

PPP Framework and Strategy for Smart Cities

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The main content of the paper

Smart City

- Definition & 5 Operational Framework in terms of smart solutions
- Challenges

Public-Private Partnership(PPP)

- Definition
- PPP Framework – how to design and implement PPP
- Proposed financing tool for Smart City PPP – Project Financing, Revenue Sharing, Social Impact Bond

Global Smart City PPP Practices

- Advanced - Financial
- Nascent - Technological
- Systemic Facilitation from central/municipal government

Lessons learned

- Conclusion



What is a Smart City - Definition

“Digital Transformation of the city”

- WB White paper
 - Smart City plans & manages its core functions by effectively using data /digital technologies to become efficient, innovative, inclusive, resilient
- Urban Planning & Management
- Digital Ecosystem – connectivity, data
- Civic Participation

Analog ecosystem

Tools to assist Analog ecosystem

Provides ‘soul’ to the city



Smart City Initiatives – 5 Framework



Smart Living : Healthcare / Security



Smart Mobility : ITS / Smart Parking / Intermodal Integration



Smart Energy : Energy Management / Waste Management



Smart Governance : E-government / Civic engagement



Smart Environment : Water Management / Pollution / Disaster Risk Reduction



Challenges for Smart City

- Establishing Digital platforms & ecosystem = Money
“Mobilizing sustainable Finance”



Public-Private Partnership (PPP)

- Hardly used in practice, Weak Regulatory environment



Why PPP for Smart Cities?

