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Dominant Factors behind Delay in Commissioning of Infrastructure Projects and the Extent of Delay along with Cost Overrun: An Analysis of Infrastructure Projects Commissioned during Last Five Years

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Abstract: ***Timely completion of infrastructure projects for delivering the desired benefits is one of the fundamental duty of administration. During the last five years i.e. 2012-13 to 2016-17, on an average three fourth of the infrastructure projects which were planned to commission couldn't see their commissioning. The quandary comes off even worse as most of the remaining one fourth commissioned projects couldn't deliver within scheduled time and stipulated cost. An additional cost of ₹ 63,910 crore was incurred and more than 35 additional months were added in the waiting time of public for availing benefits from these infrastructure projects. The reasons for the delay have been examined; delay in environmental clearances and land acquisition was found major hurdles in completion of these projects. The status of currently ongoing infrastructure projects testimonies this saga as only a little more than one fourth of the ongoing infrastructure projects are running on schedule and an additional cost of ₹ 1.72 lakh crore will have to be incurred in completing these ongoing projects.***
Keywords: Infrastructure projects, delay, cost overrun, environment clearance, land acquisition, R&R.

I. INTRODUCTION

The role of infrastructure in the steady, inclusive and sustainable economic and social growth of a nation needs no emphasis. The infrastructure sector is mother of all other sectors and has potential to make a nation prosperous. The availability and access to quality infrastructure has become the key indicator of the soundness of an economy. There is certainly a positive correlation between the growth (welfare too) and status of infrastructure. To reap the advantage of demographic dividend at full potential, a country like India which is pursuing the target of becoming developed and welfare nation, the quality and accessible infrastructure is a prerequisite. The infrastructure gap could hinder the growth of the nation. A unit increase in the investment in infrastructure has multiple positive effects on the economy in addition to huge social returns.

The infrastructure is broadly categorized into the social infrastructure (education, health, housing etc.) and economic infrastructure (roads, railways, mining, civil aviation, port, power, telecom, etc.).The infrastructure projects like metro trains, highways & expressways, industrial corridors, modern airports etc. have changed the life of mankind. For instance, transport is one of the such basic infrastructure as good connectivity ensures better access of public on government services and opportunities. It will be pertinent to mention here two recently commissioned infrastructure projects relating to connectivity, which are marvels of engineering, namely Chenani-Nashritunnel in Jammu & Kashmir and Dhola-Sadiya Bridge(Bhupen Hazarika Setu)in the North East. Incidentally, both the projects stretched around 9.2 kilometers and would play a vital role in changing the social and economic life in the respective regions. The former, Asia's longest tunnel is an all-weather route which cuts the existing distance between Jammu and Srinagar by 30 kilometers and also bypasses 44 avalanche and landslide-prone spots whereas the latter, India's longest bridge across the Brahmaputra will provide a vital link in the respective regions. These projects would not only enable an increase in trade, tourism and consequently in revenue but also strengthen the existing link to these strategically significant territories.

Keeping the importance of infrastructure sector in view, the Government in its budget for 2017-18 has proposed a sum of ₹3,96,135crore for creating and upgrading infrastructure during the financial year. The railways which is facing the problem of fund got largest-ever allocation.

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It is desirable that a project must be delivered within scheduled time and stipulated cost. A delayed project not only accelerate the cost but also put its relevance at risk. The delay in delivery of infrastructure projects reduces the efficacy of investment and is a universal phenomenon. India is no exception to this. In the Indian scenario, there are several reasons behind the delay of infrastructure projects. Few of the main reasons are indicated in the Fig. 1

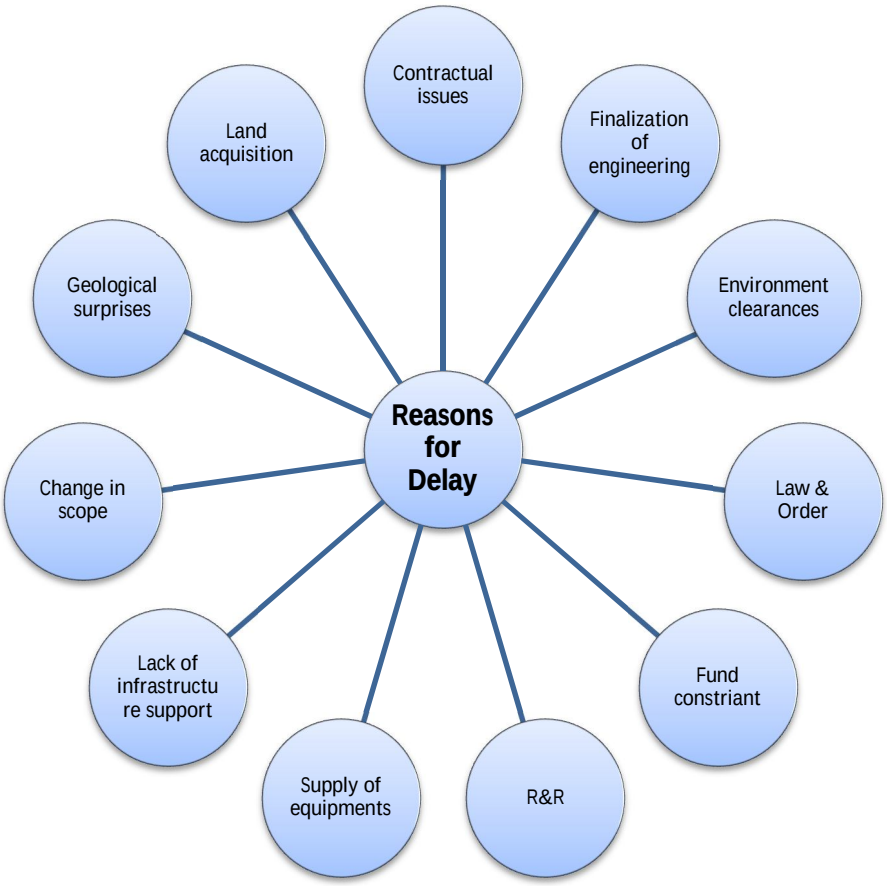

Fig 1: Factors behind delay

The delay in completion of infrastructure projects lead to increase in the cost of the project as the original cost estimates are prepared at the then existing prices. If a project is delayed or stalled, it is prone to accelerate the cost since there are few operating cost which has to be incurred even if the project is stalled. There are several other reasons behind cost overrun apart from the delay. These include under-estimation of original cost, change of scope of the project, change of rates in For ex market and statutory duties, high cost of environmental safety safeguards, expenditure incurred for rehabilitation measures, cost of land acquisition, inflation etc.

Why does a project get delay? What is the extent of delay and consequent cost overrun? We will first find answer of these questions in the light of available statistics and present scenario of project monitoring. The Indian infrastructure projects have been widely criticized for delay and cost escalation. The Santa Cruz Chembur Link Road (SCLR), a 6.45-kilometre-long six-lane road was constructed in Mumbai with the assistance from World Bank. The project missed 12 deadlines before its completion. The project was to be completed in November 2004 with a cost of₹ 115 crore but was actually completed in April 2014 with a total cost of ₹ 454 crore. The World Bank withdrew from the project midway due to repeated delays and described this project as the ‘world's most delayed road project’. The delay in the project occurred due to delay in clearance from Railways, resettling of project affected people, relocation of a religious structure, political interference, court cases etc. The delay and cost escalation is matter of concern. It is one of the biggest obstacle in development strategy of the planners and policy makers. According to the Doing Business of World Bank, India ranks at 182 among 185 economies on the ease of obtaining construction procedures (permits). New Zealand, Australia and Taiwan stood at first three places, respectively. In India, on an average a construction project requires approximately

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35 procedures, which is maximum amongst all other countries and it takes almost 196 days to conclude. A review of the institutional mechanism of infrastructure projects delivery is urgently required.

