PwC Vietnam Advisory

Harnessing the 4th IR for Sustainable Smart Cities

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Presentation

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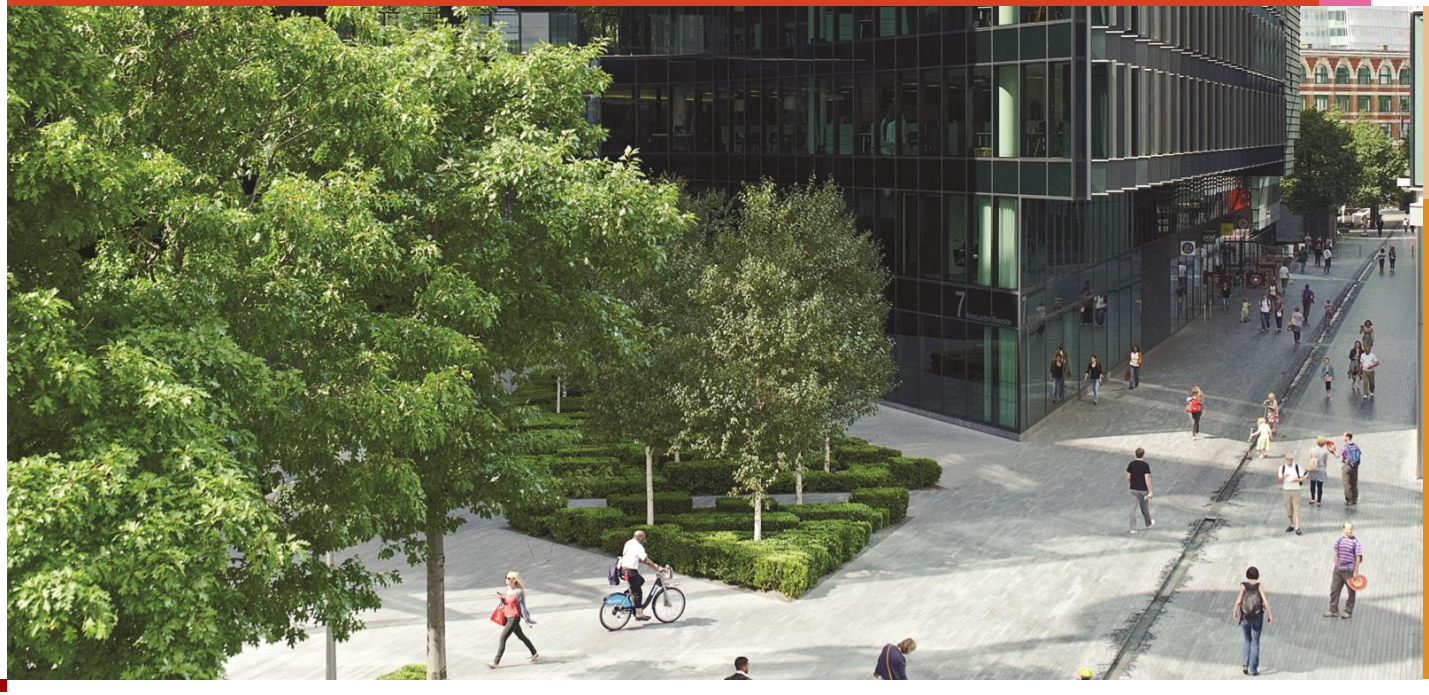

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Acknowledgment

*This presentation uses material from the **Harnessing the Fourth Industrial Revolution for Sustainable Emerging Cities report (2017)** which was published by the World Economic Forum (WEF) in partnership with PwC and the Stanford Woods Institute for the Environment.*

*Other material used in this presentation is taken from another WEF/PwC report titled, **Inspiring Future Cities & Urban Services - Shaping the Future of Urban Development & Services Initiative**, as well as from other PwC work undertaken by our expert teams in India and across the global PwC Network*

Abstract

Cities are growing at a rapid rate, with the global urban population set to increase by 2.5 billion by 2050. People continue to migrate to cities for better economic, social and creative opportunities.

Growing cities are difficult to govern because of their diverse social and economic fabric.

While cities battle issues such as climate change, social segregation and economic development, they increasingly have to do so with fewer resources as they face budgetary constraints and battle with suboptimal devolution of funds and functions.

Balancing the impact of complex interactions between the functions of cities and the natural environment will be vital for achieving a smart & sustainable future.

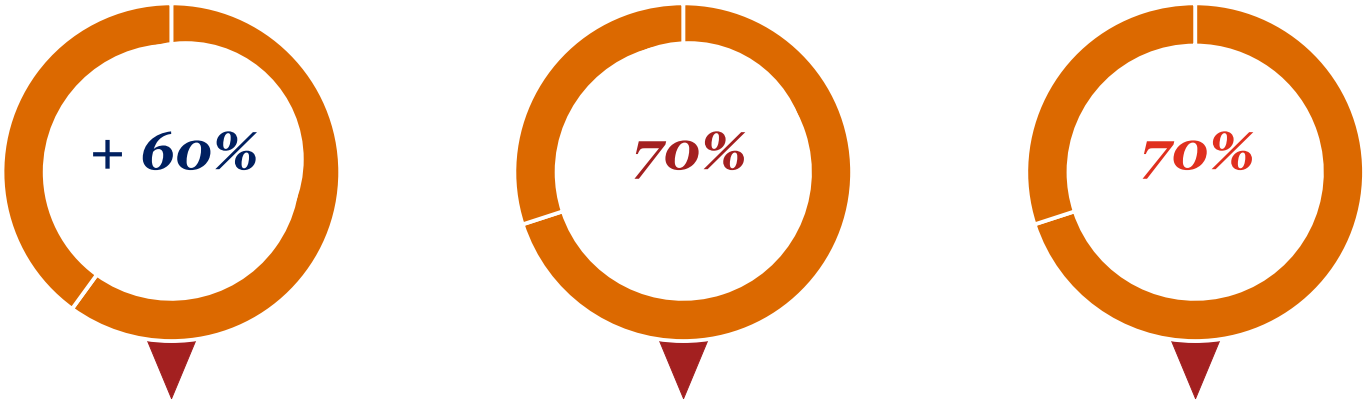
Faced with these growing challenges, City administrations are seeking to use emerging business models such as PPP, and to deploy 4IR innovations and technologies, to manage their environments and deliver improved and efficient services for their citizens.

