as extent of financing that can be enabled. It will highlight any gap between capacity increase needed and the capacity increase that can be afforded through visible financing sources. Bridging the gap would require additional revenue sources or capital subsidy which will need to be identified.

H. **Setting up Infrastructure Debt Funds is a step in the right direction. However, there is an immediate need to develop the corporate bond market.** There is a need to improve depth and liquidity of the corporate bond market to provide additional source of funding for infrastructure companies. These bonds can be listed on stock exchanges. The large commercial banks and NBFCs can also be allowed to play in infrastructure bonds.

I. **Selection of Right Projects & Right Source of Funds:** The infrastructure sector in India continues to be the key impediment towards sustaining robust GDP growth. Merely increasing the amount that we invest, however, must not be sole objective. Selecting projects that have the highest return is critically important, as is providing opportunities for the private sector to invest in public infrastructure. For instance, investments in transport and communications infrastructure allow goods and services to be moved more quickly and at lower costs, resulting in both lower prices for consumers and increased profitability for firms. Given the significant need for greater investment, the government alone should not, be expected to be the sole source provider of funds. More effectively leveraging central government investment by pairing it with state, local, and private investment is necessary to meet the challenges we face in our infrastructure sector.

J. **Banks need to raise the additional capital to avoid sector concentration in infrastructure financing:** Overwhelming reliance on public sector banks in particular to meet the debt requirement of infrastructure is fraught with risk in the concentration of exposure. To prepare banks to meet the challenge of financing infrastructure several changes are required. There are comparatively higher existing exposure levels for certain sectors such as power and roads. Banks need to raise the additional capital to avoid sector concentration.This could be achieved either by injection of capital or divestiture of government equity stake or else banks may have to rely more on tier II capital. Mergers

and consolidation in the banking sector also could help mitigate exposure constraint. Securitisation of the loan portfolios of banks could help disperse risks more widely and facilitate then to undertake more new projects. This needs regulation and supervision to avoid situations like subprime crises in USA and its implications.

K. Removing inconsistenciesin defining Works Contract under Service Tax and VAT Laws: There exists an apparent discrepancy in the definition of Works Contract between the Service Tax laws and the VAT laws which leads to different interpretation under different statutes. The infrastructure industry expectation is that uniformity should be brought in definition of Works Contract under the Service Tax and VAT laws. Further the valuation rules under the Service Tax and VAT laws for Works Contract are inconsistent which results in double taxation to the extent of 140%. A consistency should be brought in the valuation rules for Works Contract under the Service Tax and VAT laws.

Appendix

Table 1: Overall Infrastructure Ranking

Country	Rank
Hong Kong SAR	1
Singapore	2
Netherlands	3
United Arab Emirates	4
Japan	5
Switzerland	6
Germany	7
France	8
United Kingdom	9
Spain	10
United States	11
Taiwan, China	12
Canada	14
Qatar	18
Portugal	23
Malaysia	24
Italy	26
New Zealand	28
Russian Federation	35
Mauritius	37
China	39
Turkey	53
Mexico	59
Indonesia	62
Sri Lanka	64
South Africa	68
Brazil	74
India	81
Pakistan	117
Bangladesh	123
Myanmar	134

Source: The Global Competitiveness Report 2015–2016

Table 2: Sector-Wise Investments: Tenth Plan and Eleventh Plan

(Rs. Crore at 2006–07 Prices)

Sectors	Tenth Plan	Total Eleventh Plan			
	Actual	Original Projections	Anticipated	% Increase of Eleventh Plan Anticipated over Tenth Plan Actuals	Anticipated % of Original Projections
Electricity (incl. RE)	2,74,661	6,66,525	6,45,835	135.14	96.90
Centre	1,03,431	2,55,316	1,93,619	87.20	75.84
States	1,02,054	2,25,697	1,48,819	45.94	65.94
Private	69,176	1,85,512	3,03,396	338.59	163.55
Roads and Bridges	1,52,616	3,14,152	3,61,822	137.08	115.17
Centre	71,536	1,07,359	1,55,367	117.19	144.72
States	68,143	1,00,000	1,34,246	97.01	134.25
Private	12,937	1,06,792	72,209	458.14	67.62
Telecommunications	1,44,669	2,58,439	3,09,271	113.78	119.97
Centre	50,626	80,753	68,628	35.56	84.99
Private	94,042	1,77,686	2,40,643	155.89	135.43
Railways (incl. MRTS)	1,03,493	2,61,808	1,95,340	88.75	74.61
Centre	1,00,077	2,01,453	1,72,113	71.98	85.44
States	2,743	10,000	11,727	327.44	117.27
Private	672	50,354	11,501	1610.14	22.84
Irrigation (incl. WS)	1,21,475	2,53,301	1,95,688	61.09	77.26
Centre	9,661	24,759	11,629	20.37	46.97
States	1,11,814	2,28,543	1,84,059	64.61	80.54
Water Supply and SN	60,577	1,43,730	97,351	60.71	67.73
Centre	21,508	42,003	37,243	73.16	88.67
States	37,958	96,306	59,989	58.04	62.29
Private	1,111	5,421	119	–89.33	2.20

