

Thematic Session 3

**Financing for Disaster
Resilient
Infrastructure**

16:45 – 18:15

Tuesday, 19th March 2019

Taj Mahal Hotel, New Delhi

IWDRI 2019

The Panel

Chair

- To be announced.

Moderator

- To be announced

Speakers

- Aniket Shah, US SIF/ Oppenheimer Funds
- Rowan M Douglas, Capital Science and Policy Practice, Insurance Development Forum
- Prof Ila Patnaik, National Institute of Public Finance and Policy

Discussants

- Mariela Flores, Ministry of Economy and Finance of Peru
- Dr Krishna Vatsa, UNDP
- Shaohua Wu, New Development Bank (NDB)
- World Bank
- DFID
- Japan
- Dr George Thomas, Insurance Institute of India
- Michael Mullan, Global Commission on Adaptation
- Satish Raju, Swiss Re

Session Format

This session will have 3 presentations of 15 minutes each followed by a moderated panel discussion.

The session will focus on the fourth and most critical pillar of CDRI: Financing new infrastructure and mechanisms for covering risks to and from this infrastructure.

As countries step up their investment in infrastructure, they need to consider different mechanisms of ensuring their resilience. Governments need to improve standards and specifications for public financing based on risk assessment. The nature and frequency of hazards should guide the inclusion of hazard-resistant features in the design and implementation of infrastructure projects. Based on risk assessment, the governments can allocate resources for mitigating infrastructure risks. For example, investments in storm water drainage can improve the resilience of urban infrastructure. Introduction of risk pools and insurance can also improve the resilience of infrastructure. In this session, different financial mechanisms of infrastructure risk management will be discussed, achieving a good balance of public and private sector resources to address the funding gap in resilience of infrastructure systems and ways to mainstream this effectively.

Questions to be addressed in this session:

1. How are we addressing the funding gap in developing resilient infrastructure: in terms of quantum of funding and allocation for resilience?
2. What are the issues hampering long-term investments in resilient infrastructure in changing socio-economic environments? Why are traditional tools (such as deterministic cost benefit analysis) no longer suitable?
3. How can the role of financial institutions at various levels (national, sub-national, global) be harmonized for better factoring in of resilience in infrastructure investments?
4. What mechanisms can be adopted to enable creation of effective risk pools?
5. What mechanisms may be adopted to enable better understanding of the acceptable or optimal level of risk, and how much could be retained, before transferring their risk to markets through insurance.
6. What is the current imbalance in ownership of risk? How can the role of various stakeholders be re-evaluated to enable risk-sharing in a more efficient manner (private sectors, insurance, etc)?

Background and Context

Traditionally, the role of finance in disaster has focused on ensuring the availability of funds for relief, recovery and reconstruction. However, finance already plays an important role ex-ante. Infrastructure is largely publicly owned in many countries. Therefore, figuring out the extent of resilience a country can afford is a public finance problem; the goal is to maximise benefits (i.e. loss of assets, or economic losses down the line) while minimising costs (since resources are limited). If the design and materials take resilience components into account, it is estimated that upfront costs of construction rise by 5% to 15%, which may discourage their incorporation.

However, since the infrastructure is publicly owned the cost-benefit analyses have to consider the cost over the full lifecycle of an infrastructure project. The design standards, then, have to be based on such a life-cycle cost-benefit analysis. One challenge in this regard, especially in countries with low capacity for enforcement, is that compliance with standards is low. Another is that designing finance-based incentives requires a thorough understanding of risks. The session explores if and how finance can play a role in monitoring and incentivizing compliance with standards for location, design and materials for disaster resilient infrastructure. For e.g. If insurance premiums are risk reflective then premium reduction can incentivize resilience. Banks may charge lower interest rates for more resilient infrastructure (“DRR loans”) as the risk is lower. For large infrastructure projects where there is a small market, premiums may not be risk reflective. “DRR bonds” similar to green bonds that invest only in resilient infrastructure could have similar characteristics. But for this they need the capacity to measure, monitor and incentivize risks.

