

Training Workshop On Smart Cities

For Building Inclusive, Resilient, and Sustainable Cities and Communities

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INTRODUCTION

“Humanity is facing an existential contradiction: we are building an urban future for ourselves, yet urbanization in its current form is threatening the very future of humanity and the natural world”

- Herbert Girardet



Background

Cities are the main driver of economic growth, innovation, and technological disruption.

Yet for the first time in history, **urban populations have surpassed rural populations**, and this trend is expected to continue.

Without finding appropriate solutions to mitigate the negative effects of rapid urbanization and globalized economic activity, we will face major challenges related to the following:

- Environmental degradation
- Urban blight
- Overpopulation
- Food shortages
- Extreme disparities between rich and poor
- Conflicts and wars
- Natural catastrophes

Growth comes at a price

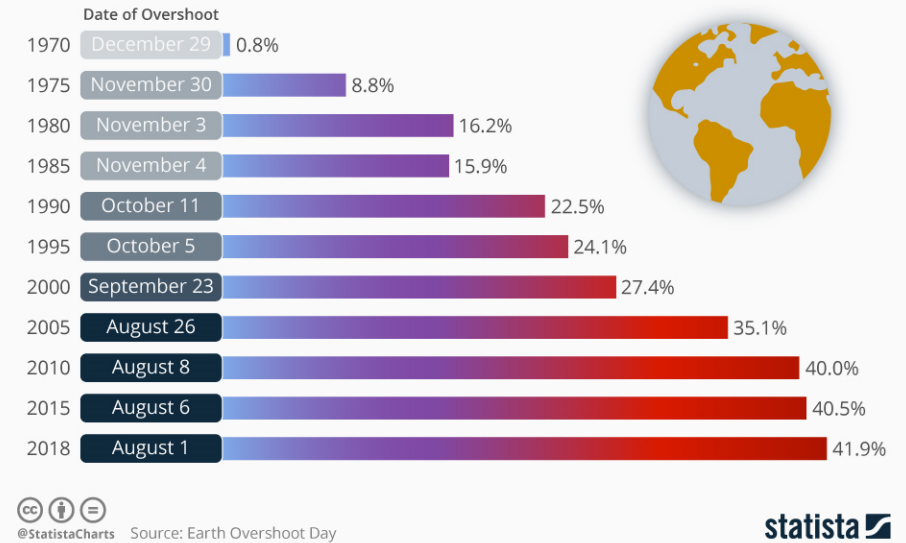
We need smart solutions to overcome the effects of globalized economic activity

Background

- **Massive resource consumption** is bringing humanity to the brink of climate catastrophe and environmental collapse.
- **In 2017 it was estimated that the global environmental footprint was 1.73 earths.** Anything over 1 is overshoot. Some countries are much higher: South Korea was listed at 3.5 earths, while Australia was at 4.1
- In order to achieve a more sustainable trajectory for humankind, implementing the UN Sustainable Development Goals (**SDGs**) are essential for our future.
- **The Smart City framework can function as a companion to reaching these goals**, while also providing a number of solutions to problems faced in cities today.

Earth Overshoot Day Comes Sooner Every Year

Share of year remaining after Earth Overshoot Day (1970–2018)



Source: <https://www.goclimat.com/se/blog/earth-overshoot-day/>

Earth Overshoot Day is the calculated illustrative calendar date on which humanity's resource consumption for the year exceeds Earth's capacity. Overshoot Day comes earlier every year.

Smart Cities, a Global Movement

“Smart city is an innovative city that uses ICTs and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social, environmental as well as cultural aspects” .

