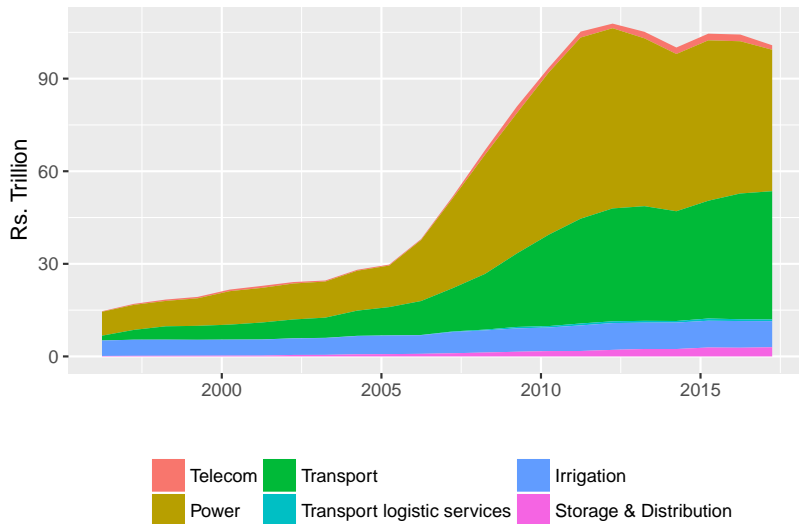


Regulating standards for infrastructure safety in India

National Institute of Public Finance and Policy

28th March 2018

Infrastructure investment has rapidly increased



Source: Projects announced and under-implementation, CMIE Capex database

Population growth rate much higher in urban areas

2001-11 population growth rate (%)

- ▶ Total: 17.7
- ▶ Rural: 12.3
- ▶ Urban: 31.8

Many rural settlements became urban

1. New statutory towns notified
2. De-facto towns, rural areas with
 - ▶ Minimum population of 5000
 - ▶ Density of at least 400 per square km
 - ▶ At least 75% male population working in non-agriculture

Source: Census data, 2001 and 2011

Most new towns were not notified

Urbanisation in India, 2001 - 2011

Towns	2001	2011	Increase	% new towns
Total	5161	7933	2772	100
Statutory	3799	4041	242	8.73
De-facto	1362	3892	2530	91.23

Source: Census data, 2001 and 2011

Missing power for town planning

Sector	Statutory towns	Rural bodies
Other roads and bridges		
Regulating/constructing buildings		
Water management and/or supply		
Urban/town planning		
Rural housing		
Rural electricity		

And with low capacity to provide quality ...

India bridge collapse: More bus passengers feared dead

🕒 3 August 2016 | India



🌐 Share



Standards as a tool for quality improvement

Sources in India

- ▶ Statutory standard setting bodies
- ▶ Private entities whose standards are adopted by statutory bodies
- ▶ International standards

The issue

- ▶ Process of standard development itself not standardised
- ▶ The safety that the standard provides may vary

Standardising the process

USA

- ▶ Hundreds of standard setting bodies
- ▶ American National Standards Institute (ANSI) offers voluntary accreditation of the standard making process
- ▶ Process requirements for accreditation follow international best practice

India

- ▶ “*Accreditation Programme for Standards Development Organizations*” - QCI June 2017
- ▶ Process requirements similar to USA, Canada, ISO
- ▶ What are the incentives for accreditation if there is already a sector specific monopoly?

Two key aspects when implementing standards

1. **Clear process for infrastructure development**
2. **Accountability of professionals if process is not followed**
 - ▶ Architects
 - ▶ Engineers
 - ▶ Town planners

Architects have a statutory regulator

Council of Architecture

- ▶ Established under the Architect's Act (1972)
- ▶ Statutory regulators allow for:
 - ▶ Register of professionals
 - ▶ Regulation of professional education
 - ▶ Prescribing code of ethics
 - ▶ Regulating continuous improvement (licensing)
 - ▶ Allowing for dispute resolution mechanism

No statutory regulator for engineers or town planners

1970

- ▶ Planning Commission recommended statutory regulator for engineers
- ▶ 4 draft bills since then but none enacted
- ▶ The result is a **limited number of competent engineers** in India

Issues

- ▶ Quality of infrastructure development (approvals at design, planning, construction stages)
- ▶ Outsourcing this role to competent engineers at the expense of engineering education and competence of future engineers
- ▶ Quality of engineering standards developed by domain experts

How do you increase process compliance? Some examples ...

Make the administrative process simple and accessible

- ▶ Remove unnecessary steps
- ▶ Translate to local language
- ▶ As cheap as possible to be compliant

Emphasise voluntary accreditation

- ▶ Infrastructure developers
- ▶ Education institutions
- ▶ Inspection companies

Compliance important as lots more infrastructure to come

Investment will continue increasing

Annual infrastructure financing (2016-2020)

	USD billion
Current investment	118
Annual needs	230
Gap	112
Gap as % of GDP	4.1

Source: ADB (2017)

Moving forward, think before building new infrastructure

Anticipate future risk

- ▶ Nature of risk may change over life cycle
- ▶ Plan for different risk scenarios like rising sea levels

Align incentives

- ▶ Don't give designer the job of construction as well
- ▶ Incentive for better O&M if builder has to do it

Reduce life cycle expenditure through O&M

Chennai airport to be shut till December 6

Chennai rains: Chennai airport will remain shut till December 6 in the wake of battering rains that have left the facility unusable.

By: **PTI** | Updated: December 2, 2015 10:33 PM

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What to do with what has already been built?

Map it out

- ▶ Critical infrastructure
- ▶ Interconnected systems

Then ... retrofit or rebuild?

- ▶ Is it cost-effective to retrofit?
- ▶ CBA scenarios for different levels of resilience

Make the framework future-resilient

Let the framework evolve

- ▶ Does India have competence for performance standards?
- ▶ Maybe not now, but will do in the future ...

Continuous reviews and updates

- ▶ Zoning for all types of hazard
- ▶ Standards in each zone for each type of hazard

Thank you.