

# Resilient Infrastructure Public Private Partnerships (PPPs): Contract and Procurement The Case of India



India is vulnerable to a wide range of natural hazards, particularly flooding, cyclones, drought, extreme heat waves, landslides, wildfire, and earthquakes. In the context of climate change, the intensity and frequency of weather-related shocks are likely to increase. India is also one of the key implementers of Public-Private Partnerships (PPPs) across infrastructure sectors such as roads, ports, airports, energy, and water and sanitation. It is among the Top 5 countries in the world in terms of cumulative investments in PPPs over the past 25 years. India’s experience in PPP projects affected by natural hazards offers insights and lessons on how disaster and climate risks can be managed under PPPs in emerging market and developing economies.

## Policy and Regulatory Framework for PPP and DRM

### Policy and Regulatory Frameworks

Although there is no single policy and legal framework specifically directed toward PPP implementation in India at a national level, various sector-specific and state-specific acts, rules, and guidelines provide key regulations for PPP in India under different jurisdictions (table ES.1).

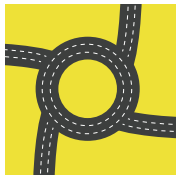

In 2010, the National Disaster Management Authority

(NDMA) has developed “Guidelines on Ensuring Disaster Resilient Construction of Buildings and Infrastructure” aimed specifically toward projects funded under PPP and private schemes. There is a need for critical infrastructure such as hospitals, energy, transport, and water and sanitation facilities to be able to continue their functions and services immediately after a major disaster. Hence, it is recommended to develop resilient infrastructure engineering and performance standards and incorporate them in PPP contracts as part of the technical specifications.

**Table ES.1** Policy and Regulatory Framework for PPP and DRM in India

	Disaster Risk Management	Public-Private Partnerships
<b>Central government</b>	<ul style="list-style-type: none"> <li>» 2005 : Disaster Management Act</li> <li>» 2016 : National Disaster Management Plan</li> <li>» 2010 : Guidelines for disaster-resilient buildings and infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>» PPP model concession agreements (MCAs)</li> </ul>
<b>State or district governments</b>	<ul style="list-style-type: none"> <li>» State Disaster Management Plans including hazard maps</li> </ul>	<ul style="list-style-type: none"> <li>» State-level infrastructure development acts</li> <li>» Sector-specific acts</li> </ul>
<b>Project parties</b>	<ul style="list-style-type: none"> <li>» Bidding documents</li> <li>» Technical specifications</li> <li>» Project contract</li> </ul>	

**Table ES.2 Standard Force Majeure Provisions in Roads and Ports PPP Projects in India**

	Definition of Force Majeure	Risk allocation and compensation	Termination
 <p><b>Roads</b> (Build-Operate-Transfer)</p>	<ul style="list-style-type: none"> <li>» <b>Acts of God:</b> epidemic, extremely adverse weather, lightning, earthquake, landslide, cyclone, flood, volcanic eruption, chemical contamination, or fire explosion</li> <li>» Strikes or boycotts</li> </ul>	<ul style="list-style-type: none"> <li>» <b>Cost escalations:</b> Developer</li> <li>» <b>Revenue loss:</b> Developer</li> <li>» <b>Extension:</b> If project revenue exceeds 90 percent of predefined average daily fee, extension of contract to extent of shortfall in average daily fee</li> </ul>	<ul style="list-style-type: none"> <li>» If disaster event persists for 180 days within a continuous 365-day period either party can terminate.</li> <li>» <b>Payment:</b> 90 percent of debt due, less insurance cover</li> </ul>
 <p>(Build-Operate-Transfer)</p>	<ul style="list-style-type: none"> <li>» <b>Acts of God:</b> epidemic, extremely adverse weather, lightning, earthquake, landslide, cyclone, flood, volcanic eruption, chemical contamination, or fire explosion</li> <li>» Strikes or boycotts</li> </ul>	<ul style="list-style-type: none"> <li>» <b>Cost escalations:</b> Developer</li> <li>» <b>Revenue loss:</b> Developer</li> <li>» <b>Extension:</b> By such period not exceeding the period during which relative performance was affected by disaster event</li> </ul>	<ul style="list-style-type: none"> <li>» If disaster event persists for 120 days, either party can terminate or continue with revised terms.</li> <li>» <b>Payment:</b> Lower of book value or debt due, less outstanding payments to authority, less insurance claims</li> </ul>

Sources: “Model Concession Agreement for Six Laning,” National Highways Authority of India; “Model Concession Agreement for Private Sector Projects in Major Ports,” Ministry of Shipping.

Guidelines on defining force majeure events and allocating risks are available in the form of model concession agreements (MCAs) for key PPP sectors. Critical infrastructure sectors such as roads, ports, and energy have well-developed MCAs with clear guidance and flexibility for changing the definition of force majeure to suit project-specific needs before signing of the contract (table ES.2). Deliberations on definition and applicability of force majeure events and the extent of corresponding risk allocation will be accommodated in effective PPP contracts.