- The Rational

Easing government's financial constraint

Increases efficiency – with sound incentives

Private sector's technical knowledge & expertise



What is PPP - Definition

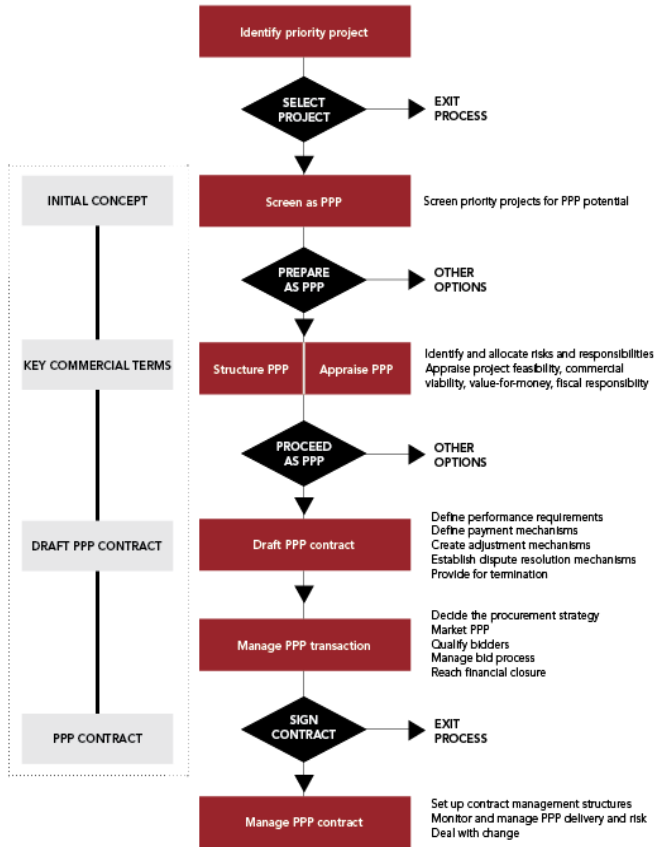
- WB PPP Knowledge lab

- 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





PPP Framework – design&implementation

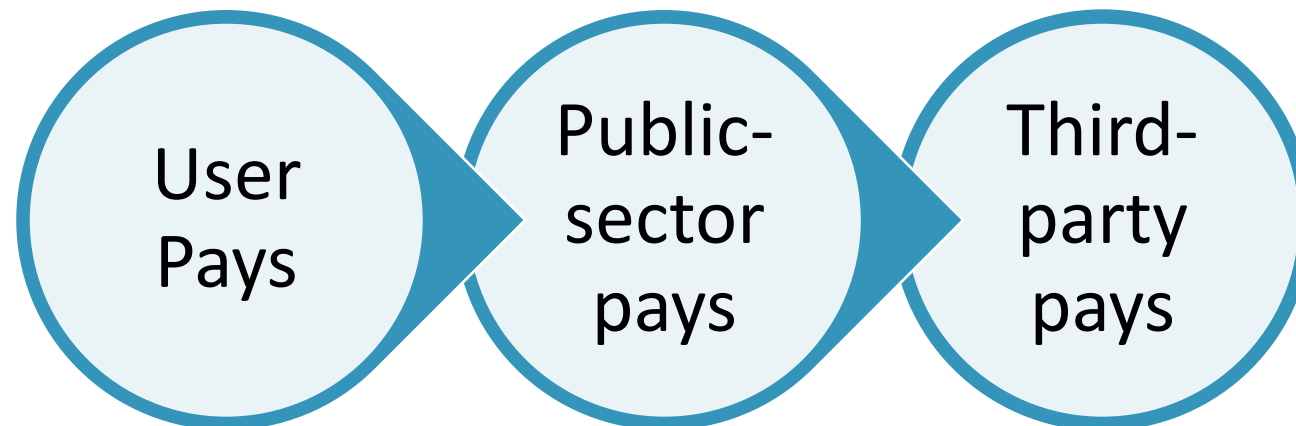


| Project Lifecycle | Minimum Requirements |
|--------------------------------------|---|
| Project Planning and Identification | <ul style="list-style-type: none"> Clear procedures to identify, screen, and prioritize PPPs in governments to ensure the project meets national priorities and objectives. Market communication and engagement strategy to facilitate ongoing engagement with the private sector through tender procedures. |
| Project Preparation and Appraisal | <ul style="list-style-type: none"> Financial models for pre-feasibility and feasibility studies, financial and VfM analyses, and risk analysis to appraise PPP project viability. Market scoping analysis to foster private sector interest and generate a competitive market. |
| Project Structuring | <ul style="list-style-type: none"> Service or function in question matched with the most appropriate PPP model to ensure projects with significant design components (e.g. legal reform) are resolved prior to concession. Financial model structuring tied to results of feasibility studies and sensitivity analysis to ensure the project makes financial sense for both the government and private sector partners. |
| Project Contract | <ul style="list-style-type: none"> Built-in structural flexibility to accommodate changing environments and unforeseen risks that can impact on project viability. Value-added services prioritized to increase revenue and innovation potential as well as customer usage or registration. Ownership rights for intellectual property and data are protected while allowing for ultimate government ownership of key information. |
| Project Procurement & Implementation | <ul style="list-style-type: none"> Transparent procurement processes to minimize corruption and political intervention by ensuring the selection of the best bidder. |
| Project Management | <ul style="list-style-type: none"> The roles, responsibilities, and obligations for both private and public sector partners are clearly defined. Standardized pro-poor contractual safeguards are introduced to support vulnerable groups access key public services. |



Financing PPP

- PPP is for “Financially Viable” project = firm revenue model
- Three Revenue Sources:





Financing PPP

• Revenue Models utilized in PPP projects

| Sources | Sub-Category | Description |
|--------------------|---------------------------|--|
| User-Pays | · User fees/charges | · Users pay directly for services · Ex) BTO cases – Road, LRT, Port |
| | · Shadow Tolls | · Public sector makes payments to private sector based on usage of the service/asset · Ex) Highway tolls |
| Public-sector Pays | · Fixed Payments | · Payments received that match pre-determined cost & returns · Ex) BTL cases - schools, library, dormitory |
| | · Availability payments | · Payments linked with private partner’s performance · Ex) concession with ‘Key Performance Indicator’ |
| | · Savings Sharing | · Savings on public budget generated from the project is used to fund the project |
| Third party Pays | · Advertising based | · Revenue streams are generated from advertising fees on asset space · Ex) Wi-Fi kiosks in NYC |
| | · Social Impact Bond/Fund | · International/Public/Private funds projects with social impact · Ex) Impact Investment Funds for clean energy, affordable housing, etc. |



Proposed Financing tools for Smart City PPP

Three Financial Instruments for minimum glitch:

Project Financing

- ✓ Raising equity & debt financing based on project cash flow
- ✓ Special Purpose Vehicle (SPV)
- ✓ Private partner develops & operates the facility for specific concession period

Revenue Sharing

- ✓ Private Sector paying a royalty on their sales to the public authority
- ✓ OR Public Sector paying private supplier with the savings from the project
- ✓ OR Shares returns as per the original investment ratio