- International Telecommunication Union, United Nations



Singapore transport network and cityscape

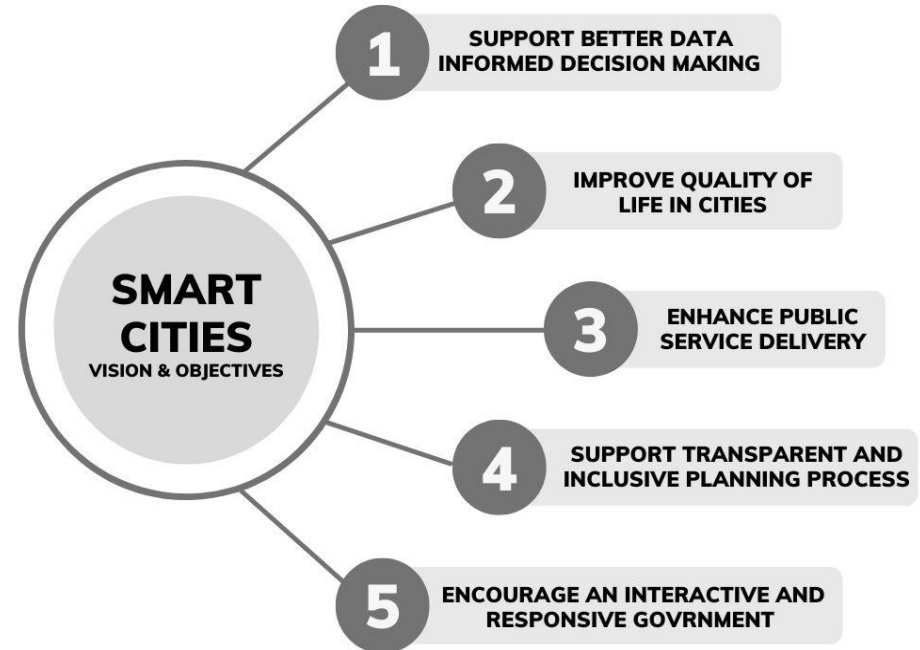
The Smart City concept

Smart cities use smart technologies and smart solutions including Internet of Things (IOT), Information and Communication Technologies (ICT), big data to increase operational efficiency, to monitor, control, and integrate various urban systems.

A major feature of smart city initiatives is to use digital solutions and innovations in technology to improve, upgrade and make urban public service delivery more efficient. However, these solutions must be correctly applied, based on a sound scientific approach and rationale.

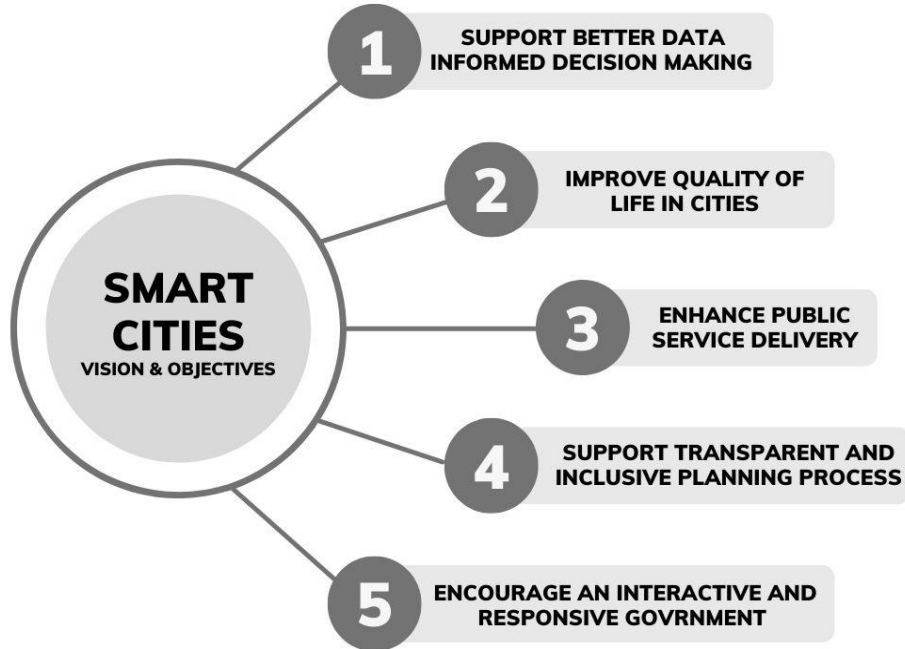
A “smart and sustainable city” approach should intrinsically promote human and social capital, as well as environmental protection.

