

Workshop on Accelerating Infrastructure Building in India

Organised by NCAER

(As part of a study supported by Holcim Ltd.)

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Summary of Proceedings

Investment in infrastructure in the Twelfth Five Year Plan is expected to double from its level in the Eleventh Plan and reach \$1 trillion. Yet, by itself, such a massive investment would not lead to faster development of infrastructure unless speedier and more efficient completion of projects is ensured. Excellence in implementation is essential for infrastructure development. Implementation remains India's Achilles' heel. China provides a contrast as it has aggressively and single-mindedly developed its infrastructure in the last few decades. India has now taken up its infrastructure development program with greater focus.

In a recently completed study the National Council of Applied Economic Research (NCAER) has provided a detailed review of the implementation process for infrastructure projects in India. The findings of the study sponsored by Holcim Ltd were released as a background paper and discussed at a Workshop held on December 1, 2010, with the idea to learn from practitioners and other experts and discuss the way forward. The study illustrates the complexity of the process of infrastructure project execution in the case of power, ports and airports, followed by a systematic examination of the constraints in the efficient implementation of the projects in the case of power and roads. It also provides some insights into how the Chinese have fared so much better in infrastructure development. The next phase of the study would take up specific projects in both public and private sectors, rural and urban, to understand the issues at the ground level.



Welcoming guests and panelists at the workshop, Mr. Suman Bery, Director General of the NCAER, commended the long and productive association with Holcim for research in infrastructure, which began in 2007 with rural housing. Paul Hugentobler, member of the executive committee, Holcim, said when his company entered India in 2005, infrastructure spending was below 5 per cent of GDP, while it was 10 per cent in China. Just five years later, the gap is closing. Power demand is growing at 12 per cent annually, while motor vehicle registrations are soaring at 11 per cent per annum and passenger air and rail traffic are growing at 20 per cent and 8 per cent pa respectively. Cargo traffic is expected

to double (air, sea and rail) over the last four years and continue at this pace due to rapid industrial growth. Transport infrastructure accounts for 37-40 per cent of the budget and creates an impetus for industrialization. India's continuous growth will further intensify the strain on the deprived and outdated state of infrastructure, so new developments need to speed up.

According to Mr. Hugentobler, the key to growth in India is decentralizing manufacturing and facilitating physical connectivity between economic nodes. Investment will not trigger implementation unless there is a clear shift in focus towards pragmatic execution and operational excellence. The challenges there are: Skill and vocational training; Land acquisition; Labor market reforms; and Easing bureaucracy. The private sector, which already accounts for close to 40 per cent of the investments, must be allowed to play a fuller role.



Inaugurating the workshop, Mr. Kamal Nath, the Honourable Minister for Road Transport and Highways, said the infrastructure deficit in India was mainly a result of growth preceding the development of roads, ports, power and other related areas.

The other important reason was faulty planning and conception. Commending NCAER studies on the valuable inputs they provided at the economic policy making stage, he said while planning and advising was the easiest job, implementation was the toughest. Many factors play a part in delaying implementation. He stressed that the plans should facilitate efficient implementation.



The presentation of the findings of the infrastructure study was done in five segments spread out over the duration of the workshop. It was divided thematically into Overall review; Pre-execution issues; Supply-side execution issues; Creation of favourable environment for execution; and Sustaining accelerated infrastructure development.

A summary of the record of implementation of the Central sector projects given in Table 1 illustrates some of the challenges in execution of infrastructure projects.

Description / Sector:	Power	Roads	Airports	Ports	Railways
Total Projects (number)	108	169	51	62	123
Average Cost (₹ Cr)*	669	212.74	50	68	93.64
Average Time(months)*	44.9	48.6	30.4	56.1	65.8
Completed on time (number)	35	23	4	3	1
Completed within cost (number)	58	79	29	41	18
Percent Time Overrun	33	46.5	67	86	105
Percent Cost Overrun	27.2	14.5	(-) 2.0	(-) 10.0	76.4

Note: The projects include those which were completed during the period from 1980-81 onwards. 'Outlier' projects (exceptionally high time/ cost overruns) excluded

* Cost and time are as estimated at the time of sanctioning the project

Data source: Ministry of Statistics and Programme Implementation.