Financing mechanisms play a pivotal role in development of new infrastructure and risk management. New infrastructure can be financed through a variety of mechanisms such as direct government expenditure, private investment and PPPs. Each of these financing mechanisms requires a careful balancing of differing incentives of the various stakeholders involved. For example, attracting private investments and Public Private Partnerships (PPPs) requires cheaper, easier and more streamlined regulatory and approval processes. Financing resilience might require more innovative approaches which similarly leverage the incentives of key stakeholders. For example, infrastructure lenders can play a significant role in ensuring resilience components are incorporated by the developer in every infrastructure project.

Given the huge investments required in the infrastructure sector, private investment will play a pivotal role in infrastructure development in the near future. The funds for financing

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infrastructure as well as the appetite among private players to invest in infrastructure both already exist.¹ To attract these investors, infrastructure projects need to be made more bankable. This requires the development of project pipelines, especially in developing countries.³²

Finally for risk management and financing, many developing countries have thus far relied on donor-driven recovery and reconstruction, and risk financing as a result has languished.

“In many developing countries governments, businesses and individuals have limited measures in place to secure financing for crisis response, recovery and reconstruction and often mobilise funds after a crisis event through budget reallocation, distress sales of assets, international aid and loans. Such ex-post funding is unpredictable and may not be timely or sufficient to meet relief, recovery and reconstruction needs. Failure to make adequate financial provisions against risk therefore may not only bear heavy costs for the individuals who may face impoverishment but also for governments, which may face acute fiscal crises, loss of public confidence and longer term economic consequences.” – OECD, 2014

However, robust risk management and financing systems are as integral to infrastructure resilience as engineering standards.

Common gaps in the financing of disaster resilient infrastructure have been identified as:

1. Lack of coherent strategy across various levels of government for risk financing
2. Lack of adequate, accurate data affects risk financing decisions and hampers insurance markets
3. Lack of research and data on incentives for each stake-holder to create resilient infrastructure
4. Lack of robust cost-benefit analyses for resilience components

These gaps have been elaborated on below:

1. Lack of coherent strategy across various levels of government for risk financing

Risks to infrastructure can be covered using a variety of different mechanisms – catastrophe bonds, parametric insurance, regular insurance, risk assumption etc. Each of them comes with its own advantages and disadvantages which need to be carefully considered.

¹ Preqin, 2016.

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For each risk, a country has to decide whether to assume the risk, or to finance it. If it decides to finance the risk, then whether it wants to make budgetary allocations for it or transfer it. If it wishes to transfer the risk, then it has to determine what kind of instrument(s) is/are best suited for that particular case.

This requires having a coherent strategy, and decision-making systems for risk financing at every level of government, for every kind of risk. Typically developing countries lack the systems and the capacity to develop such strategies.

2. Lack of adequate, accurate data affects risk financing decisions and hampers insurance markets

A comprehensive risk assessment (as stated earlier) is not possible without reliable and adequate data. Without a risk assessment a government cannot make informed decisions regarding risk financing. Further, lack of adequate, reliable risk data leads to improper pricing of risk, which can further lead to market failures. In the face of lack of easily accessible data, one of two things is likely to happen viz. (1) insurance companies may either be unwilling to offer insurance, (2) or they would charge very high premiums. The latter is either, because they have some data and buyer does not (i.e. information asymmetry), or because nobody has good data and they are playing safe.

Box.1: FEMA's flood-risk data and insurance markets

For an example on how availability of data can drive insurance markets and finance risk, we can look at flood risk data published by Federal Emergency Management Agency (FEMA). FEMA hosts a web-portal with a detailed database on flood-risk information down to neighbourhood level. It includes GIS-based interactive maps, and even open-access API's for developing information products using the database. As an example, one output of this is the citizen's information system module, which allows one to calculate flood risk for a particular location by inputting an address. Further, the system also informs one of the insurance category for that location, which decides the flood-risk-insurance premiums. Using this not only empowers the consumer, but also allows insurance companies to be competitive.

