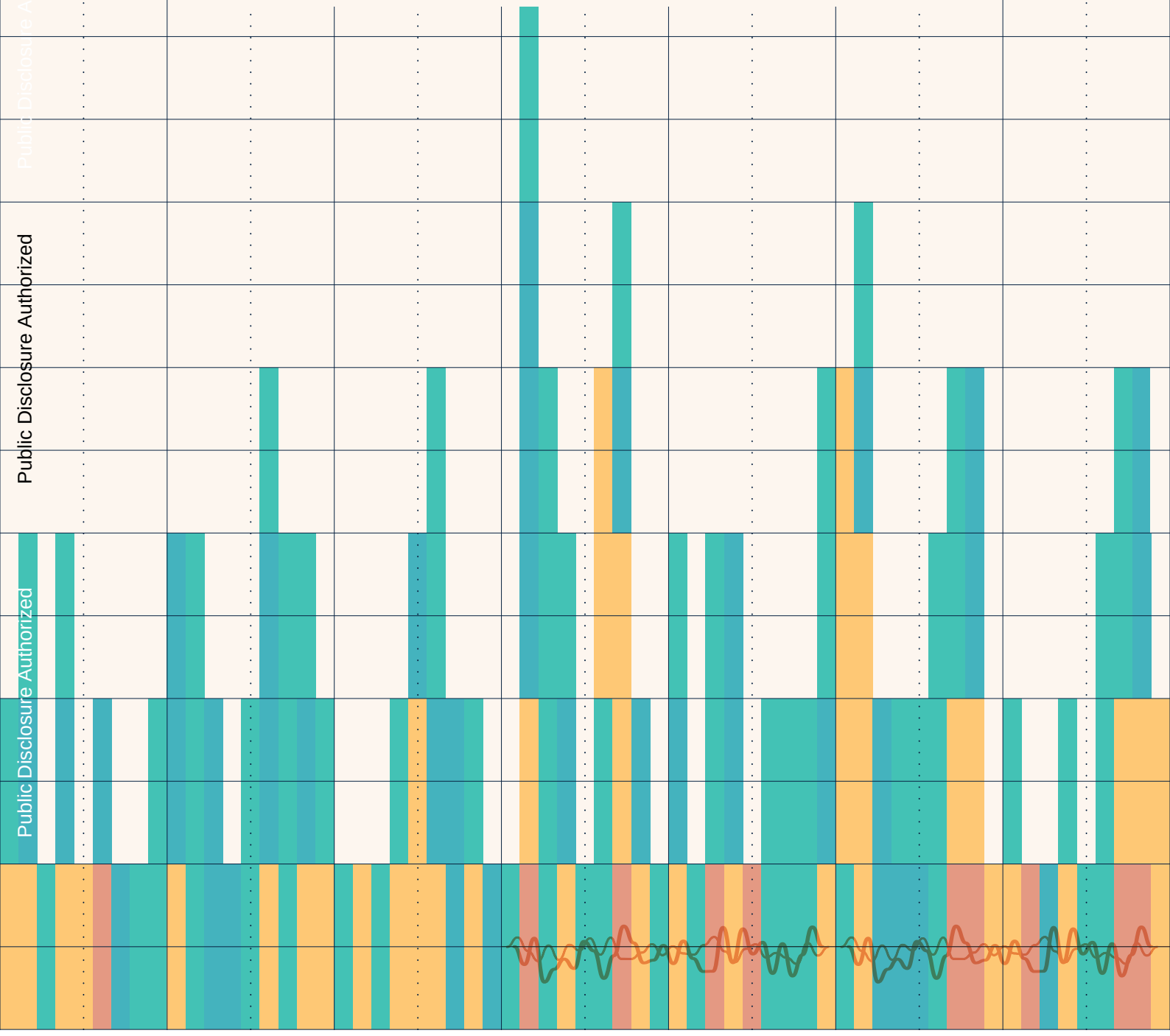
Technical Brief on

Resilient Infrastructure Public-Private Partnerships: Policy, Contracting, and Finance



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Resilience and Finance: A Dual Infrastructure Challenge

Long-term financial constraints have motivated governments to engage the private sector in public infrastructure development, including through public-private partnerships (PPPs).

