Infrastructure PPPs Impacted by Disruptive Technology

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On this page: *The changes prompted by technological innovation will have many positive effects for PPP infrastructure projects and the economy at large but will also present challenges.*

How Are Infrastructure PPPs Impacted by Disruptive Technology?

Disruptive innovation has already impacted infrastructure projects worldwide, especially in the energy, information and communications technology (ICT), and transport sectors. This development is expected to intensify in coming years because more and more disruptive innovation will be integrated throughout the entire project life cycle of infrastructure projects. The changes prompted by technological innovation will have many positive effects for PPP infrastructure projects and the economy at large but will also present challenges. They open up new opportunities, but at the same time there are also new risks that need to be managed as emerging technologies radically change infrastructure planning, design, construction, service delivery, and management.

For illustrative purposes, below are an overview of the main characteristics of PPPs that are relevant in the context of disruptive technology; examples of how disruptive innovation offers the opportunity to realize value across the PPP project life cycle; and some challenges disruptive technologies may bring about for PPP infrastructure projects.

Disruptive Technology and PPPs

In a quickly changing technological environment, governments need to adopt new strategies that allow them to respond swiftly and adequately to unforeseen technological changes that may disrupt infrastructure. Because infrastructure assets are typically long-term investments, dealing with unforeseen technological advances is never easy, but some of the opportunities and challenges are particularly important in the context of infrastructure projects delivered through PPPs.

A PPP is defined as a way to procure, finance, develop and implement public infrastructure assets and services using the resources and expertise of the private sector. This includes developing new infrastructure (greenfield projects) and upgrading existing infrastructure (brownfield projects). Although there is no universally accepted definition of a PPP, in this report a PPP is referred to as “a long-term contract between a private party and a government entity, for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance.”

Because private enterprises are at the forefront of innovation, PPPs will likely remain relevant tools to improve the delivery of infrastructure services and to seize the potential offered by disruptive technologies, in particular in emerging markets. However, PPPs have their own complexities when it comes to the adoption of new technologies and dealing with a rapidly changing business environment - complexities that governments must recognize and be capable of addressing. Key differences - in comparison to infrastructure projects that are delivered by traditional procurement methods—that are relevant in this context are:

- PPP infrastructure projects are often long-term commitments, usually for a term of 20 to 30 years, and they require large capital investments. With disruptive technology on the rise, there is an increasing risk that assets cannot be used economically before the public or private investors have fully recovered their costs.
- PPPs involve complex contractual arrangements between several public and private sector counterparties, including third-party lenders and investors. Because PPPs are different from infrastructure projects that are entirely publicly funded and operated, governments cannot therefore unilaterally respond to unforeseen technological advances and counter the risk that the infrastructure asset becomes outdated—for example, by integrating digital technology in transport projects or by switching from fossil fuels to renewable energy.
- PPPs are based on careful risk analysis, commercial assumptions, and financial models that integrate service delivery cost considerations into the design phases of the projects, and that therefore make it more difficult to respond to unexpected disruptions. Under the PPP model, the private partner typically takes on the life-cycle management of the infrastructure. Obsolescence is a particularly heightened risk to private partners that have assumed revenue risk (e.g., tolling) based on financial models that were dependent on traffic forecasts.[1]

Footnote 1: Pellen, Adrian. 2017. "Disruptive Technology Brings Risk and Opportunity to Infrastructure Projects." Marsh McLennan BRINK, August 14, 2017.

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