



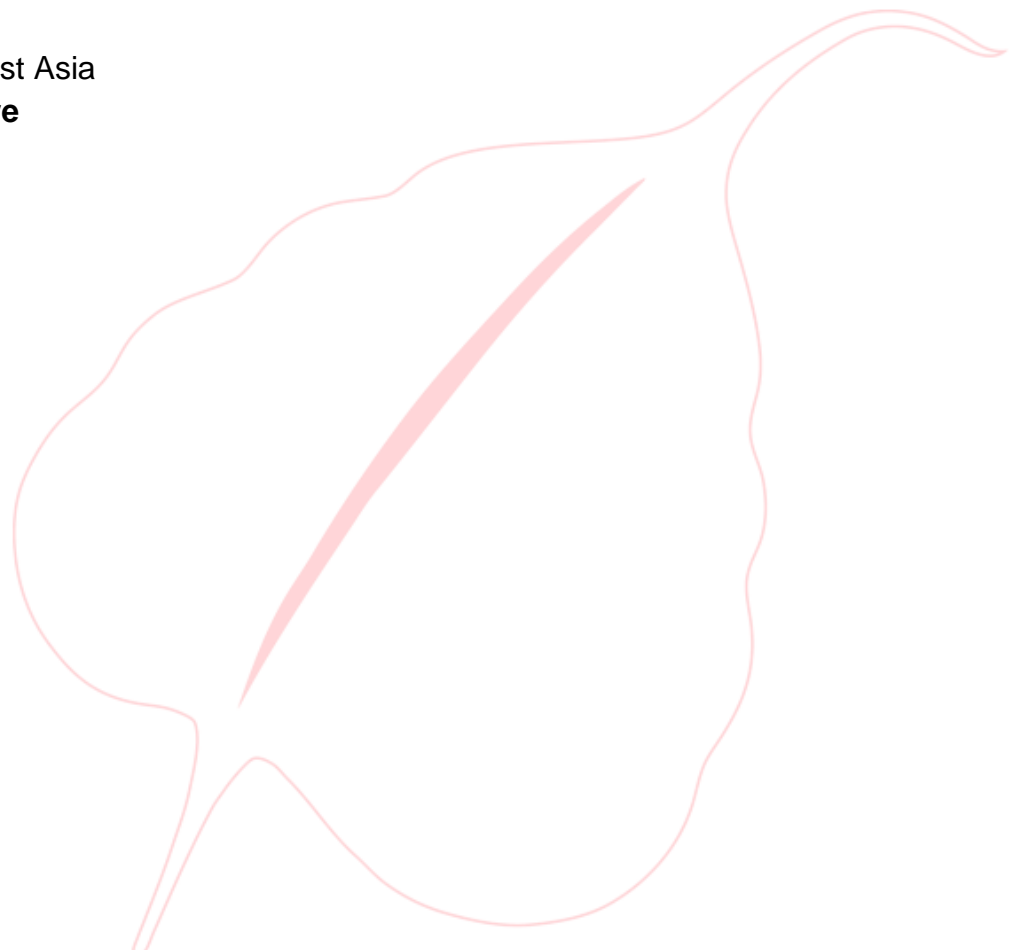
difficult   
dialogues

## LSE India Summit 2016 Working Paper #4

---

**Rebecca Bowers, October 2016**

1. Global Finance
2. Civil Society
3. India and West Asia
4. **Infrastructure**



## Table of Contents

Executive summary.....	2
Panellists .....	2
Introduction.....	3
School and education infrastructure.....	3
Transportation and land acquisition.....	4
Energy .....	5
Urban infrastructure governance.....	6
Recommendations .....	7

## Executive summary

Physical infrastructure and human capital pose some of the biggest challenges and opportunities for India today. The Infrastructure Panel at the LSE India Summit 2016 critically considered government and private initiatives in education, energy and transportation; governance challenges in urban areas; and the role of new technologies across multiple sectors. Participants offered a range of policy suggestions aimed at maximising India's youth potential, improving transport networks, harnessing renewable energy potential and delivering smart solutions to the growing urban population.

