

Climate Sustainability Working Group

Session 7 Finding New Solution through Building Smart Cities

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Smart-city defined in New Urban Agenda

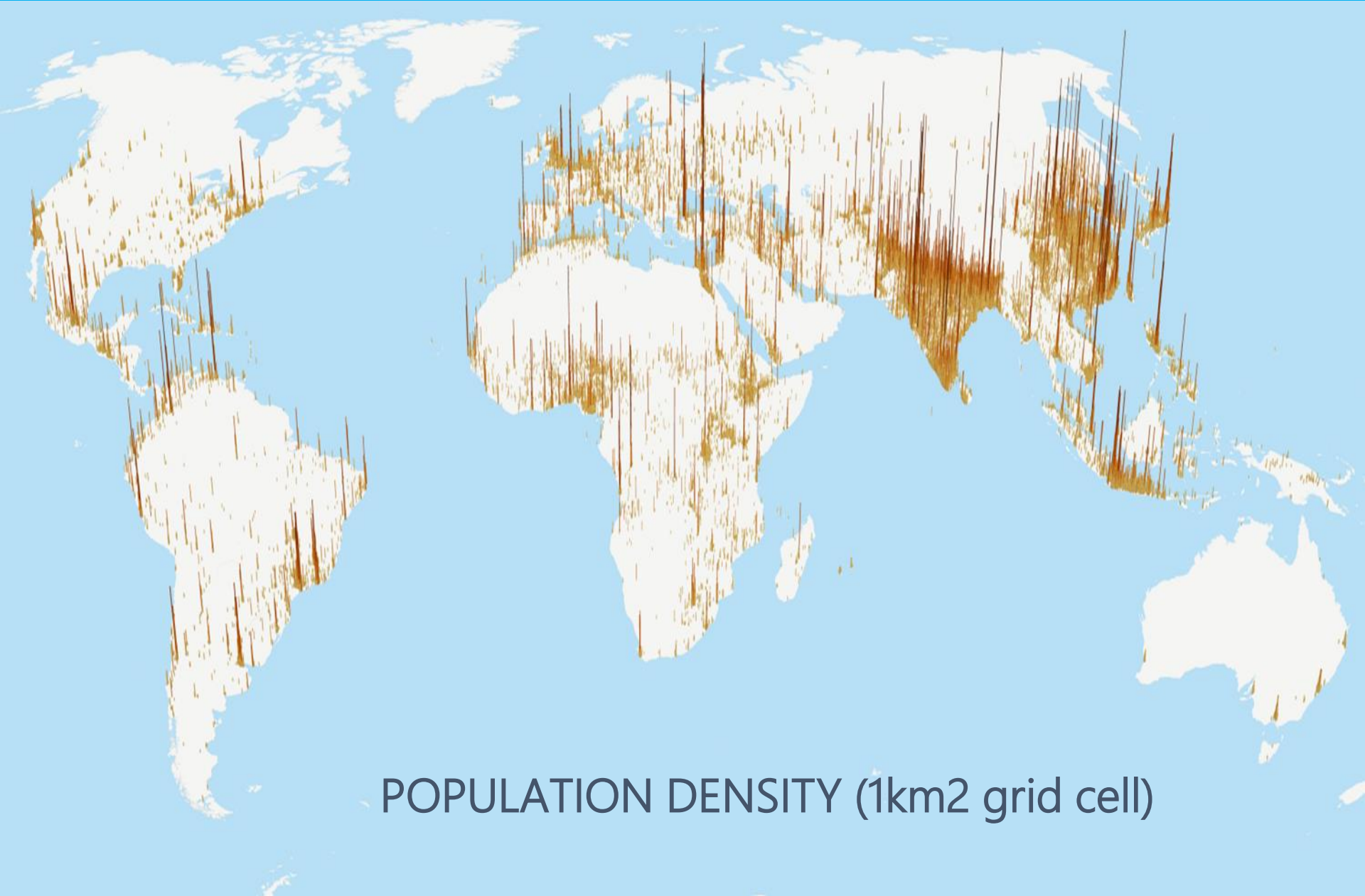
Environmentally sustainable and resilient urban development

66. We commit ourselves to adopting *a smart-city approach* that makes use of opportunities from *digitalization, clean energy and technologies*, as well as *innovative transport technologies*, thus providing options for inhabitants to make more environmentally friendly choices and boost sustainable economic growth and enabling cities to improve their service delivery.