Overall, there is a 10-11 per cent cost overrun and 45 per cent time overrun for central sector projects in the infrastructure projects which were completed after 1980-81. The worst progress is in ports and railways' it is fair to average in electricity and highways and roads, while telecom and airport projects seem to have fared reasonably well.



Clearances and Coordination emerge as the crucial issues affecting the implementation of infrastructure projects. Especially because at all the six stages of an infrastructure project, said Dr. Bhide, namely, Project identification/ Initiation, Prior approvals, Financial closure/commercial viability, Assembly of inputs, Implementation, and Operation, the government is intricately involved. This is unavoidable even if the sectors are opened up for private investment, the policy framework is in place and operations are speeded up.

Also, several new issues have emerged. A study by JM Morgan Stanley in 2005 found the worst problems to be: Land acquisition issues; Shifting of utilities; Acquiring permission for rail over bridges, and Environmental clearances. The year 2009 saw three review reports by McKinsey & Company, the Ministry of Statistics and Programme Implementation and the Economic Survey. These studies found several important issues apart from the four above, such as R&R, funds constraints, inefficient dispute resolution mechanisms, weak performance management, shortage of raw material as well as skilled and semi-skilled labour, weak design and engineering skills, weak risk management skills, delay in award of contracts and civil works, and supply of equipment and fuel.



The study concludes that

- Infrastructure projects are hugely complex, due to multiplicity of direct stake holders; intense market and non-market interface; development in a setting where there are shortages of critical inputs; and weak governance.
- There has been an enormous increase in the scale of operations. While many things can be outsourced, the basic initiating, regulatory, supervisory and governance functions are within the government, so capacity becomes a constraint.
- The evolving nature of policy is unavoidable but leads to uncertainty and may slow down the process of investment.
- Opening up the sectors for private investment and operation can speed up the process of execution once the policy framework is in place. But the need for government intervention at different stages would require equal capacity for decisions within the government.
- There is a need for prioritizing building up capacity. For example, building regulatory capacity for individual sectors and across states is not easy. Are there other options?
- The experience in project execution has varied across sectors and across states as well as between private and public sector project. Some high profile projects have met the target levels of performance metrics while the others have not.
- The Chinese experience highlights the need for strong accountability mechanisms.

To illustrate the relative success in airports, I. Prabhakara Rao, CEO, Airport Development, Delhi International Airport (P) Ltd, GMR group, narrated the huge challenges in the execution of the new airport terminal T3. Substantial growth in air traffic had led to the government earmarking an outlay of \$7 billion in the Eleventh Plan to be funded mostly by the private sector. At the same time, the AAI also planned huge investment in upgrading Indian airports, including three major ones. At Delhi airport, a \$2.7-billion project formulated as a JV between GMR Group (54 per cent), Fraport (10 per cent), MAHB (10 per cent) and AAI (26 per cent), new developments went on in parallel with 24X7 operations to meet a deadline of only 37 months, even though the Masterplan for the 502,000 sq km area had to be reworked within six months.



DIAL adopted a unique development strategy and mitigated risks to meet timelines. The basic components of the project management were managed with a comprehensive 3M approach of Men, Material and Machinery, where all stops were pulled out. There was direct involvement of the company in logistics from customs clearance to shipping as well as in procurement to avoid and mitigate sub-contractor failures.

One of the key elements in the success, according to Rao, was proactive support from all stakeholders during design, construction and in seamless transfer of operations to T3.

WORKING SESSION I: PRE-EXECUTION ISSUES IN INFRASTRUCTURE PROJECTS

The First Working Session began with the moderator, T N Ninan, Chairman and Editorial Director, Business Standard Ltd, highlighting the need for effective regulation to stem the runaway cost and time problems even in the case of private projects. He said ultimately such issues ended up costing the public and the nation, whether it was the Delhi airport where the project cost ended up two and a half times more` of the initial estimate, or the highway projects, on which a decision needs to be taken whether annuity systems worked out cheaper than toll-oriented BOT execution.