In emerging cities, action to address key challenges while also delivering environmental sustainability could be supported by 4IR innovations for: ***1. Smart urban planning and construction; 2. Sustainable transport and logistics; 3. Clean energy and utilities; 4. Urban health and natural resources; 5. Resilient urban infrastructure & systems.***

However, technology is not a 'silver-bullet' solution to urban problems. To holistically address urban challenges cities need to also transform planning, governance and regulatory frameworks.

Urbanization is occurring at an accelerated pace: By 2050 four of every five people might be living in towns and cities…

Cities today occupy approximately only 2% of the total land, but are responsible for 70% of economic activities (GDP). However they are also responsible for …



Energy Consumption

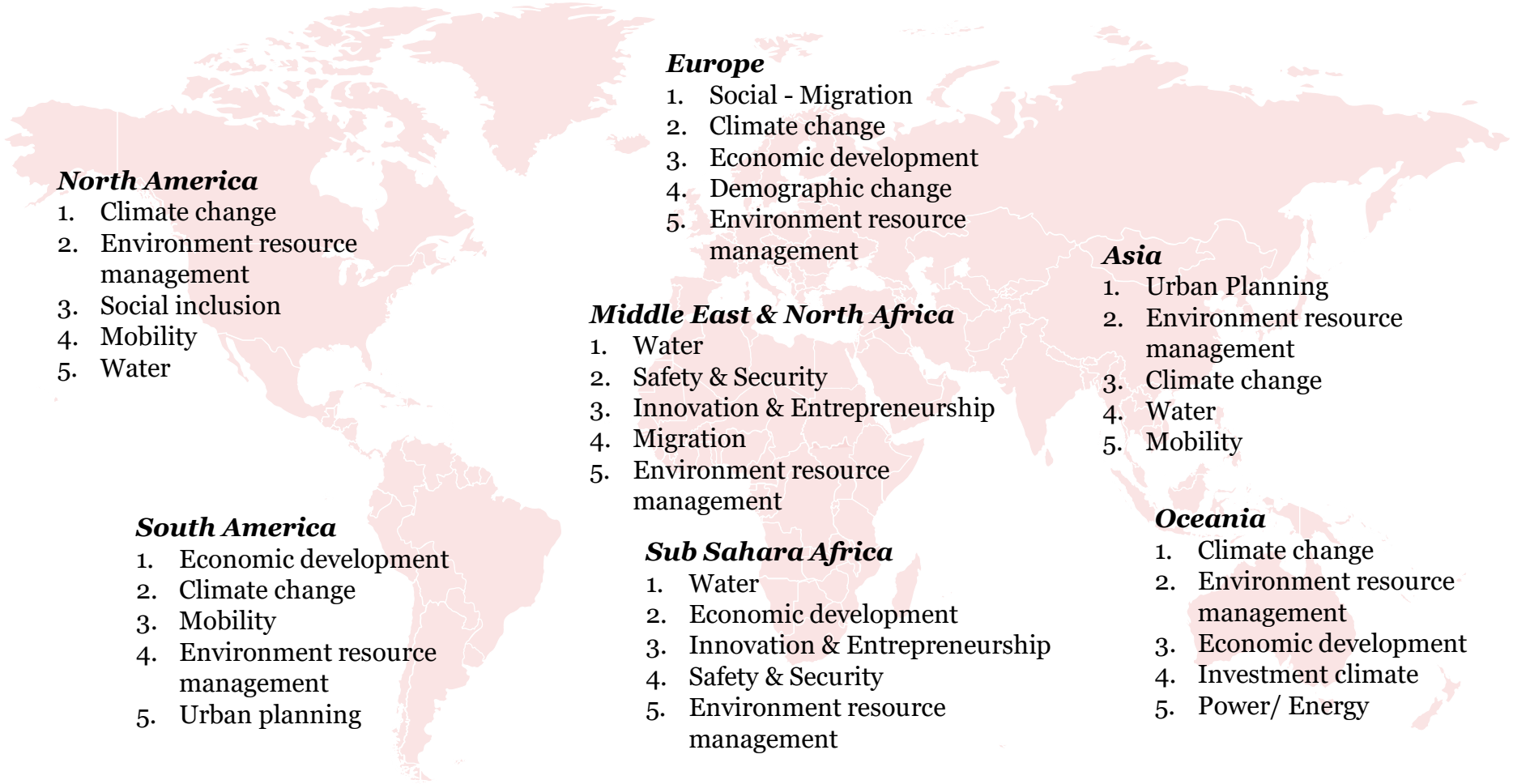
Greenhouse Gas Emissions

Waste

PwC collaborated with the WEF on a study to show how cities can be part of the solution, not the problem

