# Innovation Resilience

## Disruption and PPPs: PPP Contracts in An Age of Disruption

Innovation Resilience

Enhancing “Innovation Resilience” and the Adoption of Disruptive Technology throughout the PPP Project Cycle

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***Watch this space.*** *This section is based on the Report "PPP Contracts in An Age of Disruption" and will be reviewed at regular intervals. Visit the Content Outline, or Download the Full Report to find out more. Let us know what you think by taking a Quick Survey.*

### Enhancing “Innovation Resilience” and the Adoption of Disruptive Technology throughout the PPP Project Cycle

We are living in a world of transformative changes. Technological advances together with the transition to a carbon-free future revolutionize the way we live and interact with the world and could have immense implications for infrastructure PPPs. To reap the benefits of technological advances, PPP infrastructure projects must be planned and designed with a view to potential upsides to such advances while maintaining the flexibility to adapt to unforeseen downsides or risks.

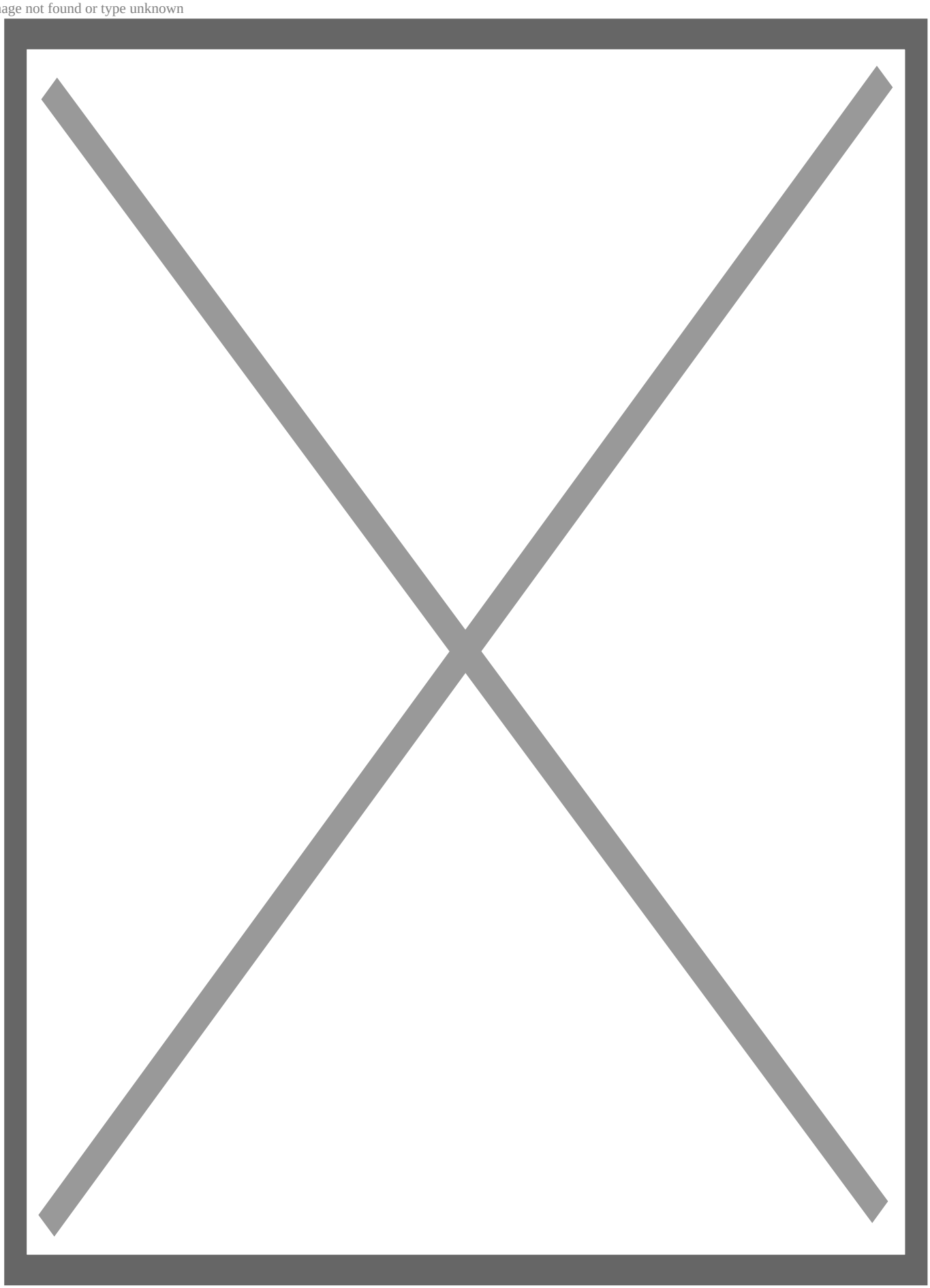
This section will discuss what governments need to consider during the different development stages of PPP projects, including the procurement, structuring, and drafting of PPP contracts. The section will also address the management of existing PPP contracts if the reader wants to facilitate the adoption of innovative technologies and respond effectively to the challenges of technological disruption.