In this session, Ms. Payal Malik, Consultant to NCAER, gave the second presentation on the study. It focused on pre-execution issues, apart from poor planning and designing at pre-award stage, which are essentially governance related.

Contracting

- Does the contract design satisfy the participation constraint?
- Are the risk and reward involved optimally balanced?
- Is the award process transparent?
- Does the bidding process ensure competition? Are mechanisms in place to check for bid rigging/bid suppression?
- Incentives created in the contracting process
- Contract types and L-1 bidding/rebidding
- Frequent revisions in RFQs, as illustrated by Bara and Karchana power projects in Allahabad
- Post bid renegotiations which may be rent seeking in nature, as in the case of UMPPs
- Good economics of competitive bidding subverted by non-market forces



Capacity Constraints

- Technical capacity with the awarding agency/ministry
- Insufficient capacity at the level of contractors, consultants to design and assess proposals understaffed, especially for managing pre- construction activities
- Shoddy DPRs-leading to post contract renegotiations

Land Acquisition

- No easy solutions because of political and sociological dimensions
- Livelihood issues and land alienation

- Eminent domain powers of the state.
- Credibility of both State and industry in question
- R&R by public or private sector have not been adequate

Environmental and forest clearances

- Unclear policy implementation
- “no-go areas” in coal mining areas
- Clearing projects with adverse environmental impact leading to land alienation, as in Khammam and Sompeta, Andhra Pradesh
- Lack of capacity in the government for efficient disposal of applications

Critical Inputs

- Fuel Linkages
- Captive coal blocks: 208 coal blocks with reserves of 49 billion tonnes were allocated, but production began at only 26 blocks
- Allocation through fiat
- Gas utilization policy based on quotas and no market discovery of price

Dr. Ram Singh, Associate Professor, Delhi School of Economics, who had lent the Central sector project monitoring database for the study, said that more than 80 per cent of infrastructure projects in India suffer from time and cost overruns. This is mainly because of poor project designing. Out of 140 road projects, for instance, 137 were faced with rise in costs. Litigation due to change in scope of design was also common. In the case of government projects, structural and organizational reasons make sure the planners are not accountable. The cost overrun is a malaise that afflicts PPP projects too, even though such projects manage to keep to their schedules.

Talking about contracting, Mr. Vinayak Chatterjee, Chairman, Feedback Ventures, said the contracting landscape must change when economic reasons change. Risk management and distribution of risks between sovereign and private promoters have increased in importance. Infrastructure management is now all about life cycle management and an independent regulator in the sector was needed. He also advocated for shift of public funds into annuity projects in the road sector, where the development and traffic risks could be with the sovereign while costs, operation and financing risks remain with the private promoter. This was the only way out within the existing framework to allow private sector to move increasingly into creation of infrastructure.

Agreeing with the rapid change in the external environment, Dr. Anita George, Director, Infrastructure Department, IFC, said what sets India apart from other countries is the very thin pipeline of infrastructure projects, which makes bidding extra competitive. Even the regulating structure has to evolve along with the needs of the sector. However, she felt that financing was not a constraint for good infrastructure projects which had their land, capital, input and clearance issues sorted out.

B L Sondjaja, Head, PAU and SAUD, Asian Development Bank, which is currently running \$9 billion worth of projects in power, roads, urban development, water supply and sanitation, agriculture and finance sector in India, said project execution and completion records get even more depressing when one includes the urban development sector. In the bank’s portfolio, power has been the best performer, followed by roads.

Sondjaja felt the commitment of the highest level of officials to a project play the biggest role in its implementation. Facing various kinds of delays in their projects, ADB and the DEA introduced in 2009 a Project Readiness Checklist which should be ready before funding talks can begin. The lack of participation by the foreign contractors in construction projects is a concern. He also felt that the capacity of the domestic construction industry was nearing its limit. However, another panelist, Mr. Vinayak Chatterjee felt that the capacity should not be measured by big names as there were a host of local players today with huge businesses. New enterprises have emerged with the opportunities.