This paper examines the current status of project monitoring with the help of available statistics and literature. In Section 2, the relevant literature has been briefly reviewed. Section 3 deals with the data and methodology used in the paper. In Section 4,a comparative analysis of the infrastructure projects expected to be completed and actually completed during the last five years (i.e. 2012-13 to 2016-17) in 12 infrastructure sectors was made. The extent of time and cost overrun on these projects has been discussed in Section 5. In Section 6, the reasons behind the delay have been examined in detail. A snapshot of the ongoing projects has been given in Section 7. Section 8 deals with the existing institutional framework of project management and monitoring of the infrastructure projects. The discussion along with possible suggestive remedies has been concluded in Section 9.

II. REVIEW OF LITERATURE

The literature of project monitoring is quite rich and a lot of analysis has been made in this field wherein the extent and reasons for time and cost overruns along with the suggestive remedies have been discussed in length. The problem of time and cost overrun have been well recognized in the literature. A pioneer work in this field was done by Bent Flyvbjerg et al. (2002,2003,2004, 2005, 2006, 2009&2010).

The cost escalation apart from the general inflation is highly undesirable. A country like India, which has to prioritize the social sector, the opportunity cost of spending additional money, in addition to originally approved outlay on infrastructure projects is moderately high. Flyvbjerg, Holm and Buhl (2002)discussed that the cost overrun is a global phenomenon and one of the reason behind it is cost underestimation. The cost estimates used in decision making are significantly deceptive. Flyvbjerg, Holm and Buhl (2003) analyzed that the cost escalations in transport projects are common and exist across different project types, different continents and different historical periods. The story is true for all other infrastructure sectors projects too. Cantarelli, Flyvbjerg, Molin and Wee (2010) categorically explained the cost overruns in four categories namely technical, economic, psychological and political. The Political explanations (deliberate cost underestimation and forecast manipulation) were found the most dominant explanations for the cost overrun. A major source of risk in project management is inaccurate forecasts of project costs (Flyvbjerg, 2006).Flyvbjerget. al. (2005) advocated a new forecasting method called ‘Reference Class Forecasting’ for demand and cost forecast. It is a method of predicting the future by looking at the similar past. The American Planning Association(APA) also encouraged planners to use this method in addition to the traditional methods. The reference class forecasting is based on theory of decision-making under uncertainty and developed by Daniel Kahneman and Amos Tversky (1979). Daniel Kahneman was rewarded with Nobel prize in economics in 2002 for his contribution. The reference class forecasting promises more accuracy in forecasts by taking a so called ‘outside view’ on prospects being forecasted, while conventional forecasting takes an ‘inside view’. The outside view on a given project is based on knowledge and statistics about actual performance in a reference class of comparable projects. Flyvbjerget. Al. (2009) in answering the question why do project planners, on average, fail to anticipate the cost of complex projects or those based on new technologies underlined that the reasons for all forecasting errors can usefully be grouped into three categories namely delusions or honest mistakes, deceptions or strategic manipulation of information/processes and bad luck. The two most significant reasons for underestimation of project cost are delusion and deception. The delusion accounts for the cost underestimation and benefit overestimation while deception accounts for faulty planning in decision making. The delusion and deception are two complementary rather than alternative explanations of failure of large infrastructure projects due to cost underestimation and benefit overestimation.

Longer the gestation period, larger will be the cost. The cost escalation is highly dependent on the length of the project-implementation (Flyvbjerg et. al. 2004). Singh (2011) discussed that delays and cost overruns have systematically declined over the years. However, the effect is U-shaped and the delays are one of the crucial causes behind the cost escalation. The big projects have experienced relatively much higher cost overruns compared to smaller ones. Morris (1990) argued that the time and cost overruns can raise the capital-output ratio and bring down the efficacy of the investments. While analyzing the completed projects of 17 infrastructure sector, Singh (2010) discussed the extent and causes of delay and cost overrun and found strong and interesting correlations between the delays and cost overruns in an econometric analysis. Mulla and Waghmare (2015) on the basis of a questionnaire survey discussed the main reasons for time and cost overruns in construction projects. It was underlined that it would not possible to execute the construction projects within the time and cost without a sound planning.

Very often, the infrastructure projects become costlier due to increasing the scope of the project dully approved by the competent authorities. Sometimes the political populism steers the extension of the scope of the ongoing projects and announcement of new projects without adequately exploring the feasibility and viability. However, the project managers usually argue that such cost

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escalations should not be termed as cost overrun. The need of the hour is that the project should be initiated after proper conceptualization and once finalized, the management should stick with the scope of the project. Flyvbjerg, Bruzelius and Rothengatter (2003) discussed different risk associated in execution of the big projects. The cost of the Trans-European Transport Network sponsored by the European Union increases due to politically approved changes to project designs and environmental protection measures. It is evident from literature that the delays and cost overruns have significant adverse consequences. The correlation between delay and cost overrun is noticeable. The delay in getting environmental clearances and delay in land acquisition are the dominant factors behind the delay in completion of infrastructure projects. Raghurama, Bastianb and Sundaram (2009) focused on the environmental and land acquisition problem in mega projects pertaining to road sector. They highlighted that the methods used for assessments related to environmental impact and land acquisition should be speedy, transparent and technology based. Mahalingam and Vyas (2011) deliberated that the key challenges in the development of infrastructure in India is the land acquisition due to unreasonable compensation. Morris and Pandey (2007) comes with the similar finding that current land prices are highly distorted owing largely to regulatory constraints and the process of compulsory acquisition.

The delay in obtaining environment clearance has become a major problem before the project sponsoring authorities. The debate of welfare versus growth is quite old and the problem of balancing the environmental concerns with the needs of the growing economy is corollary to this. The Environment Impact Assessment (EIA) has been made mandatory for developmental activities. The Comptroller and Auditor General of India (CAG; 2017) found an average 89% delay in granting environmental clearance to an applicant. The R&R issue further added fuel to the problem. Working Group on Human Rights in India and the UN (WGHR; 2012, 2017) stressed that India is estimated to have the highest number of people displaced annually as a result of apparent development projects. WGHR also stressed that evictions are generally carried out without due process or any rehabilitation plan. Negi and Ganguly (2011) discussed that for rapid economic growth, people has been displaced, however, barring a few exceptions, most pre-1980 projects did not have a clear-cut resettlement plan. Fernandes (2008) assessed the nature of existing compensation offered by the Government and the compensation expected by the civil society. The unreasonably low compensation leads to public agitation and has become threat to law and order which in turn make the project delay.

III. DATA AND CONCEPTS

The Ministry of Statistics and Programmed Implementation (MoSPI), Government of India compiles the information on central sector infrastructure projects costing₹ 150 crore and above and publishes the project data in its various periodical reports. The project data for the period 2012-13 to 2016-17 from the different periodicals of MoSPIviz. Flash Report on Major Projects costing ₹ 150 crore and above, Project Implementation: An overview and Quarterly Project Status Report on Projects costing ₹ 150 crore and above have been taken. During the period, a total of 371 infrastructure projects from 12 sectors got commissioned. The factors delayed completion of these infrastructure projects along with extent of time and cost overrun have been analyzed in the paper. In addition to this, different Government reports like CAG Report, various Acts and different parliamentary questions have also been referred. The time overrun or delay is the difference between the original date of commissioning and the actual date of commissioning of the project. It is usually defined in months. The cost overrun is the difference between the original cost and the actual cost incurred in completion of the project. It is usually calculated as the percentage of the original cost.

