Executive Summary for Disruption and PPPs

Disruption and PPPs: PPP Contracts in An Age of Disruption

Executive Summary

“To improve is to change; to be perfect is to change often.” - Winston Churchill

Download Full Report
Download Chatbot View
Photo Credit
Executive Summary for Disruptive Technologies and PPPs

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.*

“To improve is to change; to be perfect is to change often.” —Winston Churchill

This report examines how disruptive technologies impact public-private partnership (PPP) infrastructure; what this means for the management of existing PPP contracts; and how better partnerships can be created—ones that are more resilient to such changes, as well as flexible enough to encourage collaboration between the public and private sectors in order to allow implementation of innovative technologies.

Context and Aim of the Report

Both innovation and PPPs can be essential drivers to get more quality infrastructure services to more people: New technologies can maximize the positive impact of infrastructure by enhancing sustainability, resilience, and economic efficiencies, and they can play an important role in helping economies respond to global crises. At the same time, emerging technologies have the potential to disrupt PPP infrastructure models if certain equipment, delivery models, and development tools become increasingly outdated or inadequate before public or private investors can fully recover their costs.

The objective of this report is to help governments of emerging economies to better understand the increasing impact of disruptive technologies on PPP infrastructure projects. The report also seeks to provide guidance on how to manage existing PPP contracts and design future ones at a time when emerging technologies are providing opportunities for innovation, and new business models can be essential for economic growth and private sector development in emerging markets. In addition, the report intends to encourage further debate among stakeholders involved in PPP projects about the scope and type of technological disruption they have encountered, as well as approaches to manage associated risks and to encourage innovation.

Disruptive Technology, Infrastructure and PPPs

Disruption is all around us. Changes to the status quo are not new; they can come slowly or suddenly, and they can be beneficial, disastrous, or both. However, with the advent of new technologies, technological change has scaled with ever-increasing speed across the global economy. Though it is uncertain what types of disruptions PPP infrastructure projects will encounter in the future, it is already apparent that disruption through technological change will continue. Such change will create promising opportunities for the development and implementation of infrastructure - in particular in emerging markets - but it will also disrupt

infrastructure sectors and projects. This can be disconcerting when applied to long-term contracts for infrastructure development, which rely on assumptions and models developed at the beginning of a project for a period of years or even decades.

Developments in the energy sector give an idea of the scope and dynamic of the potential disruptions that are underway. For example, the rapid pace of developments in the renewable energy space, and corresponding policy changes, have opened up several arbitration cases and countless renegotiations. Similarly, advances in battery storage, artificial intelligence, electric and autonomous vehicles, internet of things (IoT), and other disruptive technologies promise to change the context in which long term PPP contracts have been drafted.

Disruptive technologies present extraordinary opportunities for progress, with cleaner, more efficient, and more resilient infrastructure services. These opportunities should be seized and celebrated. However, changes from the status quo create pain points that must be carefully managed, in particular when long-term PPP contracts are structured based on a financial model on which financing relies. Unraveling such commitments has proven contentious and difficult.

The discussion of disruptive technology and its impacts on PPPs can be considered in the broader context of disruptions that have in recent years increased, and that present unprecedented worldwide challenges, such as climate change, natural disasters, economic crises, and global pandemics such as COVID-19. Unlike these disruptive events, which usually have negative consequences, disruptive technologies generally indicate progress, albeit often with winners and losers. Even though the nature of disruptive events and disruptive technologies differs, useful guidance can be drawn from the global experience of the impact of disruptive events on PPPs; analysis of underlying issues, occurrences, and impacts of risks and ways to address them; and tools that have been developed to deal with the growing number of disruptive events in the context of PPPs. The lessons learned, and approaches that have been discussed or implemented with regard to specific disruptive events, provide a useful basis for the development of guidelines aiming to enhance resilience of PPP contracts and contract management in the context of the exponential pace of technological change.