Source: World Economic Forum, Shaping the Future of Urban Development & Services Initiative & PwC Research

Top urban challenges facing cities around the world…



North America
1. Climate change
2. Environment resource management
3. Social inclusion
4. Mobility
5. Water

Europe
1. Social - Migration
2. Climate change
3. Economic development
4. Demographic change
5. Environment resource management

Middle East & North Africa
1. Water
2. Safety & Security
3. Innovation & Entrepreneurship
4. Migration
5. Environment resource management

Asia
1. Urban Planning
2. Environment resource management
3. Climate change
4. Water
5. Mobility

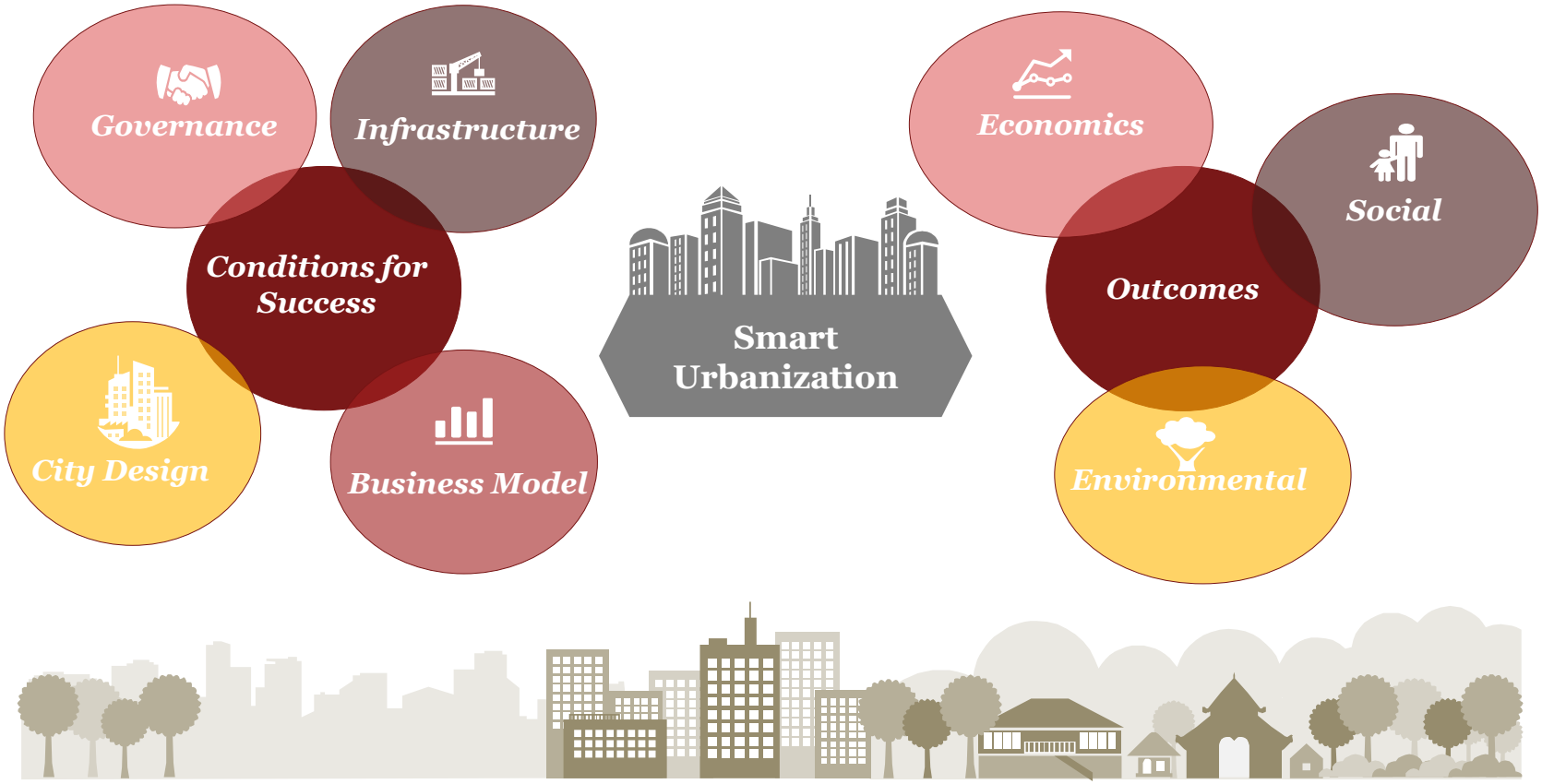
South America
1. Economic development
2. Climate change
3. Mobility
4. Environment resource management
5. Urban planning

Sub Sahara Africa
1. Water
2. Economic development
3. Innovation & Entrepreneurship
4. Safety & Security
5. Environment resource management

Oceania
1. Climate change
2. Environment resource management
3. Economic development
4. Investment climate
5. Power/ Energy

Source: World Economic Forum, Shaping the Future of Urban Development & Services Initiative & PwC Research

Smart urbanization must achieve social equity, economic viability and environmental sustainability in an integrated manner…



A new vision of the smart & sustainable urban environment is needed…

Future City Characteristics

Sustainable

Demonstrates balanced accomplishment of social & economic development, environmental management & effective urban governance.

Citizen Centric

Focus on the physical, mental & social well-being of individuals & society, encompassing many factors (life satisfaction, physical health, psychological state, education, wealth, religious beliefs, local services & infrastructure, among others).

