Getting real about resilience
How cities can build resilience thinking into PPPs infrastructure projects

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Based on EY’s analysis, PPPs are the most highly used financing mechanism for smart, resilient infrastructure in cities. PPPs can make use of other alternative financing options in their own structuring, including direct pay taxable bonds, tax-exempt qualified private activity bonds.

### What are the current financing options?

<table>
<thead>
<tr>
<th>Financing Options</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance contracting</td>
<td>31%</td>
</tr>
<tr>
<td>Innovative land use</td>
<td>29%</td>
</tr>
<tr>
<td>Public-private resilient</td>
<td>22%</td>
</tr>
<tr>
<td>Risk management</td>
<td>20%</td>
</tr>
<tr>
<td>Green bond/social</td>
<td>19%</td>
</tr>
<tr>
<td>Pension funds</td>
<td>17%</td>
</tr>
<tr>
<td>Specialized lease</td>
<td>16%</td>
</tr>
<tr>
<td>Other</td>
<td>11%</td>
</tr>
<tr>
<td>Impact investment funds</td>
<td>11%</td>
</tr>
<tr>
<td>Specialized insurance</td>
<td>8%</td>
</tr>
<tr>
<td>SME/Entrepreneur</td>
<td>8%</td>
</tr>
<tr>
<td>Specialized municipal</td>
<td>7%</td>
</tr>
</tbody>
</table>

### Where PPPs are working today

- **Mobility.** Cities are utilizing PPPs for new transit, urban congestion pricing and mobility-as-a-service by tapping into private financing, volume payments and user fees.
- **Renewables.** Cities are investing in solar, renewables, and battery storage PPPs through blended finance, multilateral development banks, grants and equity.
- **Water.** Cities are upgrading water infrastructure through PPPs that leverage blended finance, multilateral development banks and private capital.
- **Digital/ICT infrastructure.** PPPs enable cities to invest in 5G networks and digital infrastructure by tapping into private funding, capital markets and monetizing assets.
What is resilience thinking and the connection with PPP infrastructure?

Resilience is a city’s ability to respond, grow and thrive in the face of shocks, such as floods and terrorist attacks, and stresses, such as unaffordable housing and pressure on public services. Much of this burden is borne by infrastructure.

Cities that build resilience into their infrastructure projects do five things:

1. Incorporate systems thinking into their decision-making, taking into account shocks and stresses.
2. Engage with diverse stakeholder communities in the planning process.
3. Integrate projects within a broader city vision that includes vulnerable populations.
4. Assess and build projects based on the long-term environmental, social and economic benefits they’ll bring, as well as their ability to withstand short-term disruptions.
5. Recognize that their infrastructure needs to adapt to new and unforeseen challenges in the future.
Three main gaps: perception between public and private players, implementation and incentive gap

1. **Perception gap**
   When asked how well they understand and apply resilience thinking, policy makers and private sector players rate themselves (and each other) very differently.

2. **Implementing resilience**
   Applying resilience thinking throughout the lifecycle of a project is a challenge for both city governments and the private sector.

3. **Resilience incentives**
   Neither the private nor the public sector is confident that there are sufficient incentives to consistently incorporate resilience thinking into infrastructure projects.

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Getting real about resilience
City governments are relatively confident of their ability to understand and capture resilience thinking.

City governments think they understand the challenges of urban resilience much better than their stakeholders think they do.

This perception gap extends to how well city governments think they build resilience thinking into their decision-making — and what everyone else thinks.

In your opinion, do municipalities understand the urban resilience challenges they face?

In your experience, do city governments typically incorporate resilience thinking into their decision-making around infrastructure projects?
City governments and the private sector are stronger and weaker at different stages of the cycle

Overall, resilience thinking is strongest at the earliest stages of the infrastructure project lifecycle. After that, it drops off — with financing as the weakest point

Respondents rated how well city governments and the private sector build in resilience thinking across the various stages of the project lifecycle: stakeholder management, planning, procurement, financing and measurement.