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

Preparing for disruption, including by disruptive technology, starts well before the contract stage, during project selection and preparation. It is therefore important for policy makers and investors to not only consider the existing legal framework but also the policy trajectory years into the future. Taking the long view when screening and selecting projects is essential, to avoid assets becoming “stranded” well before the end of their economic life (in some cases, even before they are operational). This involves improved forecasting of disruptive technologies, and reading policy signals before they become policy changes.

For example, commitments made during the 2015 Paris Agreement on Climate Change are still being put into more detailed action plans around the world, but it should not be surprising that countries are becoming more aware of and responsive to the global climate crisis. This is a trend that has been occurring for the last decade. Therefore, it is important when selecting projects now to prioritize “green” and resilient infrastructure—not only to prevent and respond to climate-related shocks and stresses, but also to ensure sustainability of support for the projects in the years to come, and to avoid the risk of stranded assets. Conducting proper due diligence before investment is an obligation on the part of the private investor as well as the public entity, in order to set realistic expectations regarding what will stay constant, and what may change.

Flexibility with respect to technological changes can be embedded during the project appraisal stage, when the risk allocation and scenarios are modeled, as well as the procurement stage, by ensuring that the request for proposals allows bidders to propose the latest innovative solutions, and by factoring such innovations into the scoring. Governments should encourage innovative practices in the procurement documents and bidding methods, i.e., a two-stage bidding process that allows bidders to compete on innovative design aspects before

financial considerations enter the picture. In the US state of Maryland, for example, procurement of a new metro line was done in phases, complemented by an innovative dialogue process that allowed innovations proposed by bidders to be taken into account during the project design and tendering phases.

When drafting PPP contracts, it is important to ensure that the output specifications consider long-term needs and anticipate changes that are reasonably predictable. This will need to be balanced with ensuring that the private partner can quantify its risk through caps or exceptions. Upgrades with major cost implications can then be treated as variations that are compensated. An appropriate gain sharing mechanism can incentivize the adoption of superior technology if it becomes available, while ensuring that contracting authorities and society at large benefit from efficiencies that are made possible by disruptive technologies. In Australia, technological upgrades to a desalination plant could be proposed by either the public or private parties to the PPP. If proposed by the public party, the authority pays for the upgrade but also keeps any resulting cost savings. If proposed by the private party, it would share in the cost savings, creating an incentive to make such improvements. In general, balance of interest considerations should guide PPP contract management. For example, if a technological development and the need for a requested technological upgrade were unforeseeable at the time the parties entered into the contract, and such an upgrade requires significant investment, it may be more appropriate to treat the request as a contract variation if the wording of the PPP contract is not explicit.

One way to mitigate exogenous demand risk is to structure PPP contracts as present value-of-revenue (PVR) contracts. In general, it would be advisable to switch to shorter terms or make contractual terms more flexible in sectors that are susceptible to technological change, should the financial model allow. Contracting authorities could also consider extending provisions that make tariffs or payments dependent on specific formulas in tariff adjustment schemes, to factor in economic effects caused by technological disruption and to incentivize innovation.

To protect parties from scenarios in which disruptive technology upsets the economic balance of the PPP contract, it will be important to carefully assess and allocate potential increased risks related to such technology, and to clearly define atypical and extreme events that should fall within the ambit of provisions, together with thresholds, exceptions (where appropriate), and consequences for each risk. The contract could, for example, expressly mention cyber attacks as force majeure events, together with required precautionary and mitigation measures. It can also be advisable to spell out legal concepts that govern a PPP contract in a specific jurisdiction and allow for a rebalancing of the economic equilibrium of the PPP contract to achieve more clarity for both parties. Depending on the circumstances, equitable principles could also be integrated into PPP contracts in jurisdictions where such principles are not mandated by law, to provide better protection for both parties in an environment that is continuously changing due to technological advances.

The level of risk the private partner can assume with regard to disruptive events is closely connected to the availability of insurance. Contracting authorities should review recent developments in the insurance market, and should take into account the availability of insurance for events or developments that may occur more frequently due to disruptive technology (e.g., cyber incidents) and the cost of such insurance. As a general rule, uninsurable disruptions are more likely to be treated as force majeure or material adverse government action (MAGA) events, whereas the private partner may be able to assume the risk for impacts caused by certain disruptions that can be covered by insurance mechanisms.