Ports (incl. ILW)	22,351	87,995	35,536	58.99	40.38
Centre	2,630	29,889	4,398	67.24	14.71
States	916	3,627	2,216	141.95	61.10
Private	18,805	54,479	28,922	53.80	53.09
Airports	7,354	30,968	29,282	298.20	94.56
Centre	3,855	9,288	9,708	151.85	104.52
States	717	50	929	29.64	1858.00
Private	2,782	21,630	18,644	570.20	86.20
Storage	5,591	22,378	14,203	154.03	63.47
Centre	3,065	4,476	4,709	53.64	105.21
States	124	6,713	1,669	1250.17	24.86
Private	2,402	11,189	7,825	225.72	69.93
Oil and Gas pipelines	23,389	16,855	50,730	116.90	300.98
Centre	21,088	10,327	27,818	31.91	269.37
States	2,279	–	3,335	46.35	–
Private	23	6,528	19,578	85737.54	299.91
Grand Total	9,16,176	20,56,150	19,35,058	111.21	94.11
Centre	3,87,477	7,65,622	6,85,234	76.84	89.50
States	3,26,748	6,70,937	5,46,989	67.40	81.53
Private	2,01,951	6,19,591	7,02,836	248.02	113.43
Grand Total	9,16,176	20,56,150	19,35,058	111.21	94.11
Public	7,14,225	14,36,559	12,32,222	72.53	85.78
Private	2,01,951	6,19,591	7,02,836	248.02	113.43
GDPmp	1,82,46,267	2,70,44,506	2,69,34,373	–	–
Investment as % of GDP con. mp	5.02	7.6	7.18	–	–

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Appendix III: Project Status Explanation

Outstanding investments

'Outstanding investments' include all projects under various stages of announcement or implementation. These are projects whose status is any of the following: Announced, Under Implementation, Implementation stalled and No Information-Live. The explanation for these broad classifications is as follows:

Announced

This is when the project is in its initial stages. Promoters of the project have merely made an announcement of an intention to invest. Usually in such cases, the project will have not received important clearances, no land will have been acquired or contractors appointed. Often, the precise location may not have been finalised, the sources of funds or collaborators may not have been finalised.

Under Implementation

A project is considered to be under implementation if it makes any tangible progress in implementation. There are many indications of a project being under implementation. Some examples are: receipt of government permissions or significant clearances, acquisition of land, or commencement of negotiations for acquisition of land, finalisation of sources of funding, appointment of contractors, commencement of civil work and ordering of machinery. However, none of these indications are necessary or sufficient to classify a project as being under implementation. For example, a mere FDI approval is not sufficient for most industries because this is often available automatically and it does not imply transfer of money. Whether an indication is sufficient or not depends upon the individual project.

Implementation Stalled

Sometimes a project faces a serious hurdle even after its implementation has commenced. For example, the land may be partly acquired, and the remaining land cannot be acquired or there could be a dispute between promoters of the project or economic conditions may turn adverse such that the project's implementation is stalled.

ASSOCHAM

THE KNOWLEDGE ARCHITECT OF CORPORATE INDIA

EVOLUTION OF VALUE CREATOR

ASSOCHAM initiated its endeavour of value creation for Indian industry in 1920. Having in its fold more than 400 Chambers and Trade Associations, and serving more than 4,50,000 members from all over India. It has witnessed upswings as well as upheavals of Indian Economy, and contributed significantly by playing a catalytic role in shaping up the Trade, Commerce and Industrial environment of the country.

Today, ASSOCHAM has emerged as the fountainhead of Knowledge for Indian industry, which is all set to redefine the dynamics of growth and development in the technology driven cyber age of 'Knowledge Based Economy'.

ASSOCHAM is seen as a forceful, proactive, forward looking institution equipping itself to meet the aspirations of corporate India in the new world of business. ASSOCHAM is working towards creating a conducive environment of India business to compete globally.

ASSOCHAM derives its strength from its Promoter Chambers and other Industry/Regional Chambers/Associations spread all over the country.

VISION

Empower Indian enterprise by inculcating knowledge that will be the catalyst of growth in the barrierless technology driven global market and help them upscale, align and emerge as formidable player in respective business segments.

MISSION

As a representative organ of Corporate India, ASSOCHAM articulates the genuine, legitimate needs and interests of its members. Its mission is to impact the policy and legislative environment so as to foster balanced economic, industrial and social development. We believe education, IT, BT, Health, Corporate Social responsibility and environment to be the critical success factors.

MEMBERS – OUR STRENGTH

ASSOCHAM represents the interests of more than 4,50,000 direct and indirect members across the country. Through its heterogeneous membership, ASSOCHAM combines the entrepreneurial spirit and business acumen of owners with management skills and expertise of professionals to set itself apart as a Chamber with a difference.