Smart City Initiatives

- ❖ *The “Smart City” was popularized as a concept in the early 2010s to describe how digital technology, clean energy technologies and innovative transport technologies can be used to improve urban planning, management and service delivery.*
- ❖ *It has been driven by advanced technologies and their suppliers, but recently governments and cities have started leveraging technologies and innovations to address urban challenges to achieve smart and sustainable development.*

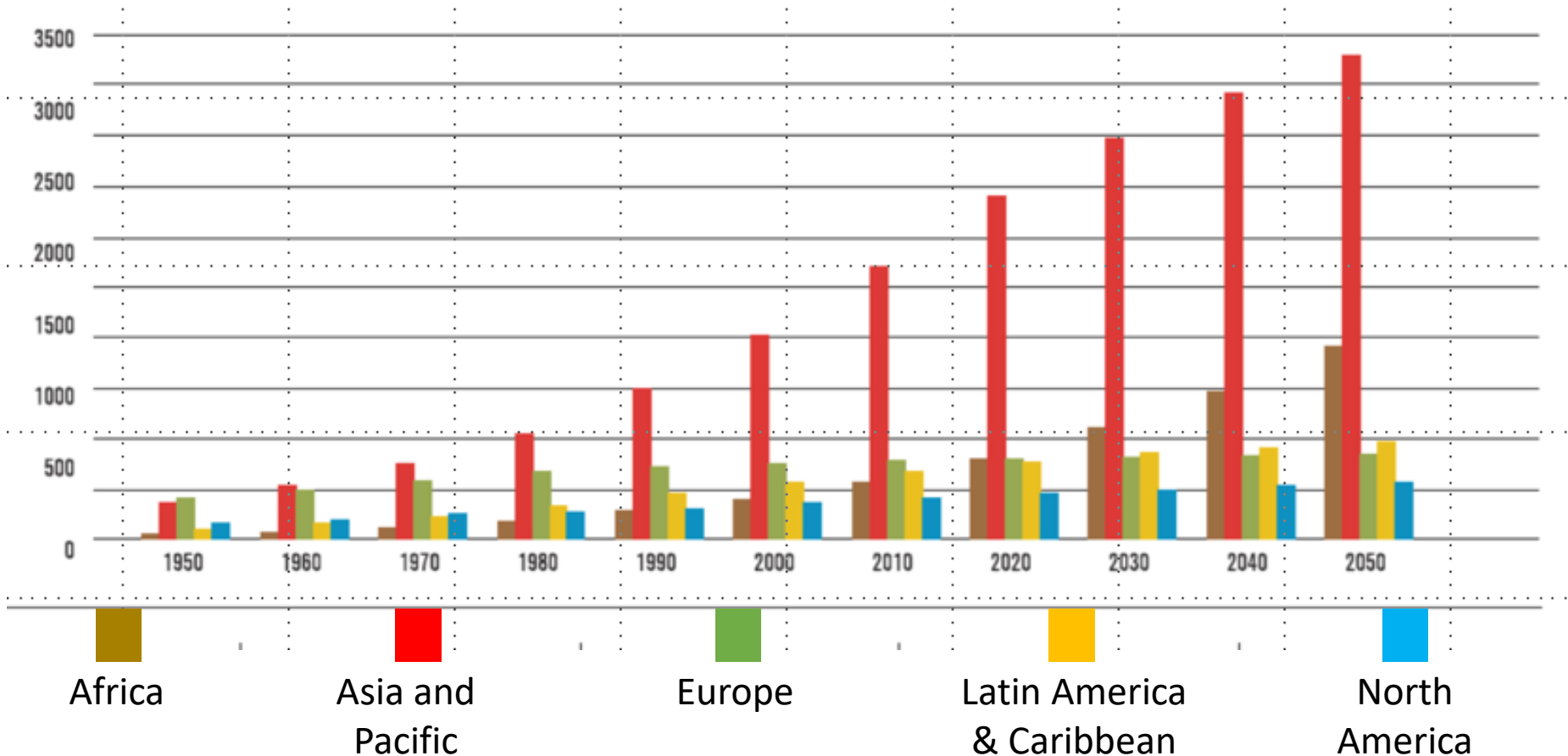
Urban Century



POPULATION DENSITY (1km² grid cell)

Urban Century

Urban population was 2.3 billion (43%) in 1990
3.9 billion (54%) in 2014, and 6.3 billion (66%) in 2050.