Shedding light on the project delays from his experience, Mr. G Suresh, General Manager (Finance), National Highways Authority of India (NHAI), said progress in road building was hampered by several reasons. Diversion of the routes affected land acquisition process. Land acquisition process is also hampered because it was handled by already-overburdened land revenue officials. However, it must be realized that to begin a project, only 15 -20 per cent of the land is needed and the rest can be acquired as the project progresses. In the case of the Railways, the delays occurred because of administrative issues. NHAI has now set up several units across the country to expedite land acquisition process.

On an average, 10 per cent of the project cost relates to land acquisition and shifting of utilities, but costs have gone up considerably along with the compensation structure. Still NHAI was not affected so much by land acquisition problems because it needed to acquire land in strips and those were easy to get. In this connection, Dr. Santosh Mehrotra, Director-General, Institute of Applied Manpower Research, from the audience mentioned that the quality of rural roads built under Pradhan Mantri Gram Sadak Yojana was better than the PWD roads. He also pointed to the millions of people who have been displaced over the years on account of various development projects. This undoubtedly would cause opposition to land acquisition unless the process is sensitive to the problems caused by it.

There was a discussion on the relative merits of Toll versus Annuity mode of contracts. It was also suggested that flexible toll periods could be built into the contract like it is done in some Latin American countries.

WORKING SESSION II: EXECUTION OF PROJECTS: ISSUES ON THE SUPPLY SIDE

Among the factors that hinder infrastructure project development and execution, supply-side factors assume an important role in a developing economy due to sudden increases in demand for inputs and services, leading to shortages, even supply bottlenecks. In the third presentation on the study, Dr. Shashanka Bhide said the government's capacity, or the lack of it, as provider of various services also influences the supply side, so inter-sector coordination was important. So is the need for balanced development, choice between indigenous production and imports, Administrative reforms, and a Responsive supply chain. The issues that we need to keep in mind in terms of supply-side factors are:

Pre-execution capacity

- The contractors across sectors, regions: experience in road sector shows that in many cases there are very few bidders for projects. This is true in many other areas as well. Experienced contractors can not be produced suddenly. It has not been easy to attract foreign contractors for construction projects.

- Finance: Bank financing of projects is limited by the lack of long-term funds with the banks. Distribution and pricing risks are significant as they involve political decisions.
- Project development: DPRs, contracts, technologies
- Project 'clearances': Environmental clearances; forest clearances; R&R plans; inter-sectoral coordination

Inputs

- Materials: Coal, Gas, Cement, Steel, Water, Power, Land; Imports Vs. Indigenous Production
- Infrastructure for infrastructure: ports, airports, pipelines; roads and railways
- Equipment: imports Vs. indigenous production (balance of plants in the power sector)
- Technical services: designs, technologies
- Government services: execution of contracts, dispute resolution, law and order
- Labour: Engineers, semi-skilled; unskilled

Monitoring progress

- Not merely the milestones but also quality
- Regular monitoring at different levels to feed into decision making bodies: empowered committees, regulatory bodies
- Informing the public

Mr. Dilip Chenoy, CEO & MD, National Skills Development Corporation (NSDC) said the estimated shortage of skilled people in the next 10 years was 240 million per year. Out of this, building and construction industry would need 33 million over the same period. Taking into account the real estate industry, this number would go up to 5 billion per year. Yet, only 3.1 million of the 12.1 million people added to the workforce every year are skilled. In-service training is very low, only 16 per cent of the workforce compared to 19 per cent in China. Result: Right people extremely difficult to find; overqualified or even underqualified persons are hired; and poaching paying more for same set of skills.



To counter this problem, NSDC, a PPP by the Ministry of Finance with 51 per cent stake by industry, was started by an initial funding of Rs 1,000 crore. It targets skilling/up-skilling 150 million people by 2022 by fostering private sector participation, which is equivalent to producing one Delhi University batch every year. It has already approved 12 proposals for employment generation, and 15 more are under evaluation. This would hopefully push up the annual supply of 3.1 million skilled workers to 3.74 million.