## Panellists

**Rukmini Banerji**, CEO of [PRATHAM](#), a learning organisation created to improve the quality of education in India

**Lisa Bjorkman**, Assistant Professor of Urban Affairs at the University of Louisville, and Research Scholar at the University of Göttingen's Transregional Research Network (CETREN)

**Partha Mukhopadhyay**, Senior Fellow at the Centre for Policy Research, New Delhi

**Adam Roberts**, LSE alumnus and correspondent at *The Economist*, who has served in London, Johannesburg, Delhi and Paris

The session was chaired by **Devesh Kapur**, Director of the Centre for the Advanced Study of India at the University of Pennsylvania, and Madan Lal Sobti Chair Professor for the Study of Contemporary India

## Introduction

Discussions of infrastructure are frequently limited to physical infrastructure: transportation networks, power, water and sanitation systems, digital connectivity and so on. The presentations covered a range of these issues, with a particular focus of India's rural habitations, its road and rail networks, and new initiatives on 'smart cities' and urban infrastructure.

However, Devesh Kapur opened the panel by broadening the definition: 'we normally think of infrastructure as a hard sector but how would the infrastructure for education be considered?' This encouraged participants and audience members to reflect on India's human capital as well, with an emphasis on education and skills.

## Schooling and education infrastructure

The typical way to observe at the education sector is to examine at the role of state. However, in the last decade, data from rural areas highlights increasing numbers of private school attendance (from 18-30 per cent). In the north and west of India this has reached over 50 per cent. Furthermore, all systems have broadly the same goals, which are oriented towards 10th standard exams. Why, asked Rukmini Banerji, are children placed within such a highly formalised structure, when they are often going on to highly informal sector jobs? This is a significant issue, particularly when the fact that poor families are spending a disproportional amount on educating their children is taken into account.

There has been a lot of talk about universities but not about where university students are coming from. Over 95 per cent of Indian populated areas have schools, although school attendance varies widely from state to state. Despite progress (as highlighted by the sharp increase in children completing 8th standard in recent years) there is little change in regards to the curriculum. Learning trajectories remain flat and subsequent cohorts are having poorer educational experiences. At the moment, the system caters only to those at top of the class (as the likes of Professor Amartya Sen have discussed at length, for example in his essay *Country of First Boys*). Something more must be done to equip all children in elementary schools with necessary life skills and prepare them for further education.

In the Q&A session one audience member questioned how these such issues can be tackled, i.e. whether policy should be established and then followed by infrastructure or vice versa. As Rukmini reminds us, policy and infrastructure develop in tandem, and at multiple levels. The 10th exam itself is not the problem she claims, but its role as the determining factor to get into higher education is.

## Transportation and land acquisition

For the past few decades investment in the railways has fallen, despite the railway's centrality to transportation in India. Partha Mukhopadhyay's initial presentation focussed on the key findings of the High Level Railway Restructure Committee that he was a part of.

In the 1950s the Indian Railways had a 90 per cent share of freight traffic. This has decreased to barely 30 per cent with the rise of road freight transportation. Since 2000, roads in India have transformed (particularly in rural areas where there are now 400,000+ km of metalled roads). This has been funded via budgetary support and the introduction of a fuel cess. In contrast, the railways have not received such budgetary support. The expansion of railways in India has been far more limited with 62,000km of track in 1980 versus approximately 66,000km today.

However, there have been three major developments in recent years:

- 1) Move to multi-track (about 30 per cent is now double)
- 2) 90 per cent of the network is now broad gauge.
- 3) Two-thirds of network is electrified (from 25 per cent in 1980).

With the drop in freight traffic railways spend about 95% of revenue on operating costs. However, this is not because of low fares since the most expensive passenger train still brings far less revenue than freight. Rather, there is no capacity in the system. New trains are added, but this creates what are essentially traffic jams: every train will get through but it is impossible to predict how long this will take. As a result, freighters increasingly use the road simply because it is more reliable.