Urban Century



“Our struggle for global sustainability will be won or lost in cities”

Ban Ki-Moon, former UNSG

By 2050, the world's urban population will nearly double, consequently about two thirds of world population will be urban



**2% of Total
Land**

**Consume
60% of
Global
Energy**

**Produce
70% of
Global
Waste**

**Account
for 70% of
Green Gas
Emission**

Challenges from rapid urbanization



INCREASE IN SLUM POPULATION

Today, 1.6 billion live in inadequate housing conditions.

By 2030, billion people will need housing.



URBAN SPRAWL

In the last 20 years, cities grew at 1.5 times the rate of the population.



Rate of expansion of cities



Rate of population growth

Challenges from rapid urbanization



AIR QUALITY IN
CITIES IS
ALARMING



97%

Developing country
cities not meeting air
quality standards

49%

Developed country
cities not meeting air
quality standards



SOLID WASTE IN
CITIES

Neglected agenda

50%
Global waste from
high income countries



**Solid waste in cities:
neglected agenda**

SDGs, NUA and other agenda

New Urban Agenda



Transforming our world: Agenda 2030 for Sustainable Development

Leaving no one behind

Figure 1. Interlinkages between SDG 11 and other SDGs



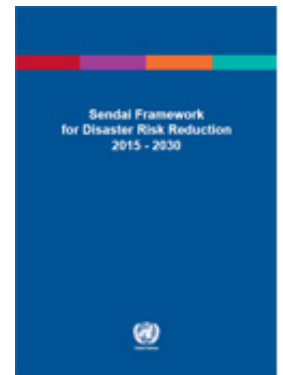
SDG11: Sustainable cities and communities