Fig 1 - Smart Cities, Vision & Objectives



Logical Steps for Smart City system

Smart Cities, Vision & Objectives



Efficient service delivery

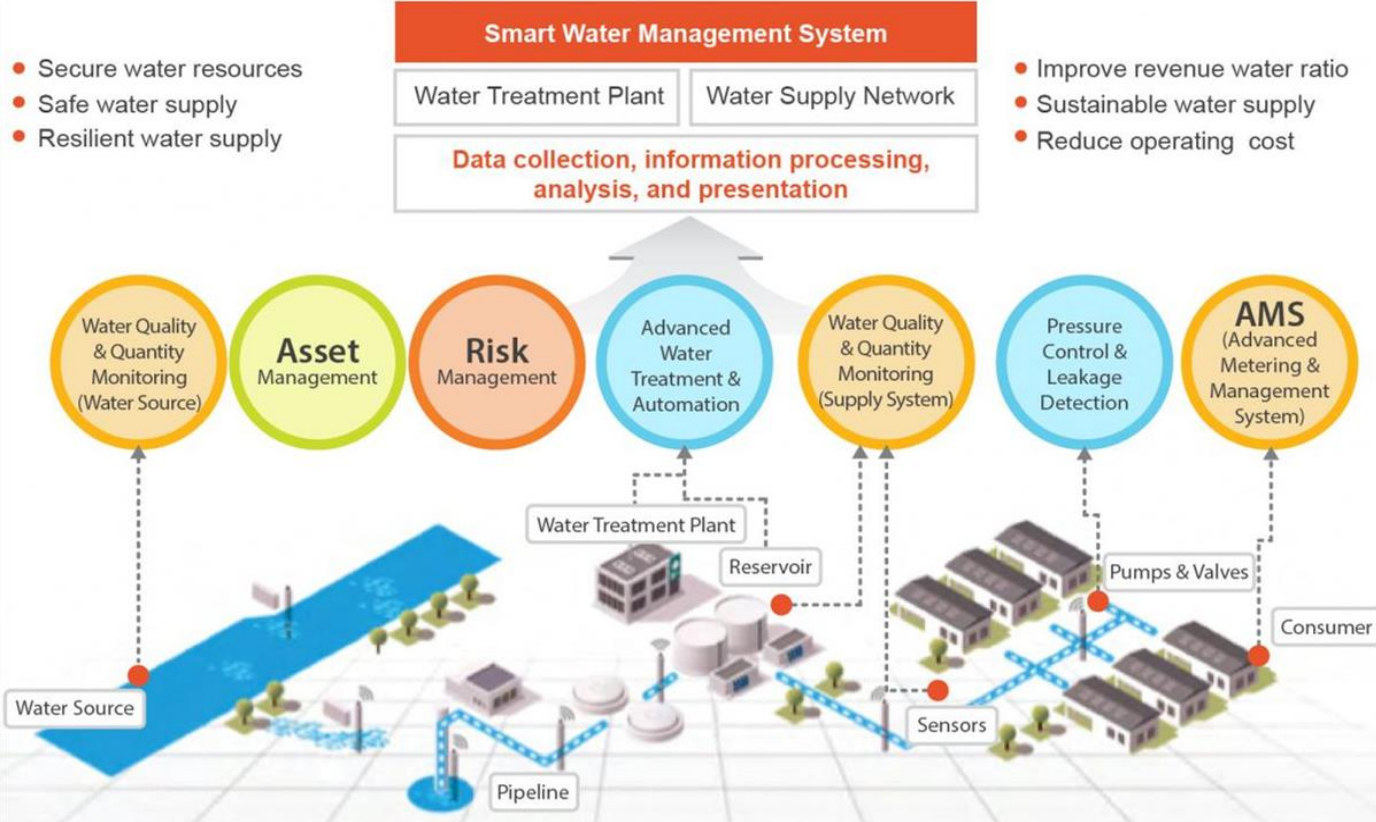
Better decision-making capability

Monitor resource use

Network management

Responsive governance

Example: Smart Water Management



Smart water management is a system designed to gather meaningful and actionable data on the flow, pressure, and distribution of a city's water.

The infrastructure and energy used to transport water are managed effectively, improving resilience, reducing operational costs, and improving system sustainability.

The most popular smart water solutions are digital meters, sensors, supervisory control and data acquisition (SCADA) systems, and geographic information systems (GIS).

Source: You Kwangtae, CEO, UnU Civil & Environmental Engineering, Republic of Korea.

Basic Approaches

- **Use data to increase operational efficiency** of urban services
- **Increase data accessibility and transparency**, within and outside governance systems
- Encourage **research-oriented planning** – collaborate with research communities, institutions (educational and private), by enabling data sharing and transparency
- **Develop smart technologies and smart solutions** to monitor, control, and improve government services.
- Improve **integration of urban systems**, and **promote effective collaboration** among different stakeholders, to foster business and innovation for a sustainable future.

“Smartness” is not just about installing digital interfaces in traditional infrastructure or streamlining city operations. It is also about using technology and data purposefully to make better decisions and deliver a better quality of life.” - McKinsey

Limitations of a Smart City

- **For cities in developing countries**, where basic infrastructure and service needs are not yet met, **the full scale implementation and benefits of smart solutions may not be viable.**
- Smart City solutions need to be **respectful of local traditions**, and local contexts. The end goal of smart city initiatives **should not be to replicate another city’s success**, but to **integrate these** into the local environment.
- The level of connectivity and applied smart solutions should be locally determined through citizen awareness and consent.

Core Principles

The smart city must keep the public trust by providing excellent safety measures and a secure environment for all individuals, organizations, and businesses.



Core principles of Smart City

Safety and Security

Equity and inclusiveness

Resourcefulness and resilience

Integration and inclusiveness

Green growth, and liveable environments

Innovation and transformation

Resource conservation

Public and private sector participation

A Smart and Humane City

A truly smart city recognizes its citizens as its greatest asset by placing citizens and people at the core.