The current skills ecosystem has a mismatch between the 3Qs--quantity, quality and qualification-- so it has to be changed to align the 3Qs with employment. The signs are very encouraging since a whole new set of social entrepreneurs are coming forward, attracted by the 21 per cent return on equity. Many of the proposals are from IIT alumni.

To improve the skill ecosystem, Mr. Cheney advocated the following steps immediately:

- Set up Sector Skills Councils
- Set up large sustainable skill development institutions
- Bring partners, world class content and practices to India.
- Assist in building a new ecosystem: Trainers, Assessors, information systems (replicate the quality model of 1983)
- Promote internships, placement, funding – fee and loan repayment

Focusing on the finances for infrastructure, Dr. Ritu Anand, Chief Economist and Principal Adviser, IDFC, said while finance for projects is not an issue now, going forward, there could be a funds constraint for the sector—an estimated shortfall of Rs 12 lakh crore in the Twelfth Plan. Banks have 23 per cent of their portfolio in long term loans, and the maturity structure of their deposits is getting shorter. Also, the RBI restrictions are working to keep the capital market tight. Insurance companies are funding only 9 per cent of infrastructure needs. There has been a huge rise in premium income but most of it has gone to ULIPs where there is no compulsion to invest in infrastructure. So there is a need for a new vehicle to draw on the high savings, both domestic and foreign, which needs to be channeled into long-term debt. IDFC has recommended to the government 100 per cent debt venture capital funds along with a change in the regulatory regime so that insurance companies could also invest in them. Also, Anand said, the unfair bias against debt in tax treatment in favour of equity needs to change immediately and there is some hope of the new direct tax code getting this in.

Growth in steel sector, said Ms. Arti Luniya, General Manager, SAIL, was 8-9 per cent a year, much less than in China, but it has to improve if infrastructure investment has to cross 10 per cent of the GDP. Current total steel demand by all infrastructure sectors stands at over 25 million tonnes (mt), while total crude steel capacity is estimated at almost 73 mt in 2009-10. This is expected to go up to 83.4 mt in the year after and 135 mt by 2014-15. Although huge brownfield capacity is coming up, new demand could go up to 60 mt, especially with investments during the Twelfth Plan expected to be worth \$288 billion in power and \$281 billion in the railways.



WORKING SESSION III: EXECUTION OF PROJECTS: CREATING FAVOURABLE ENVIRONMENT

Why does China have a favourable environment for infrastructure but India doesn't? S K N Nair, Consultant, NCAER, tried to define favourable environment as a set of factors that cumulatively bring about diverse outcomes which in turn determine planning and actual execution of infrastructure projects. This includes: Tax and Fiscal Incentives, Legislation, Regulation, Reform of bureaucracy, and Centre- State coordination.



Converting the less-than-favourable environment has three obstacles, which are not water-tight categories, and there are considerable overlap and inter-linkages.

Challenges of Scale and Sustainability

- Quantum increase related to XI Plan, XII Plan and beyond
- Technology (Super critical, larger unit sizes in power, high speed technology on railways)
- New project financing and partnership models
- Environment-related (Clean coal, increasing importance of environment-related obligations)

Institutional Challenges

- More efficient interaction between the environment and the players
- Need to and room for improving institutional capabilities.
- Adapting to a changed environment
- Priorities of implementing agencies (Operational versus Investment-related): A serious issue for the railways and potential danger area for high-growth undertakings like NTPC, Power Grid
- Structural Issues cause sub-optimal outcomes: Already identified in the case of Ports, yet to be identified in the case of Railways
- Identifying and promoting Leadership, a common issue for all sectors; importance of adequate tenure a basic need to promote leadership

Challenges arising from tradition and culture

- **Incentives** – Skewed incentive regime related to public sector background
- **Accountability** – Issues of transparency need to be resolved
- **Legitimacy** – Part of the explanation for China's success. But what were the institutional solutions that enabled it? Are they adaptable to our environment?
- **Force of tradition** – Need to break free of the 'L -1' mind set to infrastructure projects

Review of project performance shows while cost rise is high in power, roads and even airports, the sectors come off better due to high external impediments, while ports and railways suffer hugely from time overruns but external impediments are low. Project implementation occupies secondary status in the case of all sectors except roads which has dedicated undertakings like NHAI. Can this be achieved for other sectors?