The first part of this section, Preparing, Structuring and Procuring Resilient PPP Projects that Can Adapt to Disruptive Technology, discusses how “innovation resilience” and the adoption of emerging technologies can be enhanced throughout the project development stage going forward. It also gives a brief overview of some best-practice approaches that can be considered during the project preparation stage, including the structuring and procurement of PPP contracts. The aim of this section is to give the reader a basic understanding of the proactive steps that can be taken during the project development phase to anticipate potential changes and identify measures necessary to deal with expected changes while adding sufficient flexibility so that PPPs can respond efficiently and effectively to the opportunities and risks of this new technological era.

The second part of this section, Managing Technological Change in Existing PPP Projects, focuses on existing PPP projects and addresses disruptive technology from a contract management perspective. It outlines typical adjustment mechanisms that are encountered in most PPP contracts or legal systems governing PPP contracts, including the key underlying economic principles that may allow the parties to manage circumstances that were not fully envisaged at financial closure. In addition, it discusses mechanisms that are important tools for the management of unexpected changes, such as renegotiation frameworks, dispute resolution systems, and termination regimes. The aim of this section is to describe what governments have to consider with regard to projects that are already implemented in a changing technological environment, and to highlight emerging best practices that can inform future PPP contracts and contract

management.

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**Preparing, Structuring and Procuring Resilient PPP Projects that Can Adapt to Disruptive Technology**

The adoption and application of technology-enabled infrastructure as well as "innovation resilience" of PPP projects needs to be considered in the broader context of PPP project preparation and delivery against the background of the G20 Principles for Quality Infrastructure Investment.

These principles acknowledge that disruption and change have become the norm, and they stress that advanced technologies are an important component for new and existing assets. Two important ingredients of quality infrastructure are therefore (i) that it is resilient to natural disasters and other human-made risks,[1] i.e., planned, designed, built, and operated in a way that anticipates, prepares for, and adapts to changing circumstances and can withstand, respond to and recover swiftly from potential disruptions; and (ii) that it leverages innovative technologies through its life cycle to raise economic efficiency for existing and new infrastructure.[2]

Complex PPP infrastructure projects thus require new strategies that integrate InfraTech into the planning, design, procurement, and contracting stages and at the same time reflect the uncertainty and broad range of disruptive technology risks these projects may encounter over their life cycles. This section highlights key considerations regarding mechanisms that could be applied starting from an early stage of project preparation that could shape and determine the drafting of individual PPP contracts in times of rapid technological advancement going forward.

See the following sub sections:

- Project Identification, Screening and Appraisal
- Considerations Related to Procurement
- Structuring the PPP Contract

**Managing Technological Change in Existing PPP Projects**

This section discusses how existing PPP projects can manage technological change that may occur during the project implementation phase.[3] This includes the management of changes that are permitted in the PPP contract or by the law that governs the contract, such as output specifications; periodic changes in the scope of work or tariffs; and unforeseen changes caused by external events or changes in law. Against the background of the transformative nature of some technological changes that are underway and have the potential to reshape entire infrastructure sectors, it is natural to expect that the parties will at some point during the contract term face circumstances that cannot be dealt with by the adjustment mechanisms provided for in the PPP contract. These changes in circumstance may need to be addressed through renegotiation frameworks as well as the dispute resolution processes and termination regimes set out in the respective PPP contracts or legal systems governing the contract.

See the following sub sections:

- Contractual Obligations to Adjust the Project to a Changing Technological Environment
- PPP Contractual Provisions that Permit Regular Adjustments
- PPP contractual provisions and legal mechanisms that permit adjustments in exceptional situations
- Renegotiation, Government Step-in rights, Termination, and Dispute Resolution

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*Footnote 1: Principle 4: "Building Resilience against Natural Disasters and Other Risks," G20 Principles for Quality Infrastructure Investment. This principle has been developed for disruptive events but it can also be applied to some extent to disruptive technologies. Disruptions such as the rising rates and intensity of climate change-related natural and other disasters, the 2008 financial crisis, the 2022 Ukraine-Russia*

*conflict and the dramatic impact of the COVID-19 pandemic on infrastructure have shown the importance of quality infrastructure development to prevent and counter disruption.*

*Footnote 2: Principle 2: "Raising Economic Efficiency in View of Life-Cycle Cost," G20 Principles for Quality Infrastructure Investment.*

*Footnote 3: The administrative arrangements and processes for handling change are often further defined as part of the contract management framework and materials. Although rules and processes for change are usually specified in the PPP contract, room for discretion is likely to remain.*

## Subsections

Futuristic

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**Project Identification, Screening and Appraisal**

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**Considerations Related to Procurement**

Structuring the PPP Contract

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**Structuring the PPP Contract**

Futuristic computer cloud

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**Changing Technological Environment**

Person with virtual pencil

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**Regular Adjustments**

Person with a keyboard

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**Adjustments in Exceptional Situations**

Technology

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**Renegotiation, Government Step-in rights, Termination, and Dispute Resolution**

Executive Summary for Disruptive Technologies and PPPs

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**Executive Summary for Disruption and PPPs**

Disruption and PPPs

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**Disruption and PPPs**

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