Economically Vibrant

Attracts investments, facilitates business, nurtures indispensable assets (its well-educated people), improves productivity, promotes growth and expands opportunities for all stakeholders.

Accessible

All sections of society in an accessible city can live independently and participate fully in all aspects of life. This city ensures that people with special abilities and the vulnerable section of society have equal access to all services provided.

Resilient

Enhances the capacity of individuals, communities, institutions, businesses and systems to survive and adapt while they experience chronic stress and acute shock across health, the economy, infrastructure and environment.

Well Governed

Optimally utilizes resources to effectively realize the short- and long-term agenda of its development, while achieving greater transparency in public decision-making and establishing institutional accountability.

Responsive

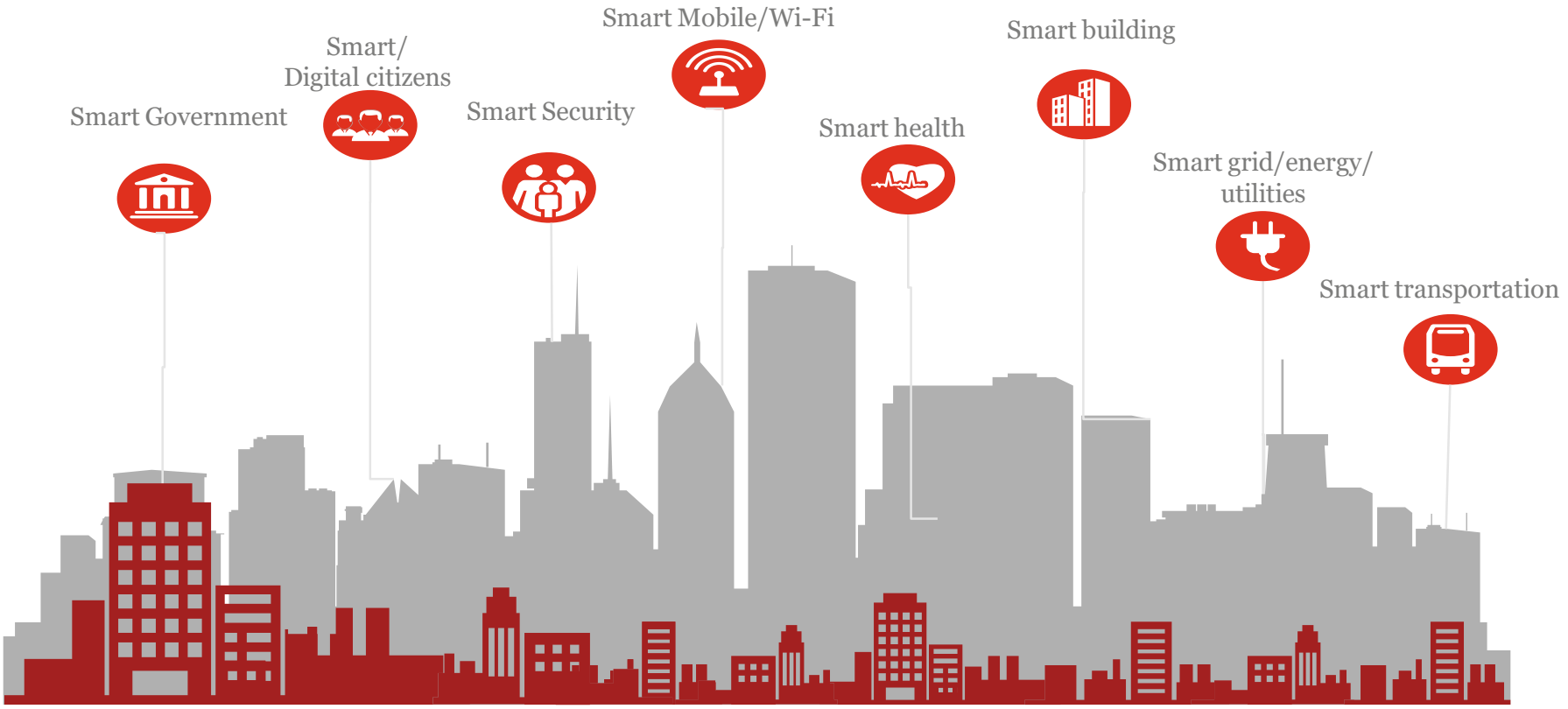
To consume its available resources in the best way possible, such a city enables all stakeholders to use data collected by digital infrastructure to spot patterns, identify problems and make real time decisions