There are certain limitations in the existing datasets. Whenever a department conceptualize a project, a tentative time schedule with estimated cost are associated with the project. But for a large number of infrastructure projects all the parameters are not available. For example, the original date of commissioning and anticipated date of commissioning are not available in case of few projects, thus the delay can't be calculated for such projects. In addition, the factors impeding the progress of the delayed projects are not available for a large number of projects.

IV. PLANNED VERSUS ACTUAL COMMISSIONING

In India, the concerned Ministry/Department, in the beginning of financial year plan to commission certain infrastructure projects during the forthcoming financial year on the basis of available resources and current status of such ongoing infrastructure projects. However, it is interesting to note that at the end of the year how many projects actually got commissioned. Whether the target is completed? If not, what is the extent of deviation? These questions will be deliberated in the subsequent discussion. The analysis of infrastructure projects planned to be completed and actually completed during last five years reveals thatonly25% infrastructure projects could see their commissioning. The rest of the projects couldn't complete due to various reasons and circumstances. These projects were either completed in subsequent years or stalled or abandoned by Government. The trend of year-wise, number of projects planned for commissioning and actually commissioned during last five years is shown in Graph 1.

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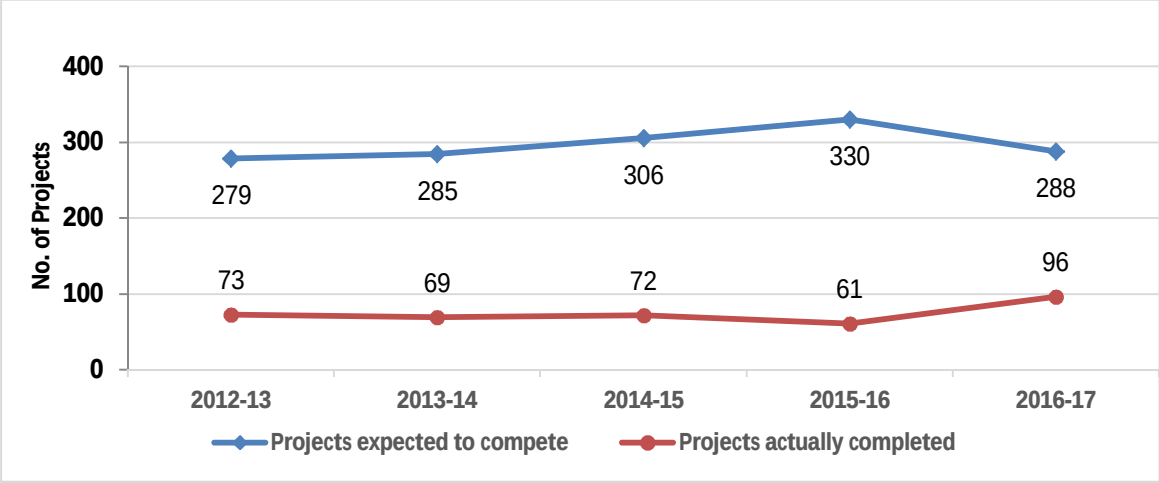
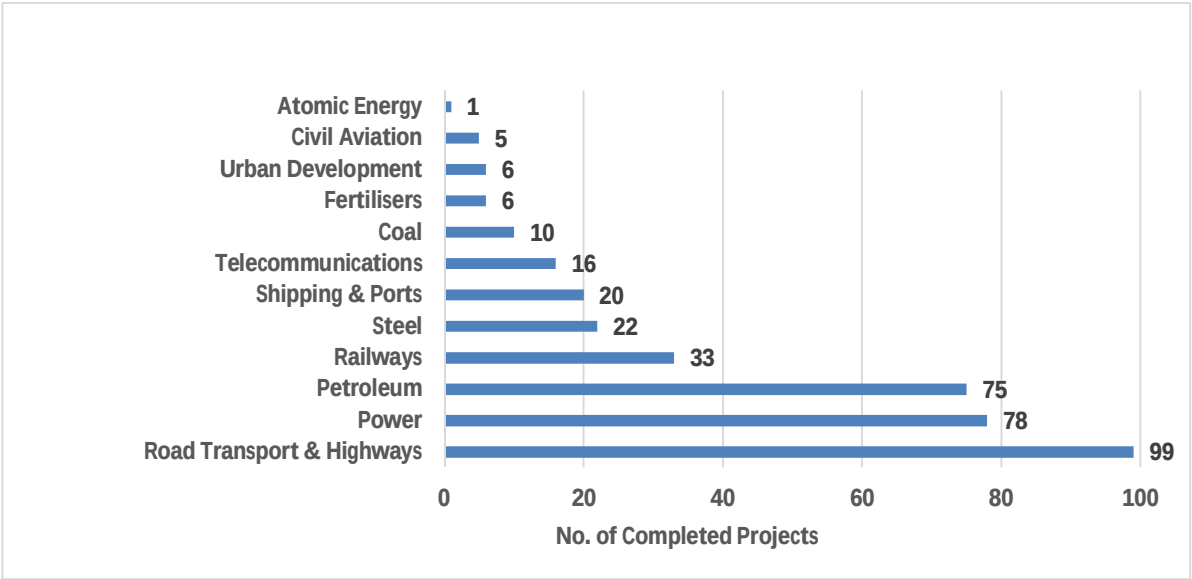


Graph 1: Expected Vs actual completion of the infrastructure projects

It is clear from Graph 1; we are far behind in achieving the set targets. There is a consistent failure over the years in completion of all the planned infrastructure projects. In the year 2015-16, only 18.50% projects got completed whereas in the year 2016-17, around 33% projects got completed out of the originally planned projects. The convergence of both the lines at a point by narrowing the gap would be highly desirable, when all the planned projects are completed. It would require a lot of efforts and policy interventions. A total of 371 infrastructure projects from 12 different sectors were commissioned during the last five years. The sector-wise breakup of these completed projects is in Graph 2.



Graph 2: Sector-wise completed infrastructure projects during 2012-13 to 2016-17

It is more interesting to see the sector-wise performance of 13 infrastructure sectors during the year 2016-17 (Graph 3). A total of 96 projects from eight infrastructure sectors were commissioned during 2016-17 out of 288 projects planned to be commissioned during the period. One of the top performing sector in which maximum proportion of planned projects were completed is Petroleum. Around 42% of the planned projects in Petroleum got commissioned. The performance was followed by the Road Transport& Highways and Railways in which around 39% and 36% projects were completed, respectively. In some sector like Atomic Energy, Fertilizer, Health, Shipping &Port not even a single project was reported complete during 2016-17. In the telecommunications sector, two projects got completed against one originally planned project. One project which was expected to complete last year and got delayed, was also commissioned this year.