Regarding the need for land for infrastructure and its acquisition, Partha Mukhopadhyay identified three issues:

- 1) the focus of compensation in India has been on landowners, so the new Land Acquisition Bill attempts to address "project affected people", although this is not fully followed through
- 2) Few compensation schemes prepare individuals/communities for life after land. In particular farmers are not trained for alternative occupations, so while the compensation might cover their land it will not automatically enable them to make a new living.
- 3) Costs are clear, but returns are less so. What is the return on the [Special Economic Zones](#) for example?

## Energy infrastructure

Recently there has been a push on renewables, linked to some extent to India's commitments on climate change. Devesh Kapur asked: how substantial is this effort, and will it address India's chronic shortages?

According to Adam Roberts, India needs to be given credit for its progress in infrastructure development in recent years, which is often underestimated by foreign visitors. Certain areas (particularly those controlled by private sector companies) such as communications and airports have vastly improved, as has the increasing housing stock. Furthermore, with the introduction of the Aadhaar card and initiatives to give every citizen a bank account (and making welfare payable this way) India is successfully undertaking a huge and formidable task in terms of improving and expanding financial infrastructure.

In terms of energy, there is huge potential for renewables. For instance, the building blocks are already available: solar, wind, and hydroelectricity (particularly in the Himalayas) and technology advancement is facilitating India's ability to harness these. For example, solar power has become cheap – equivalent in price to imported fossil fuel options. The next step will be the shift to “ultra-cheap”.

There is a strong political incentive to expand electrification in particular: Modi has said delivering electricity underpinned his success in Gujarat and therefore, alongside creating jobs, spreading electricity will be a huge political factor to the BJP's re-election in 2019 and beyond.

As was stressed in the Global Finance panel, significant investment is needed to continue on this path. Whilst Modi discussed obtaining \$100 billion a year from the global community, most will have to come from domestic banks, meaning the issues facing India's domestic banking infrastructure must be addressed. With adequate incentivisation, and regulation, the private sector will also continue to build the right infrastructure. That said, finance is only a small portion of the problem – it is actually the broader corruption environmental circumstances that surrounds infrastructure that matter more.

## Urban infrastructure governance

What are the weaknesses in urban infrastructure governance and does the smart city concept address these challenges? The Smart Cities initiative aims to improve the quality of urban life through smart solutions in core infrastructures – water, sanitation, transport, housing, health, IT, etc. Of the 97 cities that submitted proposals, 20 were selected via two qualifying areas:

- 1) Pan-city initiative – how extensively will smart technology be used to enhance existing infrastructural system
- 2) Area-based development – neighbourhood-level proposal within the city

Whilst a number of questions have been raised about the smart cities mission as a whole, Lisa Bjorkman examines how new technologies relate to existing infrastructural considerations in cities via two specific lenses: the relationship between already institutionalised practices of planning, governance and engineering etc.; and the new technologies, institutions and actors that the smart city initiative envisions enlisting in urban governance and infrastructural processes.

In relation to water, the smart cities mission talks about automated systems for monitoring flows and pressure monitors. In this case, Mumbai makes for a very instructive example. In the 1990s there were manual systems to regularly record pressures and flows. It was a labour-intensive but it worked. After a hiring freeze, a set of labour saving technologies were introduced: high tech flow meters replaced the manual auditing system. However, the meters couldn't be installed in all the necessary places, or else didn't work under water (which was problematic given Mumbai's high water table and propensity to flooding during the monsoon). As a result, a lot of very accurate data is collected but it is meaningless because it doesn't offer a complete picture of the system, or where the problems are.

Whether technology should be used and in what form has to be considered carefully and be informed by existing knowledge infrastructures in the city. Decisions on investment in technology need to be taken through dialogue with people who work within urban infrastructure every day because they will be aware of where it will be most useful. External decision makers will often treat the situation as a trade-off between man and technology, whereas it should be a question of what will be useful. Whilst much of the emphasis is on hardware, infrastructure is not just "things" – it is connections and relations including social ones too.