Dr. Partha Mukhopadhyay, Senior Fellow, Centre for Policy Research, emphasised that the government's single minded focus on revenue generation, and not service delivery, was restricting competition and discouraging investors. In the case of ports, for instance, 40 per cent of the revenues were going directly into government coffers, so private users were being charged higher tariffs to make the port viable. In the case of the Delhi airport, the government collected a charge even when the slowdown struck.

Agreeing with Ritu Anand's point earlier, , Mr. S K Goel, CMD, India Infrastructure Finance Company Ltd (IIFCL), also drew attention to the funds scarcity for the sector. He said at least 50 per cent of the expected infrastructure investment in the Twelfth Plan is expected from the private sector and even the share of PPPs is slated to rise. By 2015-16, the share of private investment would surpass public investment. IIFCL, which was set up to allow infrastructure projects easily access long-term debt, has so far sanctioned 160 proposals and Rs 28440 crore, while it has disbursed Rs 11258 crore over 113 projects.

Sharing government moves for faster off-the-ground projects, Goel said that to expedite execution of road projects, NHAI is setting up Special Land Acquisition Units in various states and also handing over possession of 80 per cent of land before the award letter is granted. In power, an additional return on equity of 0.5 per cent was allowed in 2009 for timely execution. Delays, he said, occurred due to shifting of utilities, cutting of trees, obtaining environmental clearances, permission for constructing rail overbridges, etc. In fact, a World Bank study found around Rs 5400 crore blocked in disputes in road sector. So there was a need to align the contracts more closely with the International Federation of Consulting Engineers framework. Goel also mentioned the still-evolving regulatory framework and the need for an institutional framework for regulatory commissions, their role and functions, accountability, interface with the market.

Currently, over 80 per cent of infrastructure projects in the country are financed by public sector banks. Infrastructure funding has reached almost 12 per cent of gross bank credit. But banks face constraints due to asset liability mismatch issues and prudential exposure norms relating to single party exposure and group exposure. Most banks are now operating at ceiling levels of such exposure norms. While bonds are a better bet, the corporate bond market in India is not well developed. Insurance and pension funds play a restricted role due to regulatory constraints. So there is a need for innovative financing instruments like credit enhancement to spur investments in infrastructure.

However, according to Dr. Ajit Ranade, chief economist, A V Birla Group, it was hopelessly optimistic to expect that 30-50 per cent funding for infrastructure would come from the private sector, which was already spending so much, for instance, to generate its own power. One third of industrial power needed in the country was being captively produced. The AV Birla group, for instance, produced 3000 mw for own need, yet there had been no time and cost overruns in those projects. Clearly, clearance and governance issues were important. Of late, politicisation was also happening. In Andhra, for instance, former Union economic affairs secretary EAS Sarma was battling the State for indiscriminately committing about 40,000 MW of coal-fired capacity in an ecologically sensitive zone.

Mr. Videh Upadhyay, advocate and legal consultant, recounted his experiences of the judicial lock-ins happening of late over environmental clearances as well as land acquisition. The optimal implementation of laws was increasingly an issue. He admitted there were compliance issues on the part of projects, while on the other hand, projects such as the 1000-km Ganga Expressway got environmental clearance in four days, despite a government committee, raising the concerns of the High Court. In another instance, different land clearance norms had been applied to similar Ultra mega power projects being set up by the Tatas in Mundra, Gujarat, and by the Reliance group in Sasan, MP. He felt that while basic compliance of laws was not happening in the case of projects located in tribal areas, with regard to consultations with local populace, it was also true that these issues had been loosely defined in the laws.