### Contracting and Disaster Risk Allocation Defining Force Majeure

Although the current PPP contracts include force majeure provisions, the definition is not based on the results of project-specific disaster and climate risk assessment. For instance, any flooding event irrespective of magnitude that materially affects the party is a force majeure event. Although the NDMA and State Disaster Management Authorities (SDMAs) have developed disaster risk information (such as hazard maps), there is currently no framework for incorporating such information into the definition of force majeure in PPP contracts. An open-ended definition including all possible disasters is employed to transfer the force majeure risks onto the private developer, thereby protecting the authority from any costs arising from force majeure.

Such a lack of clarity, in addition to the uncertainty in cost implications of resilience investment and skewed responsibility for disaster risks against the private sector,

may diminish their incentive to invest in risk reduction and emergency preparedness to effectively respond to disasters. As the market for PPP in India evolves, defining force majeure provisions based on hydrometeorological and geophysical risk assessments during the feasibility study stage as well as upgrading design standards will help promote effective risk sharing between the authority and private developer.

### Risk Sharing between Public and Private Sectors

Under the current PPP contractual framework, the private developer is the prime risk bearer of disaster risks and is mandated by the contract agreement to purchase necessary insurance products for transferring such risks to the wider insurance market. For example, in the Ennore port sector case, damages were covered mostly by insurance, and the government authority did not bear the risks of additional costs from disaster events (box ES.1). Because India has not seen major disasters leading to termination of a PPP project, the insurance market has yet to be tested with such shocks.

On the other hand, incentives for the private sector were carefully examined when the market was nascent. For the Chennai Water Desalination plant, the authority has provided to accept uninsurability risk in case of termination and act as an insurer of last resort for 80 percent of uninsurable or unclaimable assets (box ES.2). This was done mainly to incentivize private developers to undertake the project given that the market is nascent and the project is the first PPP project in the sector.

### Box ES.1

#### The Case of Ennore Tank Terminals: Damage Cost Responsibility

- » During the operation phase, Ennore Tank Terminals Private Limited (ETTPL) experienced heavy rainfall and resulting floods in December 2015 that affected South India. Exactly one year later, in December 2016, the project also experienced Cyclone Vardah, classified as a “very severe cyclonic storm” (wind speeds more than 150 kilometers per hour).
- » Although the floods of 2015 caused no material losses that adversely affected the operations, the project has suffered damages worth Rs 24 million (US\$0.52 million) of which Rs 17 million (US\$0.37 million) was eligible for insurance claims.
- » The remaining US\$0.15 million was borne entirely by the developer, which reduced the profits of the special purpose vehicle (SPV) during the year.

### Box ES.2

#### The Case of Chennai Water Desalination Plant: Provisions for Termination upon Force Majeure

If the force majeure event subsists for a period of 120 days or more within a continuous period of 365 days, either party may at its sole discretion terminate the agreement by serving a 90-day termination notice in writing to the other party. If further to this, termination of the agreement happens, the authority shall make a termination payment in an amount equal to:

- » Ninety percent of the debt due less pending insurance claims if any. If some insurance claims are not admitted, 80 percent of such claims will be included in the computation of debt due.
- » The entirety of the subordinated debt less pending insurance claims if any. If some insurance claims are not admitted, 80 percent of the amount of such claims will be included in the computation of debt due.
- » One hundred percent of the equity (subscribed in cash and actually spent on the project) if the termination occurs within two years of the effective date. For each successive year thereafter, this amount will be adjusted to reflect the changes during the year.

It is to be noted, however, that as the frequency and magnitude of natural hazards increase due to climate change, there is a need to promote more balanced risk sharing between private and public parties, with the authority covering the project risks against uninsurable events while the project developer acquires insurance covers for low- to medium-impact events.

### Incorporating Flexibility into Concession Agreements

The current PPP contracts across sectors in India are nonnegotiable. While MCAs provide good guidance for both the public and private sectors, a standardized approach might not be conducive to managing uncertain events that require coordination, adaptive management, and dialogues between stakeholders to develop mutually agreeable solutions for enhancing the project’s resilience.

Therefore, it will be useful to include flexibility provisions for force majeure events in the current PPP contracts and promote active dialogue between various project stakeholders to develop sound concession agreements taking into account the scale of a disaster event and commercial viability. For example, although Ennore Tank Terminals Private Limited has the contractual right to fix tariffs based on additional costs incurred by the force majeure event, they did not increase the tariff because they were concerned about the market risk associated with the tariff increase and acceptability from the clients because the extent of disaster losses was minimal and the cyclone did not materially affect operations.

