



Round Table

on

Disaster Resilient Infrastructure

1 April 2017

New Delhi

A Round Table on Disaster Resilient Infrastructure was held in Delhi on 1st April 2017, in the margins of the New Development Bank (NDB) Annual Meeting. The event was organised by the National Disaster Management Authority (NDMA), in collaboration with the National Institute of Public Finance and Policy (NIPFP). Participants included representatives from the United Nations Office for Disaster Risk Reduction (UNISDR), multilateral development banks (MDBs), private sector infrastructure lenders, infrastructure developers, insurance companies, academics working on the subject and the Government of India (GoI).

Background

In the backdrop of the Asian Ministerial Conference on Disaster Risk Reduction (AMCDRR) 2016, the Prime Minister of India had announced that India will work with partner countries and stakeholders to build a Coalition for promoting disaster resilient infrastructure. This is based on the recognition that investment in new infrastructure will be a cornerstone of sustainable development. It is estimated that in Asia alone, over the next fifteen years, an investment of \$1.7 trillion per year will be required in the infrastructure sectors. A large part of this infrastructure will inevitably be exposed to a plethora of natural hazards including floods, earthquakes, storms, tsunamis etc. At the same time, there is a risk that the new infrastructure may itself create new disaster risks. The objective of building a Coalition is to generate new knowledge on hazard risk assessment, disaster resilient technologies and mechanisms for integrating risk reduction in infrastructure financing. This will help ensure that all new infrastructure is not only disaster resilient itself but also does not create new disaster risks.

Preliminarily, four broad thematic areas have been identified for the work of the coalition. These include:

- development of **disaster risk assessment** methodologies, risk metrics and indicators of sustainability for different infrastructure classes;
- issues of **standards, design and regulation** for infrastructure development, operations and maintenance;
- **financing** for disaster resilient infrastructure including **risk transfer** mechanisms; and
- **reconstruction and recovery** of key infrastructure sectors after disasters.

Round Table on Disaster Resilient Infrastructure

Government of India, in partnership with the UN Office for Disaster Risk Reduction (UNISDR) has been working on the development of the Coalition. Towards this end, partner countries and key stakeholders are being consulted on the scope, functions and modalities of the coalition.

The Round Table in the margins of the NDB annual meeting provided one such opportunity to hold informal consultation on the Coalition for disaster resilient infrastructure. Although the Round Table touched upon all the four thematic areas mentioned above, there was greater emphasis on issues related to infrastructure finance and how it can shape a resilient future. The discussion helped identify areas where international cooperation and mutual exchange can add value.

Key Insights from the Round Table

There was broad support for the notion of a Coalition on disaster resilient infrastructure from all the participants. Following are some of the key points that emanated from the discussions that should be taken into account while shaping the coalition:

On disaster risk assessment

1. At present, infrastructure developers look at disaster risk¹ – over short, medium and long term – as only one of the several risks that the projects may face. Short and medium term risks from externalities affecting operation and maintenance – such as interest rate changes, lower than expected user base, worker strikes, civil unrest – seem to trump longer term risk considerations.
2. Assessing disaster risk to infrastructure would require good, time-series data on past hazards patterns (e.g. wind speeds, high flood levels) and capability to analyse this data to generate probabilistic risk assessments that can guide investment in disaster resilient infrastructure. In this regard, there are two principal challenges that infrastructure developers currently face:
 - Data on past hazard patterns is often spatially and temporally uneven. This hinders good analysis and estimation of the return periods of extreme hazard events. Since data on hazards is a common public good, there is a need to set standards – for spatial density, regularity etc. – for data collection and management. Such data should be accessible to infrastructure developers.
 - In the face of climate change, the past is no longer a good guide for the future, particularly for the hydro-meteorological hazards. Therefore, there is a need to combine the analysis of past hazard patterns with estimation of emerging hazard risk scenarios.

On standards of design and implementation

3. To ensure optimal resilience in new infrastructure, standards for design and risk management practices have to keep pace with the evolving understanding of natural hazards, as well as advancements in engineering technologies. National frameworks for design and construction standards need to be strengthened **through better regulation, state-of-the-art technology and innovation.**

¹ Although not stated explicitly, disaster risk reduction may be hardwired in the engineering standards followed by the infrastructure projects.