More recently, governments, researchers, and development practitioners have turned their attention to the importance of improving the resilience of infrastructure assets to natural disasters, as well as to the key role infrastructure plays in the resilience of communities, especially in the context of climate variability. During 1998–2017, disaster-hit countries reported direct economic losses of approximately US$2.9 trillion, of which 68 percent account for climate-related disasters.[1] The reported losses from extreme weather events rose by 151 percent compared to the total reported losses of US$1.3 trillion during 1978–1997. Floods accounted for approximately 43 percent of recorded events affecting more than 2 billion people, followed by storms (28 percent) and earthquakes (8 percent). During this period, climate-related and geophysical disasters took the lives of 1.3 million people and left 4.4 billion people injured, homeless, displaced, or in need of emergency assistance. These enormous economic losses of human life have promoted attention to the importance of disaster risk management (DRM) and the impacts of climate change, particularly in countries most vulnerable to natural hazards. As such, governments are tasked with ensuring that sufficient funds and expertise are available to develop and supply quality infrastructure that can also (a) better withstand and recover from disasters and (b) adjust to changing conditions associated with climate change.

What is resilient infrastructure PPP?

Despite concurrence of these trends, there is a lack of documented knowledge regarding approaches to designing and delivering resilient infrastructure through PPPs. As governments and their development partners continue to develop mechanisms and approaches to incorporate resilience into infrastructure development through PPPs, it is worthwhile to address the remaining knowledge gaps to advance resilience via infrastructure PPPs. A resilient infrastructure PPP is envisaged as one that serves policy goals associated with resilience, meets legal requirements and policy standards that promote asset resistance, incorporates resilience in project planning, and mainstreams DRM considerations at all stages of the PPP lifecycle.

What do we know, and what are the knowledge gaps?

Many countries recognize the importance of considering site-specific climate and disaster risks in infrastructure planning[2] and have committed to creating enabling environments at the policy and project levels.[3] However, there is limited experience in operationalizing these commitments or mainstreaming disaster and climate considerations in PPP development. While development partners

1 CRED (Centre for Research on the Epidemiology of Disasters) and UNISDR (UN Office for Disaster Risk Reduction). 2018. Economic Losses, Poverty & Disasters: 1998–2017. https://www.unisdr.org/we/inform/publications/61119.

2 Boyle, J., M. Cunningham, and J. Dekens. 2013. Climate Change Adaptation and Canadian Infrastructure: A Review of the Literature. International Institute for Sustainable Development. https://www.iisd.org/pdf/2013/adaptation_can_infrastructure.pdf.

3 ADB (Asian Development Bank). 2013. Making Infrastructure Disaster Resilient. https://www.adb.org/sites/default/files/evaluation-document/36101/files/learning-lessons-disaster-resilience-3.pdf; Japan Ministry of Land, Transport and Infrastructure. 2013. Task Examination Task for Promoting Disaster Prevention and Mitigation Measures for Large Scale Disasters through Public-Private Partnership (translated). http://www.mlit.go.jp/sogoseisaku/kanminrenkei/sosei_kanminrenkei_fr1_000021.html; UK Department for Environment, Food and Rural Affairs. 2011. Climate Resilient Infrastructure: Preparing for a Changing Climate. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69269/climate-resilient-infrastructure-full.pdf.

have suggested that governments incorporate climate and disaster considerations in project preparation and procurement,[4] most are yet to introduce these into policy frameworks or infrastructure planning processes, often due to high uncertainties about hydro-meteorological and geographical risks. Moreover, governments are challenged by limited climate and disaster risk data[5] and the lack of consensus on required levels of resilience.[6] Current advice proposes mainstreaming resilience at multiple stages of the project lifecycle. World Bank research suggests that integrating resilience in PPP requires attending to PPP policy and law, identifying project-level requirements, allocating disaster risks between public and private sector, creating the right incentive structures for active management of climate and disaster risks in contracts and procurements, applying disaster risk financing tools, and embedding flexibility in the PPP process.