Good contract management, including cultivating strong relationships with the partner and stakeholders, helps lead to amicable discussions when things change, before any disputes arise. To deal with conflicts that may occur more frequently in times of increased disruption, PPP contracts should contain well-drafted dispute resolution clauses. Alternative dispute resolution mechanisms, including the use of dispute review boards, can be particularly useful tools to prevent and resolve conflicts arising in the context of disruptive technology, because they allow the parties to settle disputes informally at an early stage, before they become real disputes or impede the contracts.

In particular, in instances where a technological disruption has fundamentally altered circumstances long term, renegotiations can be the best path forward to try to find a mutually acceptable solution to an unforeseen problem or opportunity. Although renegotiation should be used sparingly and avoided where possible—because it harms the investment climate of the country and jeopardizes the transparency and competitiveness of the procurement—in some instances it is the preferred solution. Sometimes there may even be a mutually beneficial outcome to renegotiation, in which case it makes sense to adjust the contract to benefit from that outcome, for example if there is a technology that improves the efficiency of the project. PPP contracts should expressly regulate the processes and conditions for renegotiation, in particular if the PPP framework does not contain detailed mandatory requirements for contract renegotiation. At a minimum, these provisions should provide for third-party government approval. Amicable renegotiation is possible, if there is trust between the public and private parties and if the renegotiated terms are seen as fair to both sides. In Puerto Rico, for example, renegotiations resulted in an extension of the concessional term, increases in the private party's share of revenues, and additional payments, which helped the private party accept the financial burden of additional technological improvement. In other instances, if there is a strong enough public policy reason not to continue with the contract, termination combined with renegotiation of the terms may be the only option, understanding that the investor has the right to demand all of the termination compensation to which it is entitled under the contract in the case of voluntary termination.

Ultimately, however, a long-term PPP contract will be limited in how much flexibility can be introduced without threatening its bankability. PPP projects are by nature dependent on a set financial model at the outset to raise financing for the upfront construction costs. Once that financing is committed, it is very difficult to adjust any variables or assumptions in the model, and attempts to do so almost inevitably result in renegotiations or disputes.

Overall, a healthy underlying sector with competitive forces driving innovation and pricing helps to encourage adoption of new technologies. A financially robust underlying sector also helps to raise the financing and funding needed to make key technological shifts going forward, such as retiring old "dirty" technologies to make space for cleaner ones. Encouraging market-based pricing where possible (for example, some liberalized markets for electricity) could naturally reflect and drive innovative behavior, helping to introduce flexibility—though whether that is a desirable outcome for every publicly regulated infrastructure sector is debatable.

Related Sections

Disruption and PPPs

Disruption and PPPs

Abbreviations for Disruption and PPPs

Abbreviations for Disruption and PPPs

PPP Contracts in An Age of Disruption Table of Contents

Table of Contents for Disruption and PPPs

Research and Publications in PPPRC

BROWSE BY REGION

- East Asia and Pacific (EAP)
- Europe and Central Asia (ECA)
- Latin America and Caribbean (LAC)
- Middle East and North Africa (MENA)
- North America (NA)
- South Asia (SA)
- Sub-Saharan Africa (SSA)

BROWSE BY SECTOR

- Power & Renewable Energy
- Urban & Cities
- Water & Sanitation
- Transport
- Telecom & ICT
- Solid Waste Management

BROWSE BY Topic

- Asset Recycling
- Climate
- Disruption
- Emission Reduction Credit
- Fragile and Conflict-Affected States (FCS)
- Gender
- Innovative Revenues for Infrastructure

The resources on this site is usually managed by third party websites. The World Bank does not take responsibility for the accuracy, completeness, or quality of the information provided, or for any broken links or moved resources. Any changes in the underlying website or link may result in changes to the analysis and recommendations set forth in the Public-Private Partnership Resource Center. The inclusion of documents on this website should not be construed as either a commitment to provide financing or an endorsement by the World Bank of the quality of the document or project. If you have any comments on any of the links provided in the Public-Private Partnership Resource Center, please get in touch here