SUMMARY SESSION: SUSTAINING ACCELERATED INFRASTRUCTURE DEVELOPMENT

Lack of skilled manpower and governance problems came in for a thorough review in the final session. In his succinct summary of the discussions, Suman Bery said that clearly, India was slowly coming to grips with an 8-9 per cent growth economy and having teething troubles to internalise it. He also made the following points:



- Managing large infrastructure projects can only be done by large players or big consortia as there are powerful barriers to entry. This is actually anti-competitive and might harm the country in the long run.
- The various inefficiencies associated with the institutional framework—which is quite vast—ultimately adds to the cost of services.
- There is a great deal still unknown about risk distribution about public and private sectors. We have still to perfect the skill and art of writing and understanding the contract documents.

Focusing on governance problems, J L Bajaj, Distinguished Fellow, TERI said there was too much political and administrative power concentrated in the hands of a few, so we could not really depend upon institutions as a solution. In power sector, for instance, some of the new project owners have also become real estate developers. This has happened despite having 90 different regulators in the sector. Even though the US has only one Public Facilities Authority, India might end up having 12 central regulatory bodies for infrastructure if all the pending proposals go through.

Dinesh Mohan, Professor, IIT Delhi, felt the biggest problem was that the public sector in India was too small and it also lacked expertise and skill, although the latter factor had afflicted the entire economy, including the premier education institutions. For instance, the Central Pollution Control Board had to run to middle-level officials in the government for everything, who themselves lacked expertise to decide on such issues. Lack of local language education was affecting even the students at the IITs, considered the best and the brightest.



Secondly, privatising higher and technical education has generated a vicious cycle: there is a great demand for these skills but the skills imparted are well below what is required and as a result the quality of work suffers but nevertheless demand continues to rise for poorly skilled professionals. Professional education has to be affordable for the lower middle class to nurture skill development and produce more engineers and technically educated people. This was one of the secrets of China's success which produced 6000 PhD engineers last year while India produced 600.

Third, attention in India was focused more on projects being “successful”, rather than projects delivering results for stated objectives. For example, the Delhi metro is seen as a shining example as a successful project but it has also suffered cost escalation of about 100% and if cost of capital is included the subsidy per passenger amounts to about Rs 30,000 per year. The metro caters for only 4 per cent of the total trips in Delhi, and 12 per cent by car, yet our road and other infrastructure development targets only those few ignoring the 30 per cent who take the bus, the 15 per cent who cycle to work and the 20-25 per cent who walk.

The journalists in the panel, especially Mr. TCA Srinivas-Raghavan of Hindu Businessline in the previous session, and Mr. Sunil Jain of Financial Express were unanimous in marking out governance problems as the main culprit. TCA lamented the lack of importance given to decision-making in the government, proved by the fact that many port trusts are headless and there has not been a member (traffic) in the railways for over six months, as well as the niggardliness in rule-making which frustrates the purpose behind making good laws.

Mr. Sunil Jain of Financial Express drew attention to the fact that while there was a huge impact of corruption in infrastructure, the uncertain rules and fluid decision-making by high-powered officials facilitated corruption. Even after due diligence, companies run the risk of changing scenarios as illustrated by the case of the Navi Mumbai airport and the Lavassa housing project in Maharashtra.

Speaking from his experience of China, Urs Schottli of Swiss daily Neue Zurcher Zeitung pointed out that such problems were minimized in China by the fact that even politicians had to undergo professional training before starting work. Also, the Chinese Communist Party had no legitimacy to stay in power if they were unable to deliver on economic prosperity, so they were single-minded in driving infrastructure to achieve high growth.

Former RBI governor Bimal Jalan commented that from his stint in Parliament, he had come to believe that politicians and ministers in general lack expertise causing governance problems. But he also noted that it is not important to distinguish between private and public sectors so long as the goals are clear. We can not also minimise the capacity of the public sector. With the right institutional framework there are examples of good execution in the public sector as well. The effort must be to find the solutions that are sustainable.

In his final comments, Paul Hugentobler of Holcim said undoubtedly, the high economic growth of 8-9 per cent in India would not have come about without a physical acceleration of investment in infrastructure. Comparing India with China is fruitless because infrastructure is 100 per cent public sector in China, while private sector now accounts for 60 per cent in India. For further growth though, lack of skills and quality in engineering remains a huge bottleneck. India should find ways to resolve this constraint.

This summary of proceedings has been prepared by Paromita Shastri.