4. The notion of better standards of design needs to go hand in hand with the **regulation of professions** that are tasked to monitor adherence to standards. Without this, accountability for adherence to standards is very difficult to ensure.
5. The notion of ‘standards’ needs to go beyond the structural engineering aspect of infrastructure to also **include operations and maintenance**. If standards for operations and maintenance are inadequate, it can increase the impact of hazard events or even trigger new ones such as urban floods due to inadequate maintenance of urban sewage systems.
6. Low frequency, high impact events, or in some cases concatenated² events that are hard to predict or model will challenge even the most well designed infrastructure. There is a need to advance the notion of “*safe to fail*” infrastructure, so that when an extremely rare hazard event occurs, the consequences can be managed and the effects are not disproportionately catastrophic.

On financing new infrastructure and mechanisms for covering risks

7. Countries need to develop **disaster risk financing strategies** at the national, sub-national and local levels. These could include **budget reserve funds** as well as disaster risk transfer instruments like **catastrophic bonds**.
8. The role of infrastructure lenders can be critical in enforcing proper risk assessment and design standards. The long-term nature of infrastructure lending implies that disaster risk needs to be measured and monitored by lenders. Banking regulators should require **continuous assessment of disaster risks** for infrastructure assets on bank balance sheets.
9. While upfront capital costs of resilience may be marginally higher, the cost of resilience is small when measured over the life-cycle of an asset. It is these that need to be considered when choosing optimal designs and standards.

On reconstruction and recovery of infrastructure after disasters

10. At present, in most countries, systematic post-disaster recovery in infrastructure sectors takes place only after major disasters. Small and medium scale events cause incremental damage and degradation of infrastructure leading to not only direct loss of capital assets but also productivity losses. This calls for **predictable mechanism(s) for systematically assessing damages and**

² An example: In 2011 a major earthquake struck off the northeastern coast of Japan, causing a devastating tsunami, which in turn overwhelmed the tsunami protection systems at the Fukushima Dai-ichi nuclear plant. It took months to contain the effects of this triple disaster. Probabilities of such linked events are difficult to estimate but when they occur their effects can be catastrophic.

losses and financing infrastructure recovery after disasters of varying magnitude. Fiscal models need to ensure liquid funds are available in affected areas within a short and predictable time frame. For example, parametric insurance, which automatically gets triggered upon an event may be one such mechanism.

11. At present, there are **data gaps on infrastructure damage and loss** for different sizes and types of disasters. Most of the systematic data pertains to large disasters where damage and needs assessments are carried out using internationally accepted methodologies. Data for medium and small-scale disasters is uneven. This gap needs to be addressed so that mechanisms for supporting recovery are based on a rigorous analysis of past damages and losses.
12. Reconstruction and recovery in infrastructure sectors must follow the **“Build Back Better”** principle not only for the structural design of the infrastructure but also in terms of management systems around it.

Follow Up to the Round Table

The Government of India, in collaboration with UNISDR will host an international workshop on the subject in New Delhi in May/ June 2017. From the Indian side the National Disaster Management Authority and the National Institute of Public Finance and Policy will anchor the workshop. The event will attract participation from a wide range of stakeholders and help shape the Coalition. In addition, at the forthcoming Global Platform on Disaster Risk Reduction, the Leaders’ Forum and the Working Session on Critical Infrastructure will be opportunities for discussing the notion of Coalition.

List of participants

Multilateral Development Banks and international agencies

1. Asian Infrastructure Investment Bank
2. Asian development Bank
3. World Bank
4. New Development Bank
5. United Nations Office for Disaster Risk Reduction

Private Sector

1. ILFS India
2. ITI Insurance Company Limited
3. Tata Group
4. ACT Digital and HD Connection
5. UTI Infrastructure Development Fund
6. HCC
7. Feedback Venture
8. IDFC
9. True North
10. Reliance Jio
11. GIC of India
12. Swiss Re

Government of India

1. Prime Minister's Office
2. Ministry of Home Affairs
3. Ministry of Finance
4. Ministry of Urban Development
5. Ministry of Civil Aviation
6. Ministry of Water Resources
7. National Disaster Management Authority

Academic

1. National Institute of Public Finance and Policy
2. Indian Institute for Human Settlements