Planned

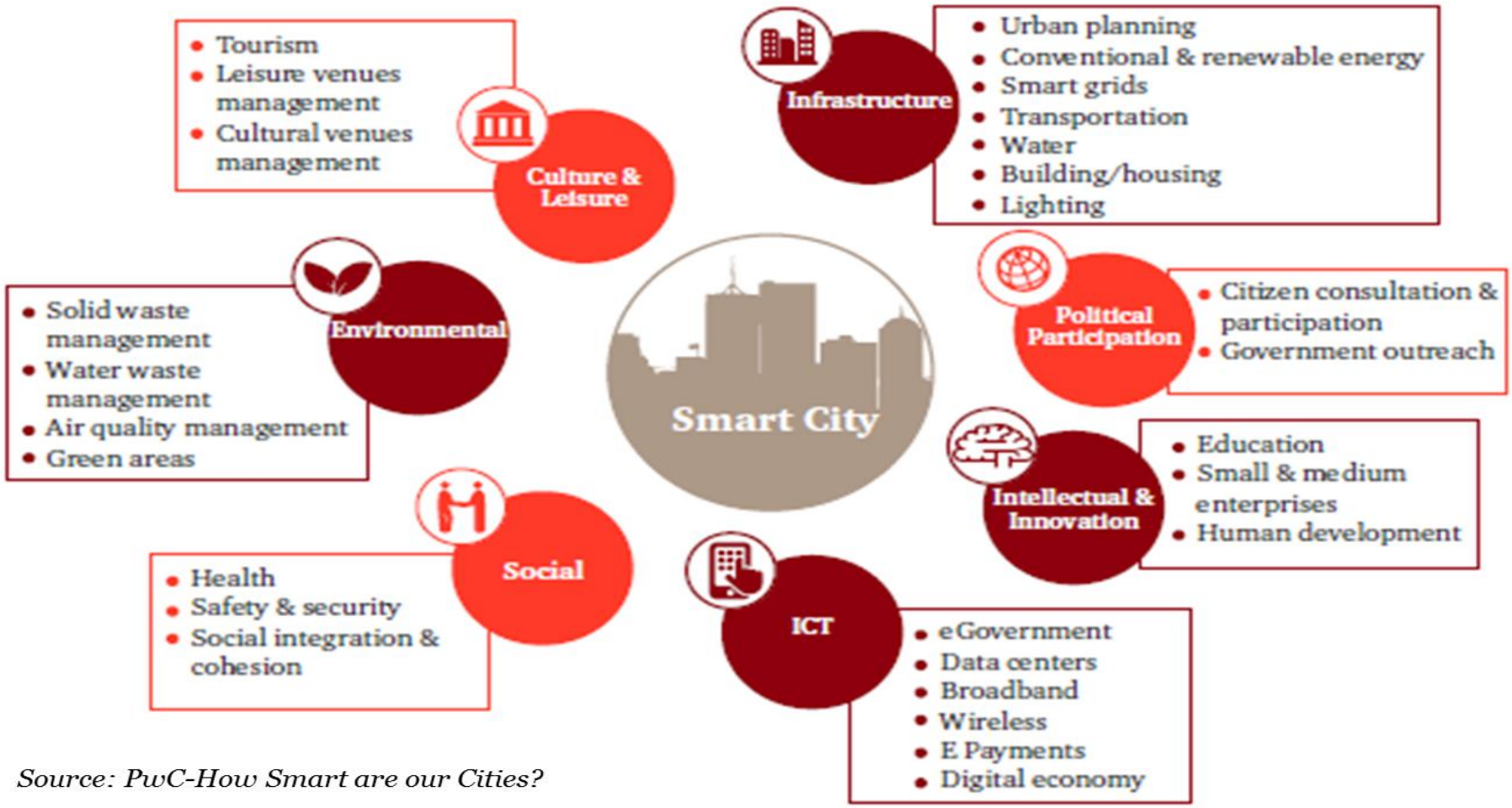
Strengthens its local economy by creating a master plan that integrates all urban domains, and offers enough flexibility to make amendments to the plan when external conditions change or when innovative solutions emerge.

So what does a Smart City look like ?

A "Smart City" is a collection of urban components linked by an integrated technology platform…