### Employing an Independent Engineer for Quality Assurance

Across all the project case studies, an independent engineer (IE) was appointed by the authority to ensure the private developer’s compliance with technical standards in the design and construction of project facilities. An IE monitors the private entity’s construction and maintenance works including their claim on disaster losses on behalf of the authority (box ES.3). Although an IE is not currently responsible for assessing the project’s hydrometeorological and geophysical risks, their scope could be expanded to review the project’s disaster and climate risks during the feasibility study, detailed engineering designs, construction, and O&M phases to provide recommendations until there is satisfactory compliance by the concessionaire. Further, an IE could work with the concessionaire to develop effective emergency preparedness and response procedures for ensuring timely coordination between the concessionaire and the public authority and minimizing service disruption.

### Procurement, Monitoring, and Payment

The current PPP procurement practice in India prioritizes least cost—namely, higher revenue shares to the authority, lower annuity requirements, and so on—thus discouraging developers from incorporating innovative solutions for resilience. The prospective bidders’ serviceability, innovative designs, operational capability, and a track record in effectively handling disasters are usually not considered as qualifying or shortlisting criteria. Hence, the bidders usually consider resilience investments as additional costs and no added value to win a project.

As disaster risk in Indian PPP projects is allocated to the private sector, it is expected that the private developer performs due diligence of disaster risks in the project

### Box ES.3

#### The Case of Samakhiali–Gandhidham Toll Road: Role of IE in Assessing Damage Loss Responsibility

At the start of operations in 2015, the Samakhiali–Gandhidham Toll Road Project suffered loss of revenue worth US\$68,000 and toll plaza damages worth US\$400,000 because of severe rainfall and flooding at the project site, and the toll plaza was closed for more than 24 hours, preventing toll collection.

Although the concessionaire invoked the force majeure clause, the IE reviewed the incident and determined that the damages and losses associated with the disaster resulted from the concessionaire's operational inefficiency in following IE's earlier suggestions for upgrades to the facilities before the start of monsoon season. Therefore, the authority did not provide an extension in contract period and the private developer borne the entire effect of revenue losses.

### Box ES.4

#### The Case of Ennore Tank Terminals: Advance Loss of Profits (ALOP) insurance

The private operator purchased ALOP insurance. During the 2016 Cyclone Vardah, the project was closed for half a working day. The developer was able to claim payout on lost profits by mitigating the requirement of infusing equity to cover for revenue shortfall. However, the negotiations for insurance payout were still in progress one year after the disaster, with the developer receiving only 50 percent of the eligible insurance claims.

Immediately rebuilding damaged assets is critical for both public and private sectors because any delays in reinstating the asset would adversely affect the public infrastructure service and cost the private developer even further loss of revenues. Hence, provisions that obligate a developer to seek financing for such additional costs on the best possible terms—such as through external funds or from the authority as lender of last resort in a mechanism similar to a revenue shortfall loan—can be included in the contract to address working capital issues arising out of disasters.

location and that the project's engineering designs consider resilience to such events. However, without technical specifications on resilient infrastructure designs and performance requirements in place, the resilience of

infrastructure services may be jeopardized depending on the private developer's risk of investment loss taking into account least-cost procurement and uncertainty in cost implications of resilience over the lifecycle of a PPP contract.

### Insurance and Disaster Risk Financing Mandating Insurance Coverage

Insurance is mandatory in India for securing project finances and developing the project because the private developer is the primary entity bearing most of the project risks. The lender's insurance adviser is employed to annually review insurance covers taken by the developer. Under the contract agreement, the developer is mandated to purchase all such insurance mandated by lenders. Although a project developer can access finances for reinstating the assets through multiple channels (including insurance claims and compensation from force majeure clauses), the developer often must infuse capital from project revenues or from external resources before any compensation is received (box ES.4).

### Availability of Insurance in the Context of Climate Change

Because India's PPP procurement process emphasizes least cost, private developers heavily negotiate insurance premiums to minimize costs. Hence, the Indian market for insurance is highly price-sensitive, and the insurance coverage taken by private developers might not be representative of actual risks faced by the project.

Over the past few years, flooding events have proven to be the most common disasters affecting India. Realizing this, insurance providers are removing floods from their comprehensive fire policies and are underwriting it under a separate rider with higher premiums. In certain cases, it has become too difficult to obtain a reasonably priced insurance to cover flood risks such as in the hydroelectric power generation PPPs. Hence, with a suitable insurance product unavailable, the developer settles for suboptimal coverage and increased exposure despite recognizing the necessity of insurance. As uninsurable disaster risks are expected to increase in the context of climate change, the role of public authorities in increasingly managing climate risks is becoming critical in structuring resilient infrastructure PPPs in India.

### Emerging Alternative Risk Transfer

The alternate risk financing market of India is still in a nascent stage, with much of the infrastructure PPP project risk being underwritten in the insurance market. Realizing the risks of climate change and the increasing frequency and magnitude of disasters, the government is actively evaluating parametric insurance products such as weather-indexed insurance to cover public infrastructure projects.

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