In the Q&A concerns were raised over the plans of smart cities to raise funds through the public private partnership (PPP) model and its efficacy. According to Bjorkman, with essential services such as water provision, the line between public and private is already very blurred. The market's role needs to be discussed seriously without over-determining the meaning of "privatisation", inasmuch as it doesn't have to be restricted to wholesale outsourcing of management and distribution. Bjorkman cited the use of the market to incentivise landowners in exchange for development rights. In this way the market is used as a tool by smart city planners and the use of PPP can be compared with technology. However, it was also argued that such practices can create distance between the segments of government which provide services versus democratic accountability.

## Recommendations for Indian policy making

### Education and skills:

- Education policy makers need to consider how better to meet the needs of young people and the state. Primary education is failing to equip children with basic literacy and numeracy skills. This urgently needs to be addressed, as problems accumulate and undermine what can then be achieved at a later stage
- There is a need for a clear vision about the skill set that young people need to develop at school to equip them, not only for further education but to play a productive role in society
- Change may require reconsideration on the centrality of 10th standard exams and a greater emphasis on vocational training to address the number of unskilled leavers
- Similarly, resettlement programmes associated with land acquisition should place greater emphasis on training, not just compensation

### Railways:

- The railway committee group has already made several recommendations, namely decentralising the railways (this is particularly relevant to Delhi), reforming accounting systems, and establishing a regulator, all of which would encourage the growth of PPP.
- More investment from the government is needed – at present, the UK spends £6 billion a year on its railways, while the Indian government contributes almost nothing.
- To increase capacity and expand freight transportation (i.e. the main source of income), passenger trains should be rationalised, signalling systems should be upgraded (at present there is very little automatic signalling) and in the long run new lines should be added. This would also be more energy efficient in comparison to road freight, and reduce congestion on highways.

### Energy:

- Better regulation is required to continue with the growing expansion of India's renewable energy sector. The government can and should create incentives for private companies to invest in clean energy sources
- As most of the main developers are private sector companies, more consideration should be given to the role of PPP tie-ups and the role of the public sector within this transition.
- There also needs to be more consideration of how capital is raised for developing the energy sector via domestic investment. This requires the restructuring of infrastructure loans, as well as more creative ways of raising capital, e.g. drawing on the diaspora.
- The shift to renewables increases the potential of new approaches which allow for greater flexibility, which the government should seek to harness. For example, innovations in battery storage and storing power generated from renewables allow for decentralisation, reducing dependence on the national grid.

## Urban development:

- Consultation with workers in key areas such as waste disposal and water is imperative for efficient and successful delivery of smart solutions to India's growing urban populations.
- The implementation of the smart city plan needs to be considered carefully particularly with regards to the interaction between municipal workers, city planners and new and existing forms of technology.
- Due to state-by-state diversity, particularly at municipal levels, a one size fits all model is not necessarily the most appropriate solution. Furthermore, whilst a number of winners of the smart city competition are worthy candidates, there are some surprising omissions such as Bengaluru, India's third largest city and home of the IT sector.
- Due to state-by-state diversity, particularly at municipal levels, a one size fits all model is not necessarily the most appropriate solution. The materialities of urban infrastructure vary across the country, so smart city approaches must be tailored.
- Climate change also poses new challenges, and city planners must look to build resilience when upgrading infrastructure and planning the incorporation of technology





The LSE India Summit 2016 was sponsored in full by Difficult Dialogues LLP

[www.difficultdialogues.com](http://www.difficultdialogues.com)  
[info@difficultdialogues.com](mailto:info@difficultdialogues.com)



### **South Asia Centre**

The London School of  
Economics and Political Science  
Houghton Street  
London WC2A 2AE  
United Kingdom

[lse.ac.uk/southasia](http://lse.ac.uk/southasia)  
+44 (0)20 7107 5330  
[southasiacentre@lse.ac.uk](mailto:southasiacentre@lse.ac.uk)

[blogs.lse.ac.uk/southasia](http://blogs.lse.ac.uk/southasia)

 [@SAsiaLSE](https://twitter.com/SAsiaLSE)

 [facebook/SAsiaLSE](https://facebook.com/SAsiaLSE)