Currently, ASSOCHAM has more than 100 National Councils covering the entire gamut of economic activities in India. It has been especially acknowledged as a significant voice of Indian industry in the field of Corporate Social Responsibility, Environment & Safety, HR & Labour Affairs, Corporate Governance, Information Technology, Biotechnology, Telecom, Banking & Finance, Company Law, Corporate Finance, Economic and International Affairs, Mergers & Acquisitions, Tourism, Civil Aviation, Infrastructure, Energy & Power, Education, Legal Reforms, Real Estate and Rural Development, Competency Building & Skill Development to mention a few.

INSIGHT INTO 'NEW BUSINESS MODELS'

ASSOCHAM has been a significant contributory factor in the emergence of new-age Indian Corporates, characterized by a new mindset and global ambition for dominating the international business. The Chamber has addressed itself to the key areas like India as Investment Destination, Achieving International Competitiveness, Promoting International Trade, Corporate Strategies for Enhancing Stakeholders Value, Government Policies in sustaining India's Development, Infrastructure Development for enhancing India's Competitiveness, Building Indian MNCs, Role of Financial Sector the Catalyst for India's Transformation.

ASSOCHAM derives its strengths from the following Promoter Chambers: Bombay Chamber of Commerce & Industry, Mumbai; Cochin Chambers of Commerce & Industry, Cochin: Indian Merchant's Chamber, Mumbai; The Madras Chamber of Commerce and Industry, Chennai; PHD Chamber of Commerce and Industry, New Delhi.

Together, we can make a significant difference to the burden that our nation carries and bring in a bright, new tomorrow for our nation.

ASSOCHAM's REGIONAL & OVERSEAS OFFICES

ASSOCHAM REGIONAL OFFICES

ASSOCHAM Southern Regional Office
No.13, D Block, Brigade MM
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Bangalore-560070
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Fax: 080-41256629
E-mail: director.south@assocham.com
admin_south@assocham.com

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Fax: +91-79-30006352
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503/D, Mandir Marg-C, Ashok Nagar
Ranchi-834 002
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ASSOCHAM Regional Chandigarh Office
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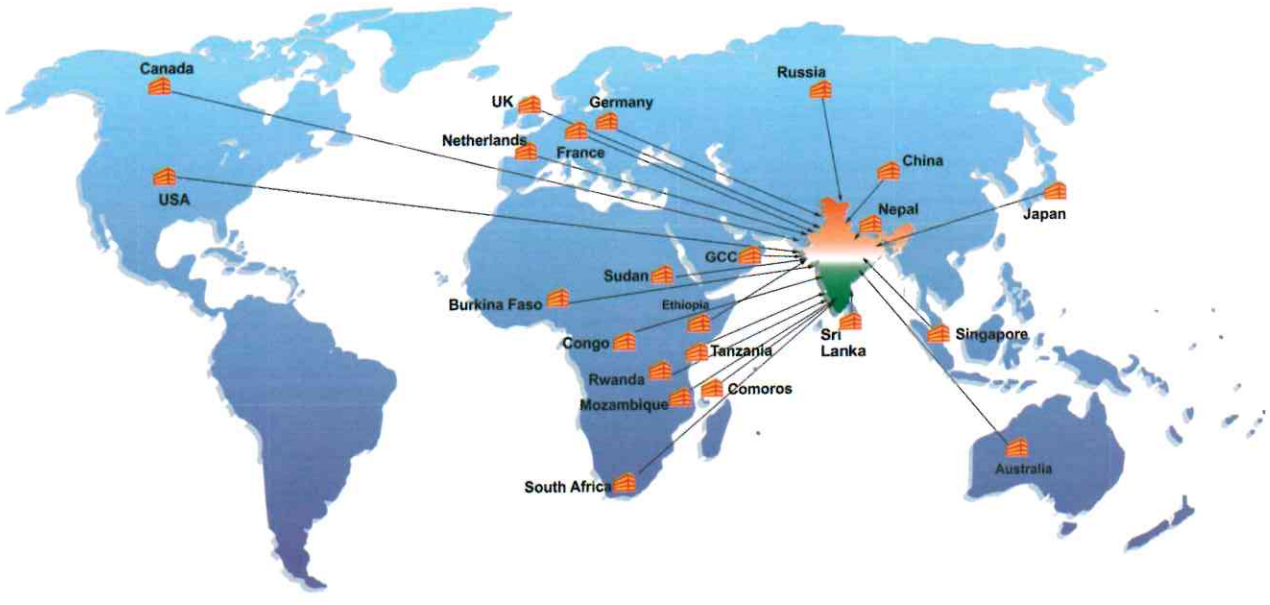
ASSOCHAM OVERSEAS OFFICES



The pictorial presentation of the world map does not purport to be the political and geographical maps of the world and India and is not drawn to scale. This is only indicative.

ASSOCHAM International Department

ASSOCHAM
INDIA

THE ASSOCIATED CHAMBERS OF COMMERCE AND INDUSTRY OF INDIA

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