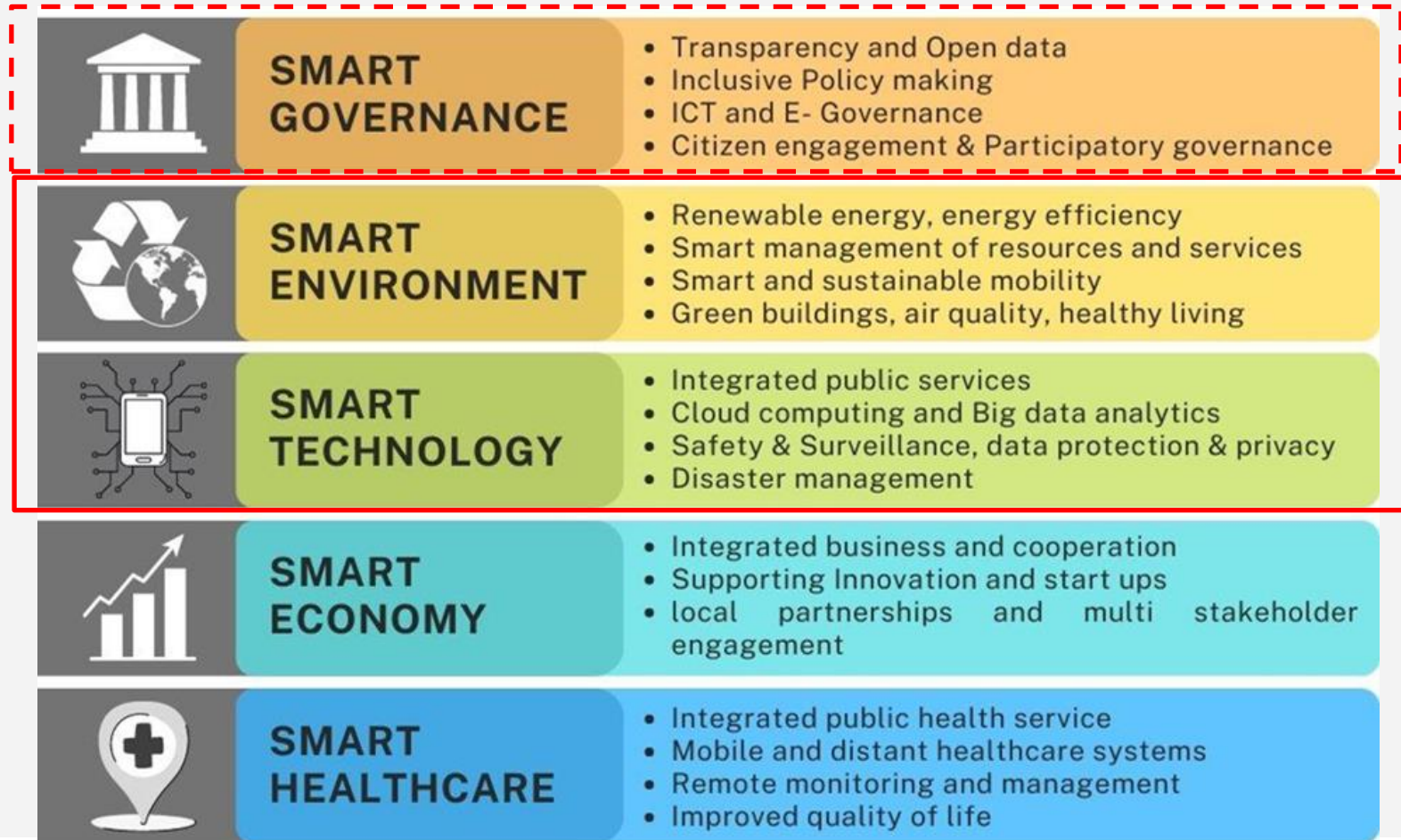
From the initial stage to the final stage of the smart city planning cycle, citizens and communities must be given a central role.

Putting people first means developing people-friendly planning in every aspect of the city. This principle should be clearly featured and enabled in every aspect of smart city planning.

The Key for Success is Cooperation, Involvement, and Management

- Considering models of existing, cooperation, **Public-Private Partnerships (PPPs)** could be a vital mechanism to increase efficiency, know-how and financing in smart city projects
- In tandem with technology, further crucial components include **nature-based solutions, pro- social and community values**, the leveraging of **local and indigenous knowledge**, and fostering **innovation and research**, and promoting **young talent**.
- In the spirit of innovation, **experimentation can be the way forward. This may involve launching a pilot project**, where users and the general public are able to try out and experience new infrastructure, services, and situations in real life situations.

The main pillars of the smart city are all about meaningful impact and positive change.



UNCRD's focus areas

Global Efforts

In Africa, Asia, South America, urban development should be 'smart from the start' with high standards of resource efficiency and renewable energy as a key component



Photo by Julien de Salaberry. Skyline of Singapore

Thank You

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