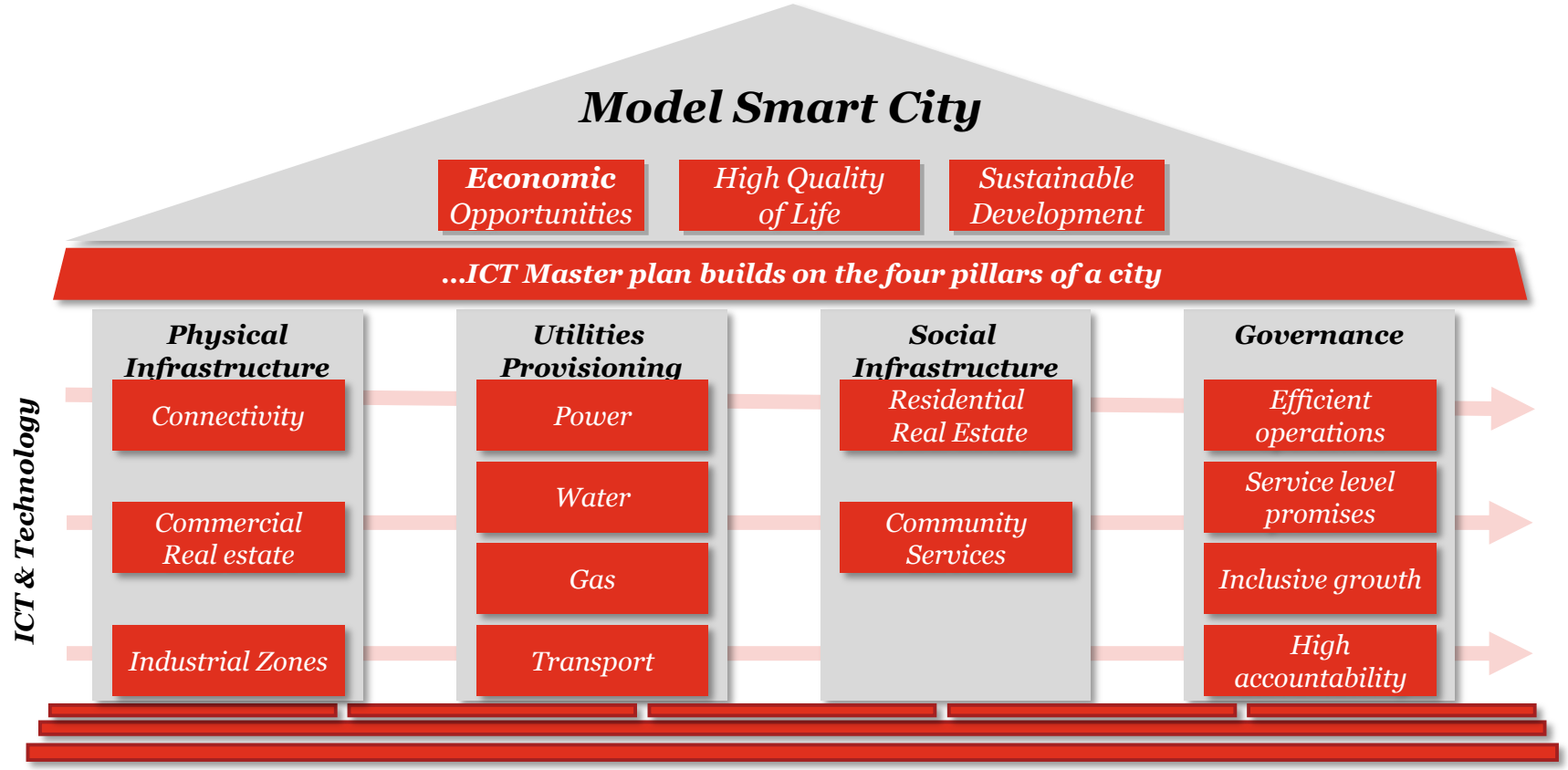


A Smart City can enable city governments to undertake their functions and deliver services more effectively …



Source: PwC-How Smart are our Cities?

A Smart City is typically be built upon four pillars which are integrated through technology…



4th IR digital infrastructure is at the heart of a Smart City, helping to create social & environmental benefits, plus new ways of delivering urban services and business opportunities…

Organic integration of IT, physical, social and business infrastructure

Framework to implement a vision of advanced and modern urbanization

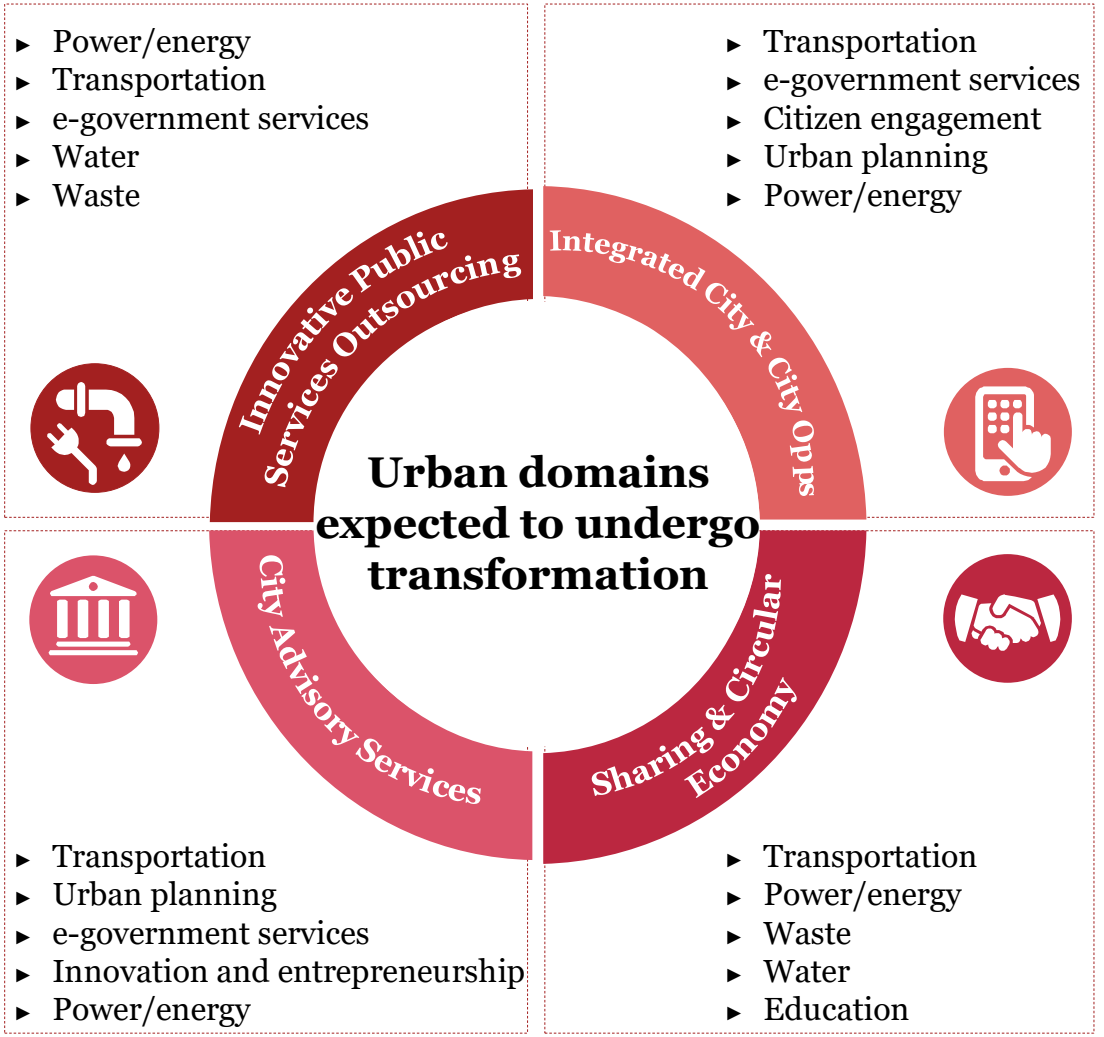
Achieve social equitability, economic viability, and environmental sustainability