Contracts remain a key means of allocating disaster risk in PPPs, and efforts are apace to develop standardized contract provisions to help governments effectively define force majeure and establish disaster responses. A 2015 World Bank review of PPP contracts recommended language for clearly dealing with disasters and suggested additional specification of consequences in case of force majeure. To maximize PPP value for money (VfM), governments are also investigating approaches to transfer disaster risks to private parties. Moreover, since extreme and unpredictable weather events could become more common, force majeure provisions may be an increasingly ineffective means of managing disaster risk.[7]

Disaster risk financing, including insurance, will likely play a more important role in the future of infrastructure PPPs. While this is still a developing field, there are some important experiences to draw from infrastructure PPPs. The insurance and reinsurance industries in Canada have insured against climate risks, for example, and have made efforts to quantify financial and economic impacts of climate change.[8] Kenya has also developed an active insurance market for drought and flood. Designing effective disaster risk financing tools will require high levels of collaboration among financiers, governments, and insurers.[9]

Another area for developing knowledge relates to technical specification of risk allocation and how contracts determine responses and cost-sharing following disaster. To date, there is limited accumulated knowledge on how and to what extent project agreements specify rights and obligations of parties following disaster events. Very few studies have assessed risk allocation in contractual provisions, definitions of force majeure across countries and sectors, or the requirements for effective risk sharing in infrastructure PPP contracts.

4 Sundararajan, S., and N. Suriyagoda. 2016. Climate Risks and Resilience in Infrastructure PPPs: Issues to Be Considered. PPIAF, World Bank Group. https://ppiaf.org/documents/2870/download.

5 PwC. 2010. Adapting to Climate Change in the Infrastructure Sectors. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/183493/infrastructure-pwc-full.pdf.

6 WEC (World Energy Council). 2015. World Energy Perspective The Road to Resilience - Managing and Financing Extreme Weather Risks. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/183493/infrastructure-pwc-full.pdf.

7 IFC (International Finance Corporation). 2016. How to Make Infrastructure Climate Resilient. https://www.ifc.org/wps/wcm/connect/5f53054c-d88a-4700-9d16-69a552a4ec6c/Note+14+EMCompass+-+How+to+Make+Infrastructure+Climate+Resilient.pdf?MOD=AJPERES.

8 Boyle, Cunningham, and Dekens 2013.

9 IFC 2016.

This brief and its attendant case study research attempt to fill some of these gaps. The knowledge compiled in this brief draws primarily on PPP experiences in three countries—Japan[10], India[11], and Kenya—and from international standards, including U.K. standard contracts and recommended standards of the United Nations. Reflecting on lessons learned from these cases, this brief highlights key considerations and good practices for incorporating disaster resilience into PPPs in contracting and procurement. Japan, for example, has incorporated increasingly specific contract agreements that establish parties' recovery obligations tied to various degrees of intensity of natural hazard events. Government has increasingly transferred risks to the private sector as information and experience drives learning about PPP operations and recovery following actual disaster events. In India, the preparation of model contracts and dissemination of a standardized definition for force majeure has helped PPP participants consider key risks in PPP contracts. Moreover, independent engineers are engaged to support contracting agencies in project planning and oversight, including issues related to disaster management. In Kenya, the government is expanding options for disaster risk financing to make contingent funds available to infrastructure developers.

Additional resilience challenge for PPPs. Incorporating resilience and justifying additional project preparation costs can be more challenging for PPPs than for purely public projects. PPPs typically involve higher short-term project development costs than public projects due to the need for specialized support staff, including legal and financial advisors, and the additional costs and time required for contracting and procurement. With limited resources available, the burden is on the government to control costs and advance a potential PPP project at a reasonable pace during project preparation and contracting—pressures that can be exacerbated by additional requirements associated with mainstreaming DRM. Moreover, because natural disasters are uncertain and resilience-building efforts costly, difficult decisions must be made about the desirable level of investments and the prioritization of DRM initiatives. Total resistance is often not only impractical but may also be inefficient. Thus, safe-to-fail designs may be considered to minimize adverse public safety impacts and prevent loss of life where disasters are highly unlikely and the costs of mitigation high. Decisions about levels of effort and investment may be supported by historical geophysical, meteorological, or seismic data. But in many countries, data are insufficient to develop probabilistic models. Even if data are available, increasing uncertainties associated with climate change challenge the robustness of established disaster models. Nevertheless, there exists a wide array of technical and organizational options for designing adaptation and adjustment mechanisms and managing disaster risks—a central issue for resilience and PPP bankability in hazard-prone locations.

10 World Bank. 2017. Resilient Infrastructure PPPs: Contracts and Procurement – the Case of Japan.

11 World Bank. 2018. Resilient Infrastructure PPPs: Contracts and Procurement – the India Country Brief.