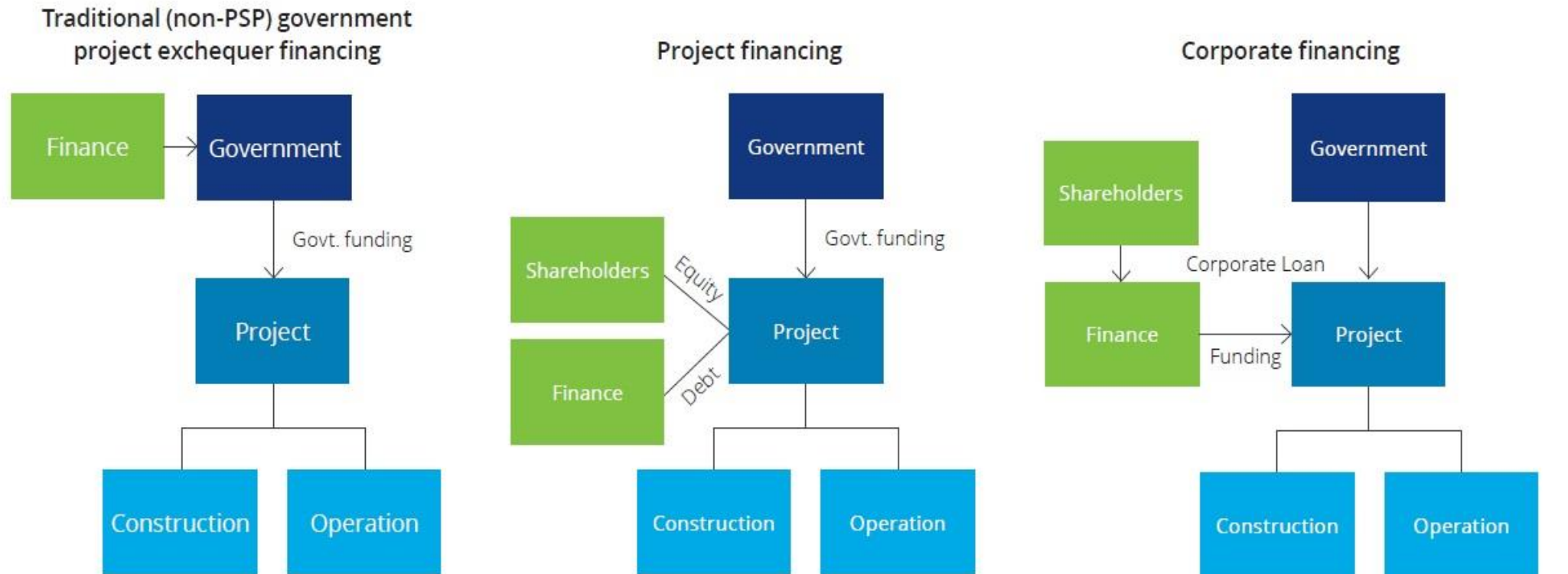
Social Impact Fund

- ✓ Pay-for-Success model
- ✓ Social problems – welfare, education
- ✓ Proliferation to smart city technology / Central government funding to innovative municipality proposals



Proposed Financing tools for Smart City PPP

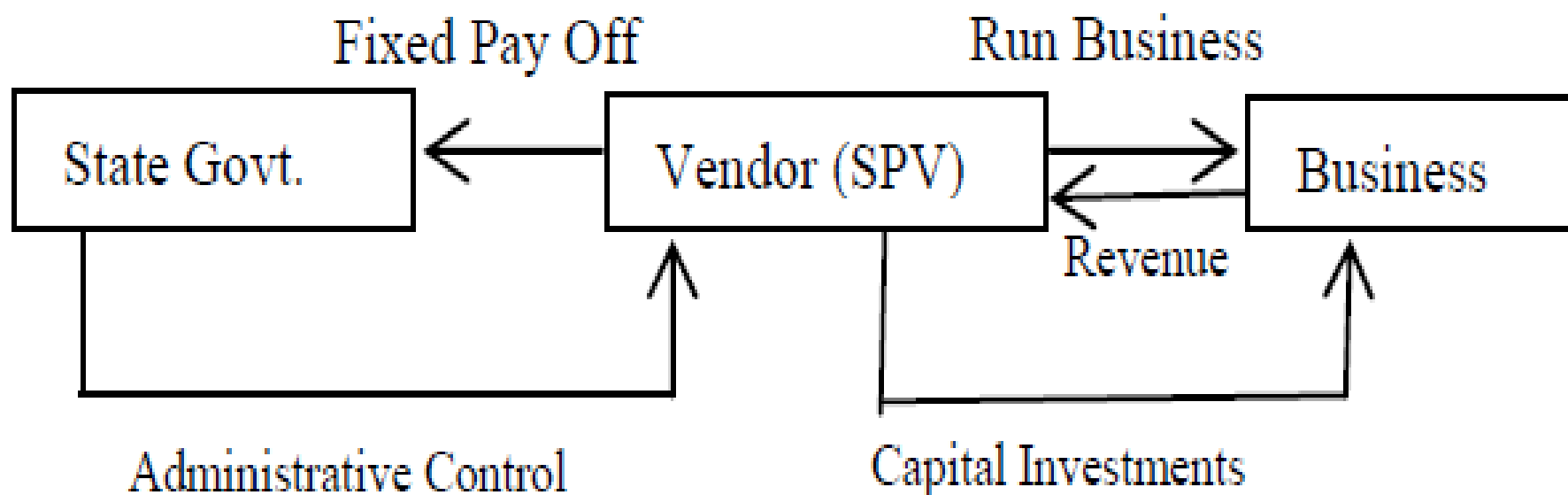
Project Financing Model:





Proposed Financing tools for Smart City PPP

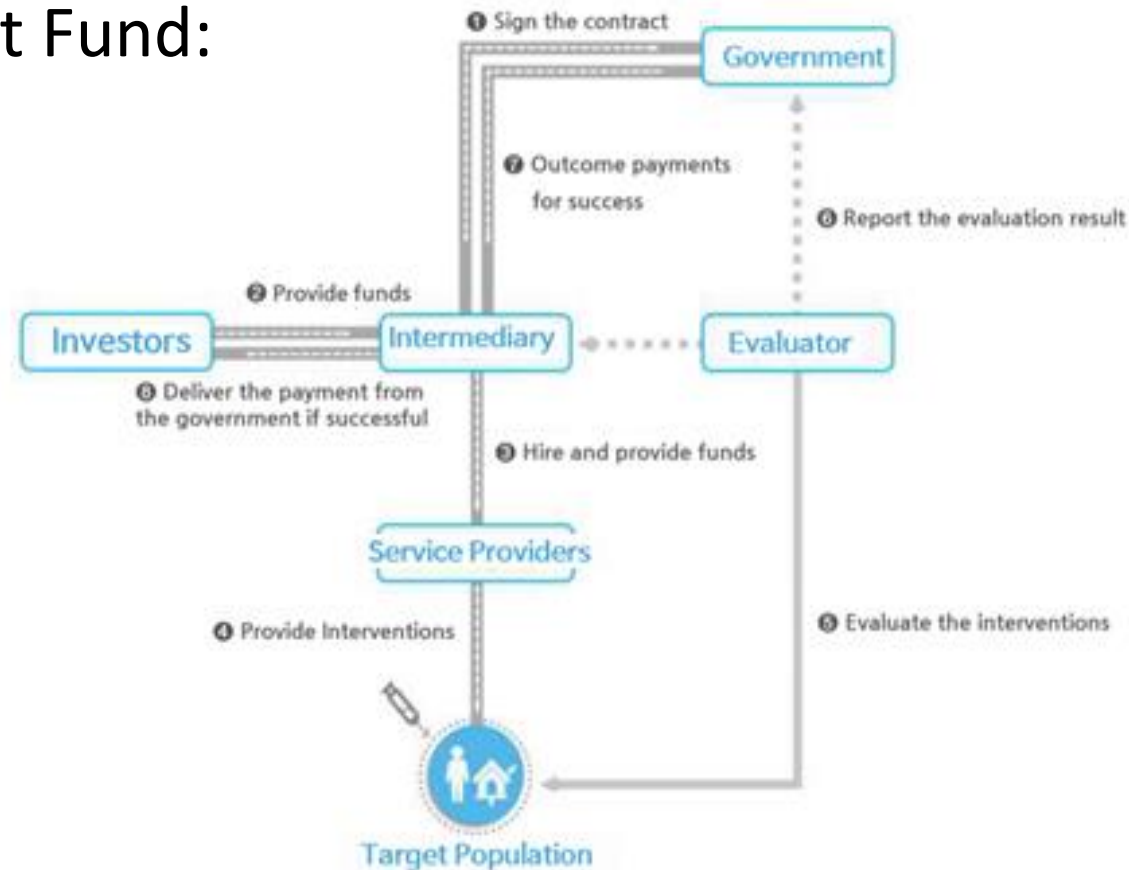
Revenue Sharing Model:





Proposed Financing tools for Smart City PPP

Social Impact Fund:





Proposed Financing tools for Smart City PPP

Conclusion:

- **Project Financing**
 - Applicable in projects with tangible assets such as infrastructure or digital instruments
- **Revenue Sharing**
 - Intangible products such as services
- **Social Impact Fund**
 - Projects with clearly identifiable target group



Global Practices – Case Study

- The most important in virtually all cases ...

the ability of PPP to bring in private finance and technological improvements to public service delivery