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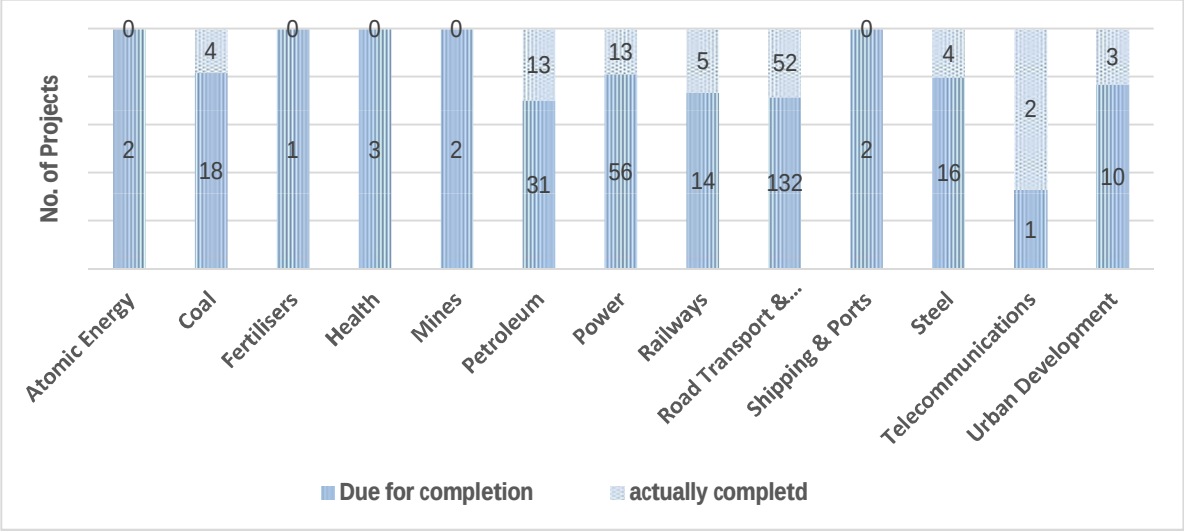
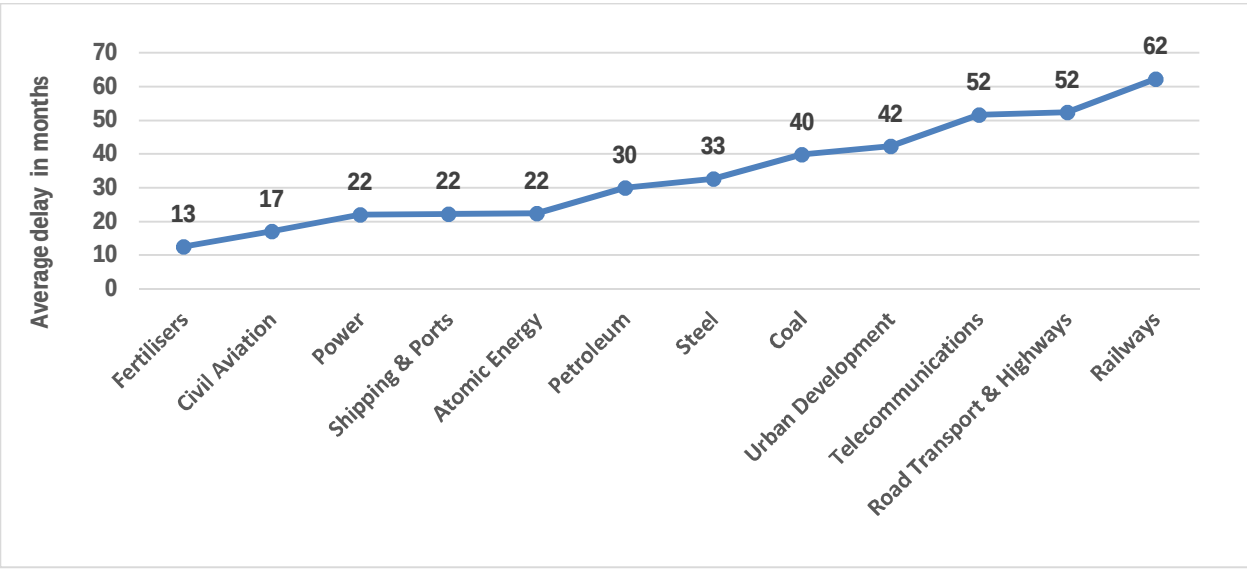


Graph 3: Sector-wise planned and completed projects during 2016-17

There is either lack of planning or poor execution apart from delayed regulatory & statutory approvals, financial constraints, problem in land acquisition etc. behind this huge gap in the planned and actually completed projects. The projects which couldn't complete during the year would likely to cause cost overrun in the subsequent years.

V.EXTENT OF DELAY AND COST OVERRUN

So far, we have discussed the expected and actually commissioned infrastructure projects. Now, few more interesting questions arise here. Whether these one fourth completed projects were delivered within scheduled time and stipulated cost? The answer of the question is a big 'No'. A total of 371infrastructure projects were completed during 2012-13 to 2016-17 in 12 infrastructure sectors. Most of these projects couldn't deliver within scheduled time and stipulated cost. The time overrun was as high as up to 181 months as the railways project 'Kolar-Chickbalapur GC' implemented by South West Railways was expected to complete in January 1999, but was actually commissioned in December 2013.Similarly, the highest cost overrun was in the tune of 820% as the petroleum project 'Development of G1 and GS-15'implemented by ONGC was to complete with a cost of ₹ 430 crore but it was actually completed with the cost of₹ 3955 crore. The sector-wise average delays (in months) and cost overruns (in %)in completion of these infrastructure projects is given in Graph 4and Graph 5, respectively and the year-wise original and anticipated cost is shown in Graph 6.



Graph 4: Sector-wise average delay (in months) in completion

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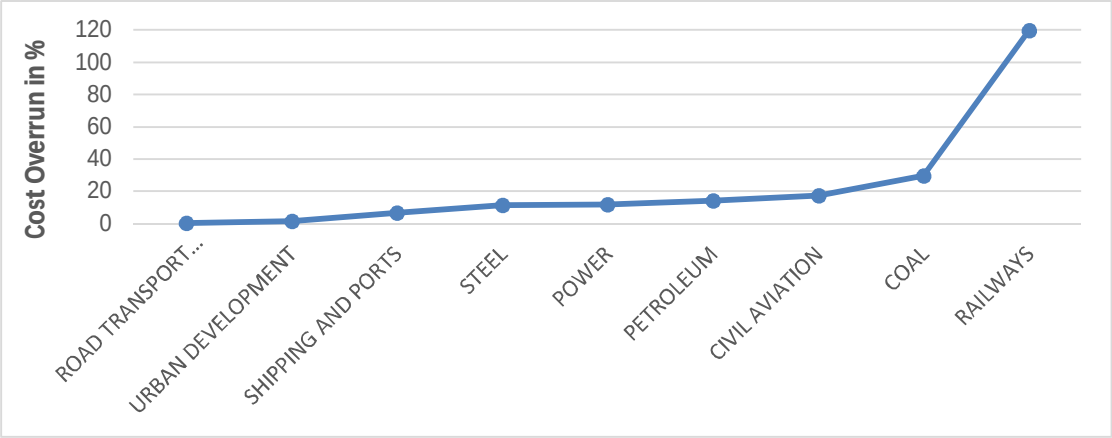
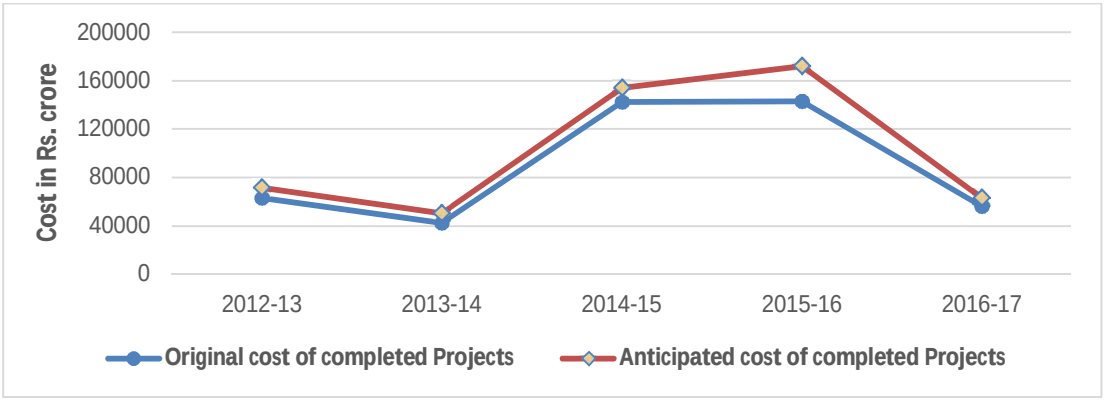
It is evident from Graph 4, on an average, a railways project was delivered more than five years beyond its original commissioning whereas the projects of road and telecom sector were delivered around four and half years beyond their original date of commissioning. If we compute the overall average delay irrespective of sector, around 35 additional months were taken in commissioning of these projects. We can say on an average a project was delayed by three years. The cost overrun, one of the side effect of delay is another area of concern. The probability of having cost overrun in the delayed projects is fairly high. The time overrun is a significant reason behind the cost overrun. During the last five years, an additional amount of ₹ 63,910crore was spent on completion of these projects. The cost overrun was 14.30% against the original cost for these commissioned projects. The sector-wise analysis of cost overrun shows that railways has the maximum cost overrun of 120% followed by Coal with 30% cost overrun.