While this specific example in the box above is about consumer insurance, the principle is applicable to insurance markets and risk financing in general.

Typically, when data is sparse, people tend to underestimate the risk from low-probability, high-impact events.² This can only be remedied with better risk data.

² Tversky and Kahneman, 1973

3. Lack of research and data on incentives for each stake-holder to create resilient infrastructure

In order to make infrastructure resilient, the incentives of various stakeholders need to be carefully thought through. For example, an infrastructure developer may be discouraged from adding resilience components for fear of higher initial capital costs. In this respect, the role of infrastructure lenders can be pivotal in ensuring proper risk assessments and engineering standards are complied with. The long-term nature of infrastructure lending implies that lenders have an incentive to measure and monitor disaster risk. The incentives-structure for insurers, and infrastructure developers to incorporate resilience needs more thought. Some research and innovation is necessary in order to align the incentives of all stakeholders to incorporate resilience in to infrastructure projects.

4. Lack of robust cost-benefit analyses for resilience components

Cost-benefit analyses are critical for determining feasibility and design of any project. Cost-benefit analyses are also necessary for making decisions regarding adoption of standards for any country, such that they match its needs, resources and capacity.

However, robust cost-benefit analyses are extremely difficult to do and require a great amount of data. It follows that in developing countries – where data is sparse, data collection systems are weak and capacity to conduct such elaborate analyses is likely lacking – it is not possible to do cost-benefit analysis to support decisions regarding adoption and design of standards, and design of projects. In this scenario it also becomes difficult for a government to correctly gauge the importance and value of resilience components in infrastructure works.

This further affects risk analysis and financing.

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Key Insights from IWDRI 2018

1. The role of finance in incentivizing resilience:

- Infrastructure is largely publicly owned. Therefore, determining the extent of resilience a country can afford is a public finance issue with the goal being to maximize benefits (i.e. loss of assets, or economic losses) while minimizing costs.
- Financial instruments play a key role in incentivising uptake of good practices towards building DRI. However, effective financial planning requires a sound underpinning of data on hazards, risks and climate dynamics. E.g. Taking resilience into account while developing infrastructure may raise upfront construction costs by 5 to 15%. This can be justified only by a comprehensive cost benefit analysis over the lifecycle of a project.

2. Understanding contingent liabilities:

- Governments are advised to set up institutional and operational frameworks to understand “contingent liabilities” to identify how and to what extent a budget is impacted after a disaster.

3. Acceptable level of risk:

- Mitigation funding and residual risk financing is beneficial for recognition of risk at various levels. Governments need to better understand the acceptable or optimal level of risk, and how much could be retained, before transferring their risk to markets through insurance.
- Mexico’s Fund for Natural Disasters (FONDEN) provides a series of different financial instruments to address risks at all levels. Colombia also uses public private partnerships (PPP) for disaster resilience, and strong disincentives are built into the policy for non-compliance.

4. Looking beyond insurance:

- While insurance is able to create incentives for governments and private institutions by making premium risk reflective, it is unable to address the root cause of risk. Hence, using insurance in the absence of other systemic measures cannot be the answer to creating incentives for building resilient infrastructure.
- Risk financing strategies for sovereign nations will depend on their varying capacities, risk appetite, resources and willingness to manage risk. Ownership of risk is a critical issue in this regard. No matter who owns the infrastructure, the government of any country still has to plan for the risk.

- A layered approach to risk management can be facilitated through a range of financial instruments that are now available to address financing development (or redevelopment) of resilient infrastructure. Disaster risk screening of infrastructure is one such method.
- 5. Mainstreaming the role of the private sector:**
- Since the last decade, the Indian private sector is investing almost half as much as the Government in infrastructure. Banks are a key source of finance for infrastructure projects and have a role in improving compliance to standards for risk assessment and building. Institutional risks are critical, which is why a study of contingent liabilities becomes important.