Global Practices – Project Financing

- **Digitization and operation of Electronic Land Registry System (Ontario, Canada)**
 - Contract Structure : **Concession** between The government of Ontario & Teranet, Teramira Holdings, Borelais Infrastructure
 - Financial Structure : Upfront investment payment from consortium, 50/50 ownership of the system
 - Revenue Structure : Registration related revenue, non-registration services related revenue





Global Practices – Project Financing

- **Creating Smart City ecosystem by re-developing Waterfront area (Toronto, Canada)**
 - Partnership between Waterfront Toronto & Sidewalk Labs
 - \$ 50 million initial investment for pilot
 - Citizen participation in the planning
 - Revenue Structure - Real estate based





Global Practices – Revenue Sharing

- **Recycling public asset to increase internet accessibility (New York, United States)**
 - New York City government & CitiBridge Consortium
 - Installing & Operating by the consortium
 - Revenue Sharing : 50/50 revenue share from advertising revenue (\$50 million annually)





Global Practices – Revenue Sharing

- **Upgrading and Maintaining Street Lighting system (Bhubaneswar, India)**
 - Bhubaneswar Municipal Corporation & Indian Energy Services Company (ESCO)
 - Company mobilized \$4.8 mil from private sector
 - Revenue Structure : BMC shares savings as a operations fee to the company (\$0.1 million annually)
 - Payment security ensured by advance payments & automatic approval



Global Practices – Social Impact Fund

- **The United Kingdom’s Cabinet Office of Social Outcomes Fund (National, United Kingdom)**
 - 32 mil euro to catalyze innovative public projects
 - Generally focused on social welfare, but widening into experimenting green & smart technologies
 - Ex) Essex – therapeutic program for children in troubled home
 - funded by 3.1 mil euro (SIB), Big Society Capital & Bridges Ventures
 - saved 17.3 mil euro for Essex CC, gave out 7 mil outcome payment



Global Practices – Social Impact Fund

- **Deploying Broadband technologies with Digital Inclusion Fund (San Jose, United States)**
 - San Jose Municipal government & Verizon, AT&T, Mobilite
 - Initial Contribution of \$24 mil to Digital Inclusion Fund
 - Deploying broadband cells on 4,000 city owned light poles for 5G network
 - Bring in \$500 mil investment from private sector



Conclusion

- Smart City PPPs are useful tools to reform public service
- Large-scale costly transformation, long-term delays before reaching profitability => less attractive for investors
- Obstacles can be overcome with right collaborative approach



Conclusion

• Institutional Conditions for the Success of Smart City PPPs

| Elements | Pitfalls to be avoided | Good Practices |
|--|--|---|
| Clear performance standards | <ul style="list-style-type: none"> Over-stringent performance standards Excessive list of indicators for penalties Not specifying measurement/monitoring instrument | <ul style="list-style-type: none"> Penalties for 'must-do' performance targets only (prioritize high-impact parameters) Bonuses for difficult 'good-to-have' indicators Independent 'non-manual', 'autonomous' tracking/monitoring |
| Balanced Risk Sharing | <ul style="list-style-type: none"> Passing Demand/Tariff uncertainties fraught with challenges | <ul style="list-style-type: none"> Creating fall-back for Demand/Tariff risk transfer (minimum guarantees, off-take commitments) Risk assessment at early stage |
| Stakeholder Engagement | <ul style="list-style-type: none"> Failure to identify sources of opposition Misperception on the project | <ul style="list-style-type: none"> Mapping stakeholder needs/expectations and Identify fault lines early on to improve project design and acceptability Provide good communication (early stage communication, NGO-led communication) |
| Transparent Bidding environment | <ul style="list-style-type: none"> Creating too competitive bidding environment Tight bid process timelines and incomprehensive information | <ul style="list-style-type: none"> Balancing competition and capability by encouraging consortiums Fine-tuning Bid documents with relevant authority for capacity building Transparent and robust engagement with private sector |
| Stable Policy Regime and Political Support | <ul style="list-style-type: none"> Unclear PPP policy that lose bidders confidence | <ul style="list-style-type: none"> Legal Basis / Policy enablers for wider PPP adoption |



Conclusion

- Starting from Small-scale cooperation toward Big Impact

“Escape the stereotype of bulk, high-cost national infrastructure project”



**“Small-scale technological solutions /
Social adjustments” = What citizens want**



Conclusion

- Smart City as a Platform

Smart City is incremental transformations that enhances resident's lives

“No one-time showcase. A platform for sustained, revolving transformation”

Collaboration between sectors

Identify appropriate tech solution

Develop Human Capital

“Embrace disruptive technologies into seamless ecosystem” “nurture innovation”

**Own Smart City Portfolios
– risk appetite, investment size,
duration of financing**



Discussion