Graph 5: Sector-wise percentage cost overrun

In the year 2014-15, the cost overrun was only 8.31% which increases up to 20.43% in the year 2015-16. For the year 2016-17, it was comparatively low at 11.91% (Graph 6).



Graph 6: Year-wise original and anticipated cost of completed projects

The gap between the two lines shows the extent of cost overrun in these completed infrastructure projects over the years in Graph 6.

VI. WHAT CAUSES A PROJECT DELAY?

Finally, let us discuss the million-dollar question: What does cause delay? The answer of the question is not so straight forward. The various infrastructure sectors are intrinsically different from one another. Few sectors are labor-intensive, few are machinery & equipment intensive whereas in some sector the procurement of heavy and sophisticated instruments is involved. Moreover, the infrastructure projects are located over the diverse geographical locations across the country. The main reasons behind these delays have already been discussed. The reasons for delay are generic and sector-specific. A single project may be delayed due to one or combination of several factors. It is difficult to get all the reasons for delay for each and every delayed projects. The factors impeding the completion of the infrastructure projects during 2012-13 to 2016-17 have been compiled from MoSPI reports and analyzed. The relative frequency of these factors delaying the completion of infrastructure projects gives fairly good idea about the major hurdle in completion of projects.The factors which delayed the completion of infrastructure projects during the last five years are given in Graph 7.

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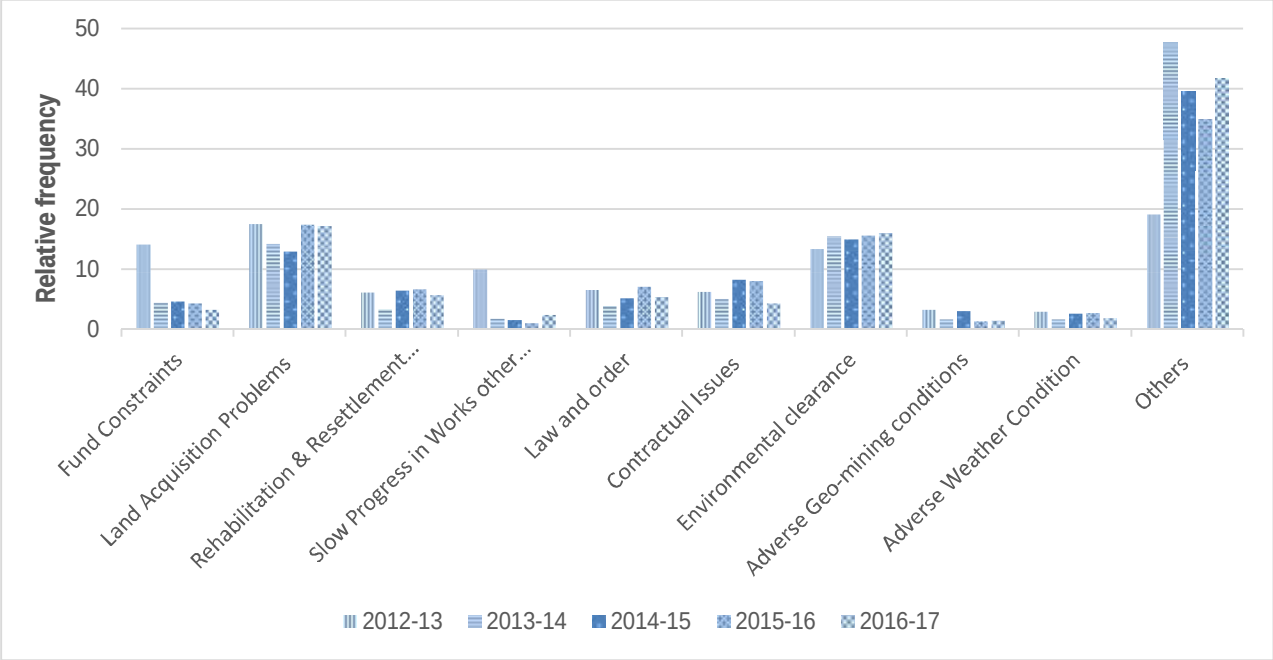

Graph 7: Relative frequency of the factors delaying the infrastructure projects

The category 'Others' includes problem of technology selection, change in scope of the project, court cases, lack of adequate infrastructure, shortage of labour, lack of skilled manpower, delay in permission from local bodies, Right of Use (ROU) problem, delay in supply of equipment, Right of Way (ROW) problem, utility shifting, slow progress in civil works etc. It is clear from the Graph 6; the fund constraint is not significantly contributing in delay now. The reason behind it would be priority of Government on infrastructure sector and the adoption of PPP approach. On the other hand, the environment clearance and land acquisition are the persistent problem. The issue of R&R, law & order and contractual issues are other significant reasons for delay.

A. Sector Specific Reasons for Delay

As discussed in the preceding section, the reasons for delay are generic and sector specific. The projects of Atomic Energy usually suffer from delay in supplies from the foreign vendors, lack of skilled manpower and agitation by locals in the vicinity of plant due to the fear of possible threat of radiation. Even PILs have been filed in Supreme court against such plants. However, the Civil Liability for Nuclear Damage Act, 2010 aims to provide a civil liability for nuclear damage and prompt compensation to the victims of a nuclear incident.

In the Coal sector, the delay in land acquisition, environmental clearances, contractual issues, R&R problem and geological surprises are the main constraints in completing the projects on time. Steel sector suffers from delay in supplies and erection of structures by the vendors. The petroleum projects got delayed due to delay in environment clearance, land acquisition, ROU issue and law & order problem. The power sector faces the problem of land acquisition, law & order, ROW issue, environment clearance, public agitation against big dam and R&R issue. The problem of fund constraints, slow progress of works and land acquisition is pretty common in Railways projects.

The Road sector projects suffer from the problems relating to land acquisition, environment clearance and public agitation. The projects of Urban Development face the problem of land acquisition, contractual issue and R&R issue. The Telecommunication projects usually suffer from contractual issues. In addition, the governance and law & order situation of the concerned states wherein the project is being implemented are also main factors which cause delay. The projects in Jammu and Kashmir faces the problem of disturbance in the state while extremist activities in Naxal affected regions is a hurdle in smooth implementation of the infrastructure projects. The progress of infrastructure projects also faces the adverse climatic conditions. The hilly terrains in some states cause problem due to extreme and bad weather. The extreme weather like flood, heavy rain, cloud burst, snow fall etc. cause hindrance during monsoon and winter season in the construction work of the infrastructure projects. The natural reasons delaying the projects are unavoidable while the manmade and technical reasons could be minimized.

