

Conclusion and Next Steps for Disruption and PPPs

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The Disruption and PPPs section provides a framework for thinking about potential strategies to enhance resilience and flexibility of PPP contracts in the face of disruptive innovation.

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Watch this space. The Disruption and PPPs section is based on the Report "[PPP Contracts in An Age of Disruption](#)" and will be reviewed at regular intervals.

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Technology is consistently innovating and developing. However, during recent years the pace of technological change has been accelerating rapidly across the global economy. Disruptive technologies can open up unprecedented opportunities for all infrastructure sectors, in particular with regard to digitalization

and decarbonization. At the same time, innovative technology has the potential to displace established business models or supersede existing technologies within a short timeframe, thereby creating winners and losers within infrastructure markets.

Strategies that facilitate the adoption of disruptive technology

Against this background, governments increasingly face challenges caused by disruptive technology when managing long-term PPP contracts. Strategies that have allowed governments to overcome these challenges and to enhance “innovation resilience” and facilitate the adoption of disruptive technology are:

Plan for innovation

- Output specifications:
 - Anticipate long-term needs.
 - Quantify innovative technology risk (caps and exceptions).
- Variations:
 - Allow for technology changes if compensated.
 - Consider risk sharing for unpredictable technology changes (e.g., risk of obsolescence or upgrades with major cost implications).
 - Integrate gain sharing mechanism to incentivize the adoption of superior technology.

Enhance flexibility

- Equity principles:
 - Integrate explicit provisions that restore balance of economic equilibrium where mandated.
 - Consider integration of equity principles where possible (subject to legal advice).
- Term: Enhance flexibility related to contract term, e.g., present value-of-revenue (PVR) contracts.
- Change in law:
 - Limit/share risk for laws/regulations that require technical enhancement unless the requested upgrade is affecting the general economy and any type of business.
 - Integrate financial relief mechanisms to share and limit cost impact if legal obligation was not foreseeable and adversely impacts in a material form economic equilibrium of contract.

Consider potential cyber attacks

- Consider risk of cyber attacks when drafting force majeure/MAGA clauses.
- Consider availability of insurance for cyber risk (mandatory insurance requirement?).

Promote strong partnerships and contract management before dispute stage

- Cultivate strong relationships with the partner and stakeholders, to find amicable solutions when things change, before the disputes stage.
- Alternative dispute resolution mechanism in PPP contracts, including the use of dispute review boards, may be useful to prevent and resolve disputes.

Consider renegotiation and termination

- Consider renegotiation/termination where technological disruption has fundamentally altered circumstances long term.
- Specify process and conditions for renegotiation in PPP contract.
- Include provisions that give contracting authority the right to voluntary termination.

Increase the resilience of PPP contracts going forward

To increase the resilience of PPP contracts going forward and to encourage and facilitate the implementation of disruptive technologies with regard to future PPP contracts, governments need to prepare for technological disruption before the PPP contract stage. The following strategies could be applied going forward:

Plan for disruptive innovation

- Identify, assess and allocate risks/opportunities associated with potential technological changes.
- Find possibilities to integrate new technologies into projects throughout all stages.

Incentivize flexible and innovative solutions during procurement

- Consider quality of technical solution and its flexibility to adapt to a changing technological landscape during PPP procurement.
- Focus, e.g., on life-cycle costs and collaborative procurement methods that allow bidders to prepare alternative proposals or to propose innovative solutions.

Focus on climate-smart and digital projects

- Prioritize “green” and digital infrastructure projects (including smart-city components).
- Set out low-carbon and digital targets.

Collaborate with all stakeholders throughout project development to identify and adopt innovation (e.g., give access to data).

The Disruption and PPPs Section

The Disruption and PPPs section provides guidance to developing country governments on managing PPP contracts in the face of innovative technologies. It attempted to create a framework for thinking about potential strategies to enhance resilience and flexibility of PPP contracts in the face of disruptive innovation.

The examples, case studies and recent reports reviewed with regard to disruptive technology and disruptive events provided crucial inputs for the development of this framework. These inputs made it possible to highlight several strategies that governments could consider to make PPP contracts and contract management fit for the Fourth Industrial Revolution.

However, this section can only be a starting point—given the various types of disruptive technology that could impact infrastructure projects going forward and the fact that these technologies can be integrated into the physical infrastructure as well as used in infrastructure design, planning, delivery and management, and can affect PPP projects and their partners in a number of different ways as well as sector-specific differences. Because disruptive innovation as well as disruptive events are continuing to change infrastructure markets globally, it is expected that the evidence base for this report can continuously be expanded in coming years to make the analysis and guidance even more robust.

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