Leverage technology and infrastructure for optimum resource utilization and improve the standard of living

New Smart City digital infrastructure can drive urban transformation as well as drive the emergence of the new urban services paradigm…

4th IR Technologies Driving Transformation

1. Open Data in Government
2. Internet of Things
3. Mobile device based sensing
4. Intelligent Transport
5. Smart Grid
6. Location & Condition Sensing Technologies
7. Citizen e-ID
8. Mobile Health Monitoring
9. Big Data
10. Data Analytics Predictive & Prescriptive



Source: World Economic Forum, Shaping the Future of Urban Development & Services Initiative & PwC Research

And new Smart City digital infrastructure can boost adoption of emerging business models …

New Business Models

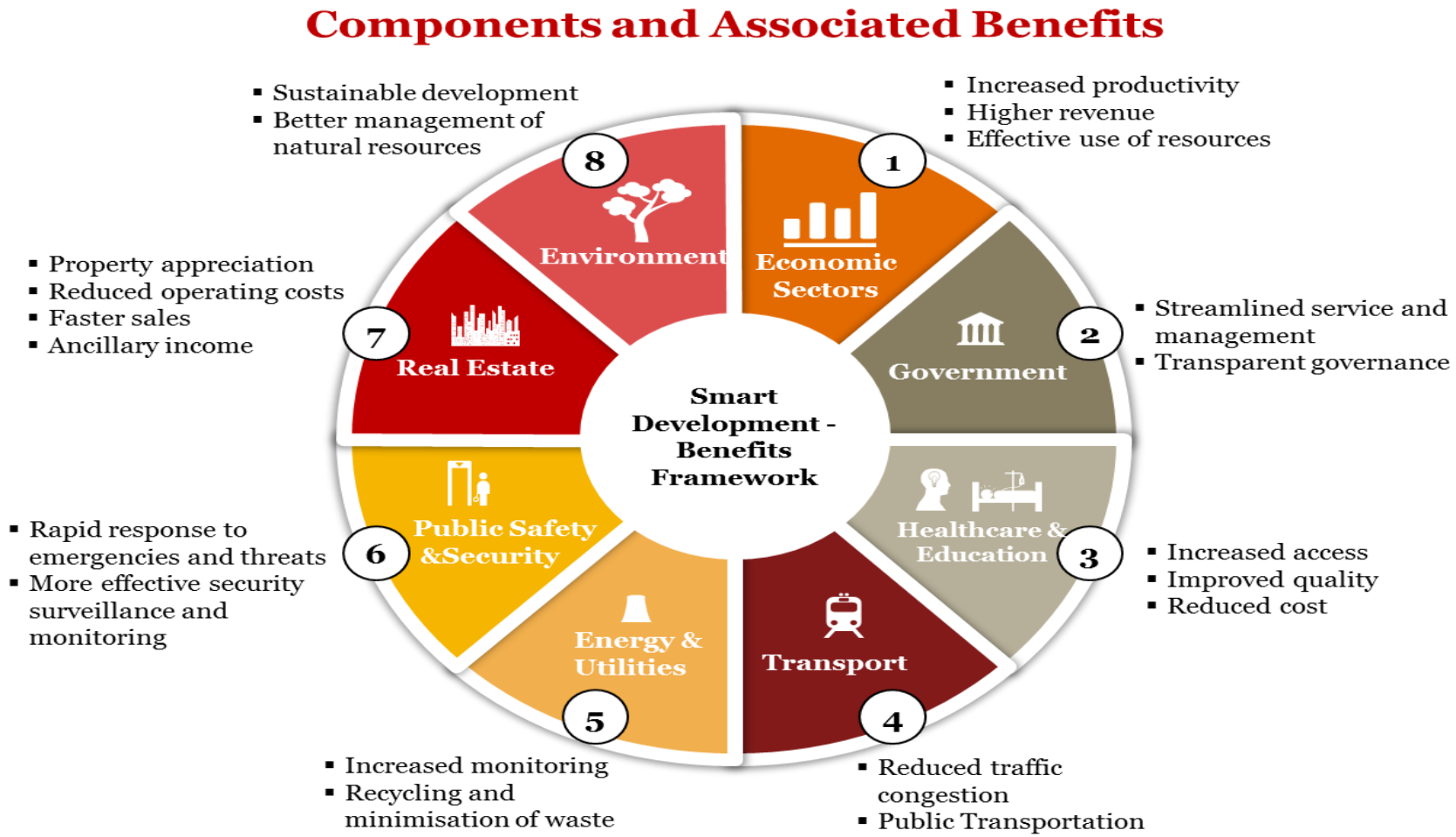
- Digital “integrated city” services
- “CityOps” (city operations) as a service
- Public asset revitalization
- The circular and sharing economy
- Innovative public services outsourcing and PPP
- Pricing structures for peak load distribution
- City advisory