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B. Environmental Clearance

A large number of infrastructure projects got delayed due to delay in getting environment clearance. To get the environmental clearance timely has become the biggest challenge before the project sponsoring authorities. The problem of balancing environmental concerns in one of the fastest growing economy has hindered the infrastructural development. The Constitution of India assigns the responsibility to protect and improve the environment including forests, lakes, rivers and wild life to its citizens and the states. The article 48A and 51A of the constitution of India deliberate upon it. In connation to this, different acts have been enacted. The Ministry of Environment, Forest and Climate Change (MoEF&CC) is the nodal agency for the planning, promotion, co-ordination and overseeing of the implementation of environmental and forestry policies for the nation. The EIA has been made compulsory for the infrastructure projects. It is a planning tool to integrate environment concerns into developmental process from the initial stage of planning. The EIA ensures that the environmental impact and the mitigation measures are taken into account during the project design. The EIA was formally recognized at the Earth Summit at Rio de Janeiro in 1992 and in India, it commenced in late 1970s when the erstwhile Planning Commission got examined the river-valley projects from an environmental perspective. Whether a project is required to get environment clearance can be ascertained from EIA Notification and EIA Manual of MoEF&CC.

The process of getting environment clearance is quite cumbersome and time consuming. A transparent and quick method of EIA is required to complete the mega projects of Road (Raghurama et. al., 2009). The CAG(2017) in its report on Environmental Clearance and Post Clearance Monitoring examined whether the process of grant of Environmental Clearance is carried out in a timely and transparent manner and its compliance with the prescribed process. It also examined the compliance by project proponents with the conditions attached to the environmental clearances. The CAG found an average 89% delay in granting environmental clearance to an applicant. The projects were not cleared within the stipulated 105 days and the average delay in grant of EC was 238 days. Despite the online processing of applications, there is inordinate procedural delays in getting the environmental clearance. The infrastructure sector projects faced maximum delay in environment clearance processing according to the CAG report. The EIA process suffers from various ‘procedural deficiencies’, which leads to delay in grants, there is ‘lack of compliance’ of environmental conditions by project proponents, ‘weakness in monitoring by the state pollution control boards’.

C. Land Acquisition

The second most dominant factor impeding the progress of infrastructure projects is the problem of land acquisition. Globally, the Government has the power to acquire the land for public purpose, in lieu of a compensation paid to the landowners. The Land acquisition in India is governed by the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (LARR). It regulates land acquisition and lays down the procedures and rules for granting compensation, rehabilitation &resettlement to the affected persons.

Ideally, the complete land should be acquired first before initiating an infrastructure project. The projects should not be awarded with partial availability of land. The subsequent land acquisition is not an easy task. Mahalingam and Vy as (2011) debated that the Indian Land Acquisition Act, local Acts and guidelines followed by multilateral agencies, all suffer from limitations in practical implementation. They identified two key issues with land acquisition in India. First, very little meaningful negotiation is undertaken and very little attempt was made to involve stakeholders in a consultative discussion. Second, thZe methods by which compensation is fixed are subjective and suboptimal. The compensation is often much lower than the actual market values. Therefore, the landowners are often reluctant to give their land. Raghuramaet. al. (2009) emphasized that the methods used for assessments related to land acquisition should be speedy and transparent. Dhru (2010) stressed that the methods of fixing even the monetary compensation through the averaging of sale deed prices is unfair. Indian legal framework assumes the displaced person to be a willing-seller of his land by granting only monetary compensation. There should be compulsory Social Impact Assessment ensuring that the subsequent problems of loss of employment, social surroundings and emotional trauma are accounted for.

The Government has approved long awaited international airport at Jewar in Greater Noida which expected to require 5,000 hectares of land. Nine villages have been identified for acquisition for the first phase. The land acquisition, adequate compensation and rehabilitation could be an uphill task.

The area had already been in news when the twin villages of Bhatta and Parsaul became the epicenter of protests on land acquisition. The timely completion of the airport will depend on the land acquisition and environment clearance. The law & order problem and the issue of R&R depend largely on the issue of land acquisition.

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D. Resettlement and Rehabilitation

The R&R is another problem before the project authorities. Development causes displacements. It is the question of welfare of few versus welfare of the public at large. However, the process is not Pareto optimal. The words 'Resettlement' and 'Rehabilitation' are not synonymous as they appear. Resettlement refers to the process of physical relocation whereas Rehabilitation refers to a relatively longer course of action require for regaining livelihood, assets, economic resources & opportunities, social &cultural bonds etc. The construction of the multipurpose river valley projects, power plants, mining, transport etc. have been a major source of displacement. The land is not merely a source of income for the landowner but it is a symbol of social status also. However, the forced evictions and grabbing of land from landowners and farmers has increased the pain. Generally, the displaced populations have no say in selection of the resettled site and other resettlement measures. Involuntary resettlement without adequate R&R planning for the development projects has adversely affected the life of the people.

The WGHR (2017) admits the widespread usual phenomenon of displacement of people on the account of developmental projects. It stressed that at least 70 million people have been displaced in India for development projects since 1947. The irony of the fact is that vast majority has not received adequate resettlement and the minority that got resettlement mostly in remote sites without access to basic services like livelihoods, education, healthcare etc. The WGHR (2012) also stressed that India is estimated to have the highest number of people displaced annually as a result of apparent development projects. The rural poor, marginal farmers, fishermen and tribal constitute the major portion of displaced. The evictions are generally carried out without due process or any rehabilitation plan. The Commonwealth Games held in Delhi in 2010 displaced around 2,00,000 people in the city. A slum cluster of 368 Tamil families at Jangpura's Barapullah Nullah was demolished to construct a parking area for the Games without proper rehabilitation plan. The importance of planned R&R got late attention. In the beginning, there was no proper planning for R&R. Negi and Ganguly (2011) discussed that for rapid economic growth people has been displaced, however, barring a few exceptions, most pre-1980 projects did not have a clear-cut resettlement plan. The Resettlement was undertaken on a case-to-case basis. Fernandes (2008) assessed the nature of existing compensation and what the Indian civil society feels it should be. There exist constant distortions in displacement and compensation. The livelihood is paramount and compensation must be judged accordingly.

E. Other Factors Delaying Infrastructure Projects

In addition to above three major factors which impeded the progress of the infrastructure projects, there are other several reasons which are forcing the projects behind the schedule. One of such problem is associated with contractual issues. In the present contractual framework, the implementation of an infrastructure project typically involves several contractors and sub-contractors. The bidding and the award of contract involves several complicated actions like preparation of the contract documents, legal sanctity of the contract, effect of force majeure, liquidity damages, technical and financial evaluations etc. and liable to several legal issues. A single dispute related to contract in the beginning of the project may delay or stall the entire project. The formation, performance and enforceability of contracts is governed by the Indian Contract Act which is one of the oldest law of India. The other main factor delaying the infrastructure projects is change in the scope of the projects. As discussed earlier, sometimes the political populism and poor project management broaden the scope of the project without exploring the feasibility. The scope of the project should not be increased unless it is extremely urgent and doesn't hamper the progress of the project. The adverse law & order situation in the vicinity of project location hindered the project activities. The unreasonable compensation in lieu of land, inadequate resettlement of project affected people, failure in proving employment to the affected people in different project activities etc. led to public unrest and agitation.