% of respondents who agree:

- **Stakeholder engagement mechanisms in place**: 38% (47%)
- **Resilience thinking built into planning guidelines**: 27% (42%)
- **See resilience as a key value driver in assessment of private sector bids**: 20% (30%)
- **Think current financing options are sufficient**: 12% (15%)
- **Have post-implementation assessments that include resilience thinking**: 19% (26%)
Insufficient regulatory incentives and activating new revenue streams are key deterents

What are the constraints for financing solutions?

<table>
<thead>
<tr>
<th>Constraint</th>
<th>Private sector</th>
<th>Public sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insufficient regulatory incentives</td>
<td>21%</td>
<td>54%</td>
</tr>
<tr>
<td>Activating new revenue streams in cities is a challenge</td>
<td>29%</td>
<td>52%</td>
</tr>
<tr>
<td>Lack of proof points</td>
<td>39%</td>
<td>39%</td>
</tr>
<tr>
<td>Not enough projects/bad design</td>
<td>48%</td>
<td>48%</td>
</tr>
<tr>
<td>Banks don’t understand risks</td>
<td>36%</td>
<td>44%</td>
</tr>
<tr>
<td>High upfront investment needs</td>
<td>46%</td>
<td>36%</td>
</tr>
<tr>
<td>Lack of clarity on city regulations</td>
<td>39%</td>
<td>36%</td>
</tr>
<tr>
<td>Prohibitive whole of life project costs</td>
<td>29%</td>
<td>32%</td>
</tr>
<tr>
<td>Investment risks are too great</td>
<td>28%</td>
<td>21%</td>
</tr>
</tbody>
</table>

The EY/100RC view

- Substantiating a business case for investment deters private sector actors from getting involved with resilient resilience-building infrastructure projects. Resilience-building projects need to be viewed as revenue generators.
- Not understanding the benefits and risks properly is another common block, which ultimately leads to lack of investor confidence.
About the study
A shared vision: the why, what, when and who of the joint EY/100RC study

100RC — EY partnership

- 100 Resilient Cities (100RC) helps cities around the world become more resilient to the physical, social and economic challenges of the 21st century.
- At EY, we believe that our experience in infrastructure, as well as our commitment to building a better working world, makes us an ideal partner to help achieve this goal. So in 2016, we committed to becoming one of 100RC’s platform partners for five years.

Objective

- To establish what good looks like, and recommend how city governments and the private sector could get there by exploring:
  - How government and the private sector currently build urban resilience thinking into their infrastructure programs
  - How those groups could engage with each other better to plan, procure, deliver, finance and measure the costs and benefits of these types of investments

Methodology

- Online survey of our combined networks in the public and private sectors (April–May 2017)
  - Interviews with Chief Resilience Officers and other people from our networks (June–July 2017)
- In both the survey and the interviews, we asked our respondents about the role, issues and opportunities for resilience thinking through the infrastructure project lifecycle.

Participants

- 400 people from EY/100RC’s networks in 10 regions
  - 48% public sector respondents from city, state or national governments, including Chief Resilience Officers (CROs) in the 100RC network
  - 3% private sector respondents, including entrepreneurs and private enterprises
  - 9% people from non-government organizations (NGOs)
  - 5% people from academia

Percentage split for N=292, where respondents disclosed their sector
The infrastructure lifecycle
EY takes an end-to-end approach across the entire infrastructure life cycle for a successful delivery

Working with a single provider across the entire project enables our clients to achieve consistency, operational efficiency and accountability while reducing their risk.

Our approach to infrastructure services focuses on the entire infrastructure life cycle. It incorporates a key understanding of capital agenda needs and program control necessary to deliver successful project outcomes.

► Our infrastructure services focus on supporting infrastructure development through five phases of the life cycle, from strategic planning to exit.

► The EY Capital Agenda is a robust framework to deliver infrastructure projects that balances time, cost and project quality with the availability of capital and competing projects.

► The program control framework establishes and identifies the potential risks in delivering complex infrastructure projects, and implements an effective strategy across the business and program environment to manage them.
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