Technology Innovations

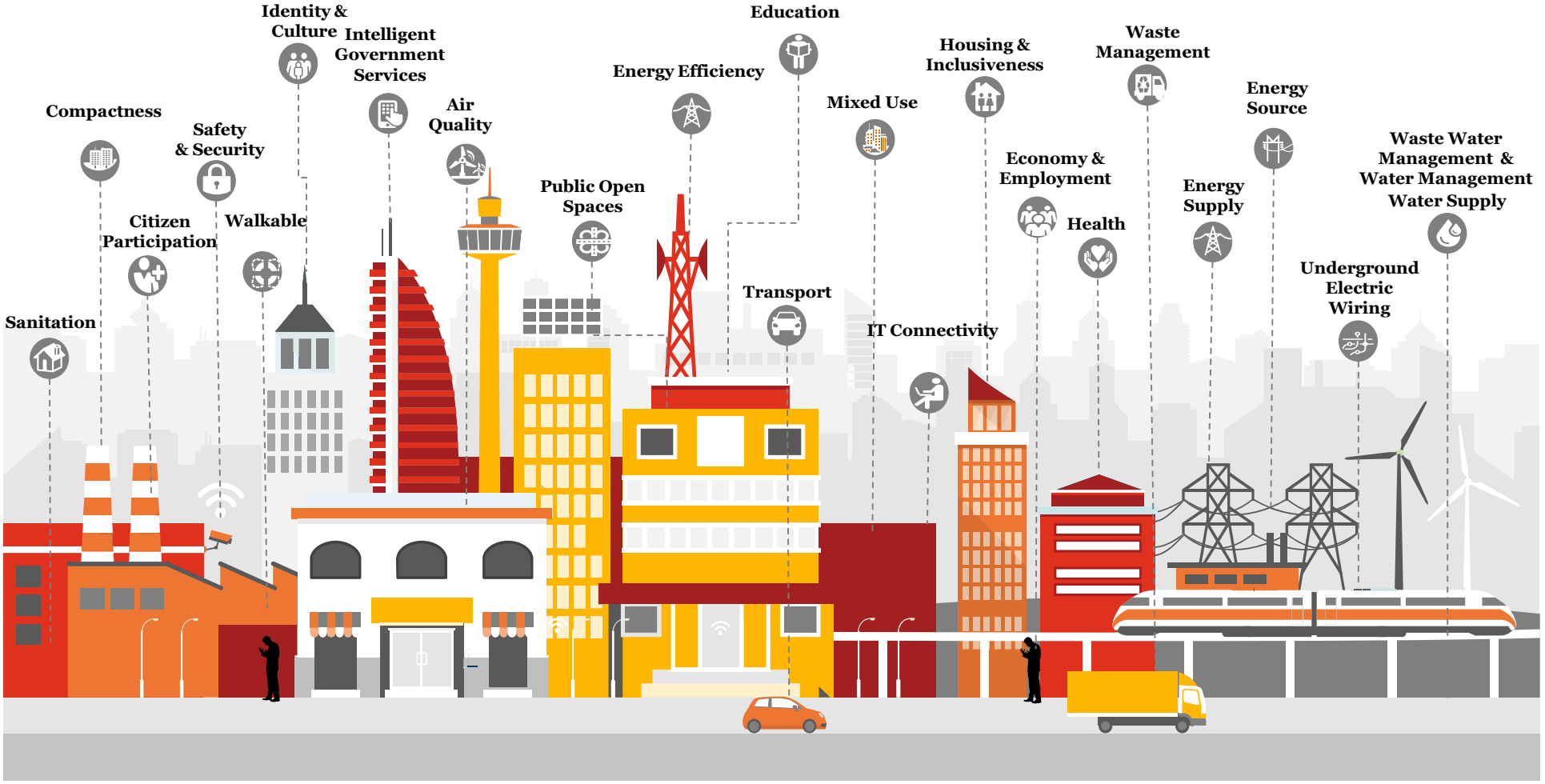
- Internet of Things
- Mobile-based Sensing
- Location & condition sensing
- Big data
- Data analytics
- Open data
- Intelligent Transport
- Smart grid
- Citizen e-ID
- Mobile health monitoring

Source: World Economic Forum, Shaping the Future of Urban Development & Services Initiative & PwC Research

The transformation towards a Smart City can deliver a wide range of benefits…



Smart City transformation can positively impact on all areas of city life …



New 4th IR digital infrastructure is not enough on its own – a Smart City transformation also requires cities to transform the way they regulate, govern and operate …

Cities around the world are and will be facing challenges

- Budget Constraints
- Foggy Governance
- Poor Leadership
- Lack of Expertise
- Changing Demographics
- Sourcing Risks & Trust

city administrators and other stakeholders need to make a concentrated effort to address the challenges to come.

Few key enablers that will help solve challenges…

- Regulatory Reforms
- Agile, City Scale Governance
- Capacity Building
- Visionary Leadership
- Stakeholder Engagement
- Integrated Planning

For complete Smart City transformation, city administration must first formulate a clear vision to put it on the right path …

The transformation towards smart city must ensure inter-department cohesiveness and seamless coordination between multiple city authorities

City Vision
Defining city characteristics, vision and city level measurable KPIs

City Master Planning
Creating a city master plan, finalising smart initiatives and creating the ICT masterplan

Procurement Strategy
Phasing smart city initiatives, creating regulatory framework, procurement best practices, including the potential for PPP

Implementation, Operations and Sustainability
Implementing identified initiatives and monitoring against KPIs and for sustainability

More than 26 cities are envisaged to be known as Smart Cities by 2025 … can cities in Vietnam also be ready to join soon?

Thank you!