It sometimes takes ugly turn and makes the project activity stopped. The concerned State Government can ensure proper law & order situation. The other factors impeding the execution of the infrastructure projects include the problems of technology selection, delay in civil work, various court cases, inadequate infrastructure support, municipal permissions, shortage of labour, ROU/ROW problems, lack of skilled manpower etc.

VII. STATUS OF ON-GOING PROJECTS

We have deliberated so far on the infrastructure projects completed during the last five years. A quick look on the status of the currently ongoing infrastructure projects and the extent of delay and cost overrun of such projects would give a comprehensive indication about the present situation of the project implementation. The status of ongoing central sector infrastructure costing ₹ 150 crore and above as on 31.03.2017 as per the MoSPI report may be seen at Table 1.

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Description	Value
Total number of projects on the monitor of MoSPI	1231
Projects running on schedule	333 (27%)
Projects running behind the schedule (delay)	327 (26.5%)
Projects for which delay can't be calculated	571 (46%)
Projects showing cost overrun	322 (26%)
Total original cost of the projects (₹ crore)	15,59,571
The cost overrun (₹ crore)	1,71,591 (11%)

Table 1: Status of ongoing infrastructure projects as on 31.03.2017

It is evident from Table 1,slightly more than one fourth of the infrastructure projects are running on schedule and almost equal proportion of projects are running behind the schedule. The limitation of the data has already been discussed in Section 3 and the same can be visualized from Table 1 as for 46% of infrastructure projects the delay can't be calculated. Either the original date of commissioning or anticipated date of commissioning is not available for these projects. The cost overrun has gone up to ₹ 1.71 lakh crore against the originally approved cost of ₹ 15.59 lakh crore.

VIII. THE INSTITUTIONAL MECHANISM

The journey of an infrastructure project passes through project conceptualization, preparation of feasibility report, preparation of Detailed Project Report (DPR), project approval including statutory clearances, project implementation, detailed planning and scheduling for implementation before it finally commissioned and subsequently evaluated. The preparation of Feasibility Report before seeking in principle approval for the project is most crucial stage of project inception. It ascertains the financial, technical, operational and legal feasibility of the project. It defines the viability and justification of the project so that the planner scan decide over the investment. In nutshell, it is a base document for investment decision-making. Preparing a DPR is the next significant step of the process. The DPR contains complete breakdown of all components of the project with specific time schedule and firmed up costs. It is a base document for planning the project and its implementation. DPR firms up the project. Thereafter the DPR is dully appraised and the decision on initiation of project is taken by the competent authority.

In India, many institutions and organizations are actively involved in the implementation of infrastructure projects. The Government of India (GoI) initiates infrastructure projects through its concerned Ministries/Departments and the progress of the project is continuously monitored by MoSPI, NITI Aayog, Cabinet Secretariat and the Prime Minister's Office (PMO) in addition to the administrative Ministry, Department and Project Implementing agency. Thus implementation of infrastructure projects needs cooperation and coordination amongst various government institutions.

The Project Appraisal & Management Division (PAMD) in NITI Aayog, in cooperation with other departments, evaluates various aspects of the project, like its justification, technical feasibility and reliability of the cost estimates etc. before the project is considered for approval by Public Investment Board (PIB) or Delegated Investment Board (DIB) or other authority. Finally, the decision to initiate the project is undertaken by the Cabinet or Ministry of Finance or the administrative Ministry depending upon the predefined threshold level of the investment.

The MoSPI is mandated for monitoring the central sector infrastructure projects costing ₹150 crore and above. The Infrastructure and Project Monitoring Division (IPMD) in MOSPI collects information in one place on these projects through its Online Computerized Monitoring System (OCMS). The project implementing agencies upload the relevant data on OCMS. IPMD monitors the progress of these projects and publishes different monthly/quarterly reports. The MoSPI flags the projects showing time and cost overrun to the concerned administrative Ministries, NITI Aayog, PMO and Cabinet Secretariat for taking appropriate remedial measures. Nevertheless, the projects on the monitor of MoSPI are not exhaustive. Only those projects, which are reported by the Ministry/Department/Implementing Agencies are monitored. However, it is standing instruction for the administrative Ministries that they advise concerned project implementing agencies under their administrative control to report all the central sector projects costing ₹ 150 crore and above on the OCMS of MoSPI. The responsibility of actual implementation of these projects lies with the nodal administrative ministries and project implementation agencies.

Although central sector infrastructure projects are implemented by the concerned Ministries/Departments but these infrastructure projects physically located in various states. A number of central sector infrastructure projects fall in more than one state. Several issues pertain to concerned State Governments and require active coordination amongst various institutions. The MoSPI has

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suggested all the states to set up a Central Sector Projects Coordination Committee (CSPCC) to resolve project related issues faced by project implementing agencies in their states. The CSPCC is to be constituted under the chairmanship of Chief Secretary, with Principal Secretary (Planning) of the State/UT as the Member Secretary. The representatives from the central project authorities, MoSPI and concerned State Departments/ Agencies are the part of the committee. The issues like land acquisition, shifting of utilities, resettlement & rehabilitation and law & order problems are to be solved by CSPCC. The Project Monitoring Group (PMG) under PMO (earlier under Cabinet Secretariat) has been set up for resolving a variety of issues including fast tracking the approvals for setting up and expeditious commissioning of large Public, Private and Public Private Partnership (PPP) Projects. Any problem hindering the implementation of projects may be submitted to PMG. The PMG neither sanction nor clear any project nor grant any approval for setting up of any project. It facilitates resolution of specified issues pending for resolution with Central and State level authorities. The issues hindering the progress of the projects are discussed in PMG meeting with the concerned Central and State Government authorities. The decisions taken in the meeting of PMG are followed up in subsequent meetings until a final decision is arrived. A programme namely PRAGATI (Pro-Active Governance and Timely Implementation) has also been initiated by PMO to monitor and review the important programmes and projects of the Government of India as well as projects flagged by State Governments. It is a three tier (PMO, Secretaries of Government of India and Chief Secretaries of states) IT based redressed and monitoring system where Prime Minister interacts through Video-Conferencing with the different stakeholders on various issues. It is an effort to speed up the implementation of the infrastructure projects. The mechanism of Standing Committee in each Ministry to review the time and cost overruns in infrastructure projects and to fix responsibility thereto is in vogue. In each Ministry a Standing Committee has been set up to fix responsibility for time & cost overruns, where cost overruns are over 20% and are accompanied by time overruns of over 10%. The project sponsoring ministries require to set up a Revised Cost Committee for every case where the project cost overrun is beyond 20% due to time overrun, change in scope, under estimation, etc. (excluding increase in costs due to statutory levies, exchange rate variation and price escalation within the approved time cycle) to identify the specific reasons behind such increase, identify lapses, if any, and suggest remedial measures for the same.

IX. CONCLUSION AND WAY FORWARD

The smooth completion of an infrastructure project within scheduled time and stipulated cost has become a major challenge in India. A large number of infrastructure projects are not sustainable due to one reason or another and have become a matter of concern in public, politics and media. The viability of the such projects also makes uncertainty on the investment. The time and cost overruns in infrastructure projects in an environment of uncertainties cannot be eliminated completely; but these can be minimized by taking up suitable measures. The delay due to unforeseen causes are inevitable but the delay on the account of several regularity clearances can be curtailed.

It is true that the magnitude of time and cost overruns has been declined over the years. The cost overrun which was 36% in March, 2000 has been declined up to 11% in March 2017 and the number of projects showing time overrun has come down from 44.99% in March, 2000 to 26.56% in March 2017. These achievements have been accomplished due to better project management & monitoring, better financing plans, reforms in regulatory frameworks etc. However, there is certainly scope for further improvement. The delays are most frequent in the early stage of project implementation. The problems in the initial stage of project implementation include wrong project conceptualization, inappropriate feasibility study, wrong formulation & appraisal, incorrect cost estimations, delays in getting various clearances, problems of project funding, subsequent changes in project design, lack of expertise in carrying out specialized tasks etc. The project sponsoring authority has to play a significant role in providing utmost importance during the initial stage of project implementation. The project authority should aptly engage a team of experts and consultants from repudiate institutions for preparing Feasibility Report, DPR, contract documents, EIA Reports etc. The DPR must be rigorously apprised keeping the track record of the sector and the implementing agency in view. An extensive cost benefit analysis considering the social rate of return and viability of the politically motivated projects should also be ascertained.

One of the major factor responsible for accelerating the cost, apart from delay is incorrect cost estimation. The correctness of cost estimates depends on the quality of the estimation process. The dividend, interest and depreciation depend on the capital cost of the project. If the cost of the project is not estimated correctly, the preparation of cash flow and profitability estimates will go in vain. The fund constraint is no more a big problem as the Government has given utmost priority to the infrastructure sector; moreover, the PPP model has also solved the problem of availability of fund to some extent. The exact cost forecasting may be difficult task but a suitable cost estimates can be achieved by specifying the scope of the project clearly and by avoiding poor cost models. Better forecast technique like reference class forecasting which also considers the outside view should be exhaustively used. There should not be any scope for ‘Delusion’ and ‘Deception’ in cost estimates.

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More coherence in the activities of different institutions like administrative Ministries, MoSPI, NITI Aayog, PMG, State Governments, Central Public Sector Enterprises (CPSEs) is solicited. The institutions should encourage the better management through rigorous and quality monitoring of infrastructure projects. The mechanism of Standing Committee and CSPCC need to be made more operative. Traditionally, political populism played a significant role in initiation of infrastructure projects. The pressure for announcing new trains and increasing stops for existing ones during Rail budget is well known. However, the end of 92 years old practice of a separate Rail budget would stop this tradition to a large extent. The viability, cost benefit analysis and social rate of return should also be kept in view before initiating the infrastructure projects. An equal importance to complete brown field projects apart from initiating green field projects need to be given.

There is a need to simplify the regulatory framework for approval of infrastructure projects. A single window clearance system with simplified and time bound regulatory and statuary approval processes for infrastructure projects may be helpful in solving the problem of delay. The review of the contractual framework for timely settlement of contractual disputes, strong R&R policies, reasonable compensation for land acquisition, strict compliance for timely environment clearance and effective project planning & monitoring can reduce the time and cost overruns. The commissioned infrastructure projects should be evaluated by independent agencies and the best practices found in project implementation should be encouraged. The faster construction techniques should be adopted. In the present scenario, the technology can play an important role.

To adhere the timeline and the cost, one should avoid unreasonable project scope, over ambitious cost estimates, incorrect task assessment; ensure the adequate planning, strong risk management, task clarity and effective procurement planning. A complex and large project can't be monitored manually. Therefore, the technique of Critical Path Method (CPM), which identifies the activities logically based on the criticality in relation to time and the Programme Evaluation and Review Technique (PERT), a statistical tool to analyze the tasks involved in completing the project should be appropriately used.

One of the limitation of existing project monitoring is that the central sector infrastructure projects costing less than ₹ 150 crore and all other projects implemented to different states and private sector are out of purview of MoSPI and are not being monitored at one place. Some alternate mechanism can be devised for the same. The project implementing agencies should provide all the project related data on the OCMS of MoSPI. More or less, the present system of monitoring the infrastructure projects is quantitative, there is no centralized and independent authority to measure the qualitative aspects of the projects. The mechanism for qualitative evaluation of the infrastructure projects should also be devised. In nutshell, for timely completion of the infrastructure project within the stipulated time and cost, a comprehensive overhauling of project delivery system is warranted.

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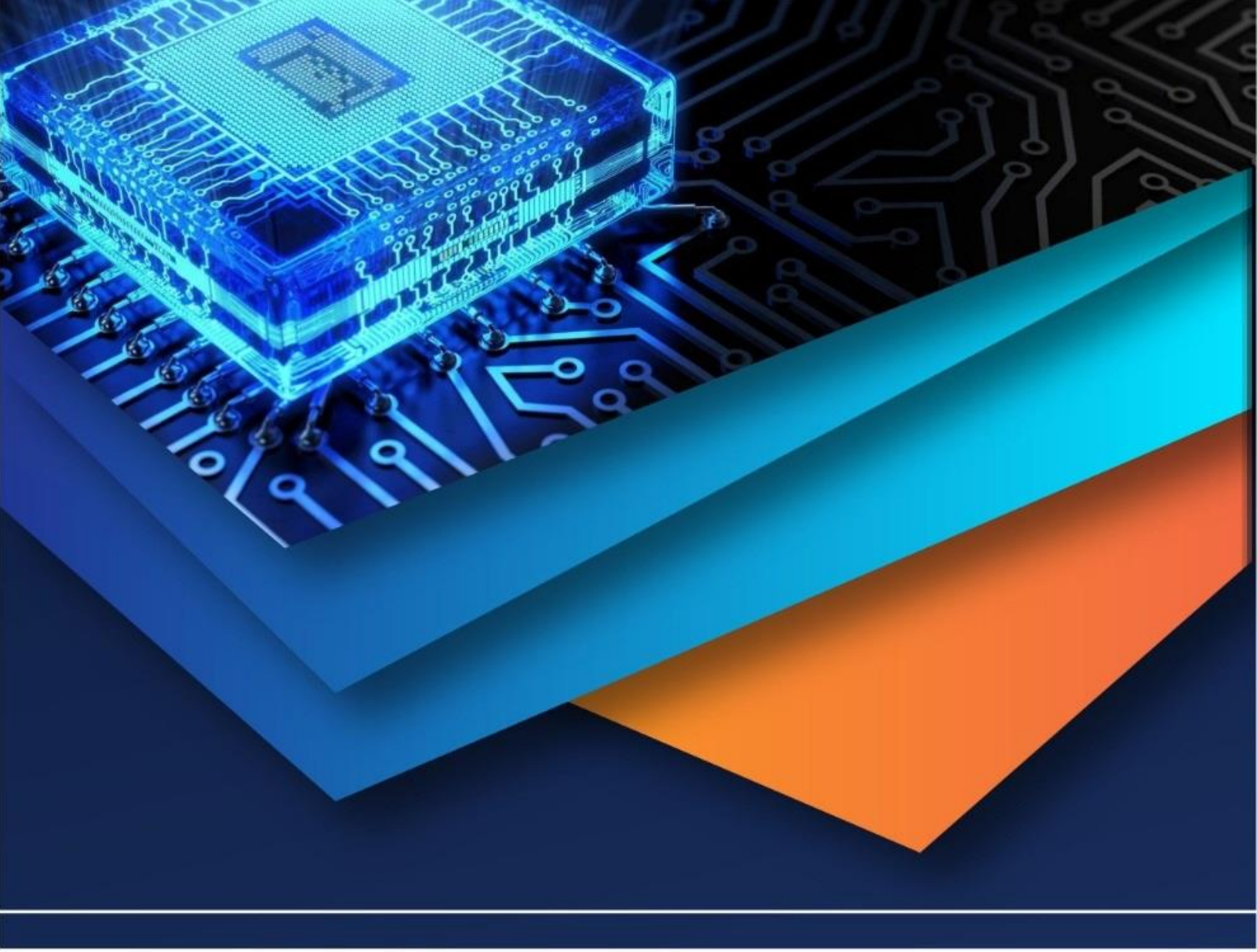

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