Paris Agreement



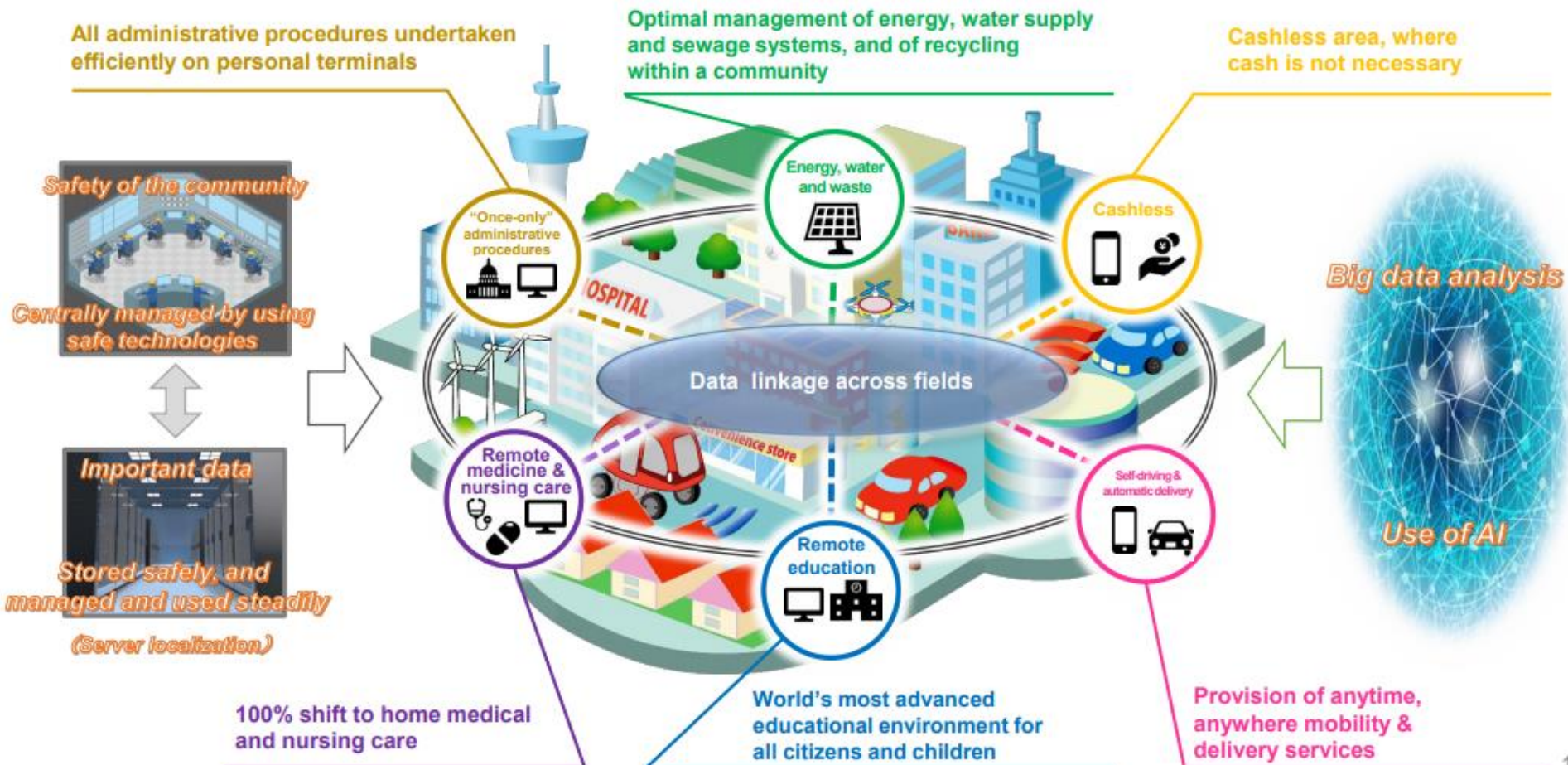
PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

Sendai Framework for Disaster Risk Reduction



Super City Initiative in Japan

The Super City initiative aims to implement measures for “once-only” administrative procedures, a cashless society, self-driving & automatic delivery, remote medicine & nursing care and remote education by using AI- and big data-based systems across different fields.



Many initiatives across Asia

In Korea, Presidential Committee on the Fourth Industrial Revolution and MOLIT announced plans to build new ‘smart city’ in Sejong City and Busan by 2023.



In China, smart city is a national strategy to accelerate industrialization, informatization, urbanization and agricultural modernization. China is home to about 500 of them.

**SMART CITY
KOREA 2018**
2018.10.10 WED-12 FRI | Coex, Seoul

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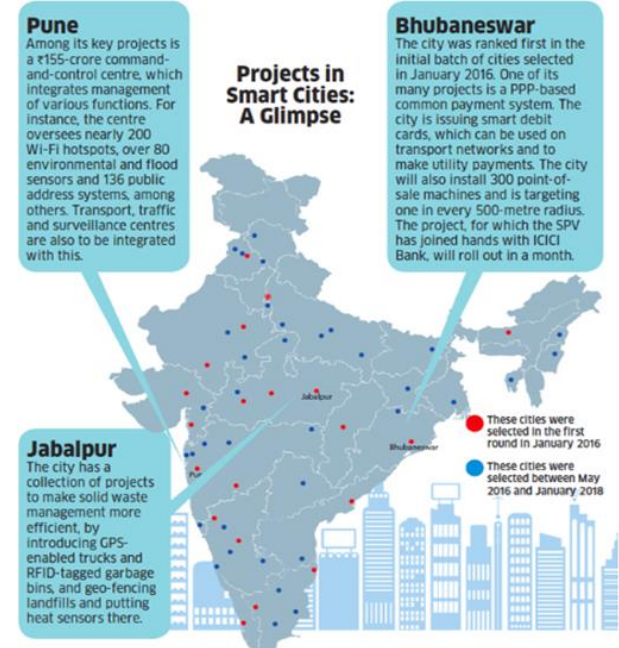
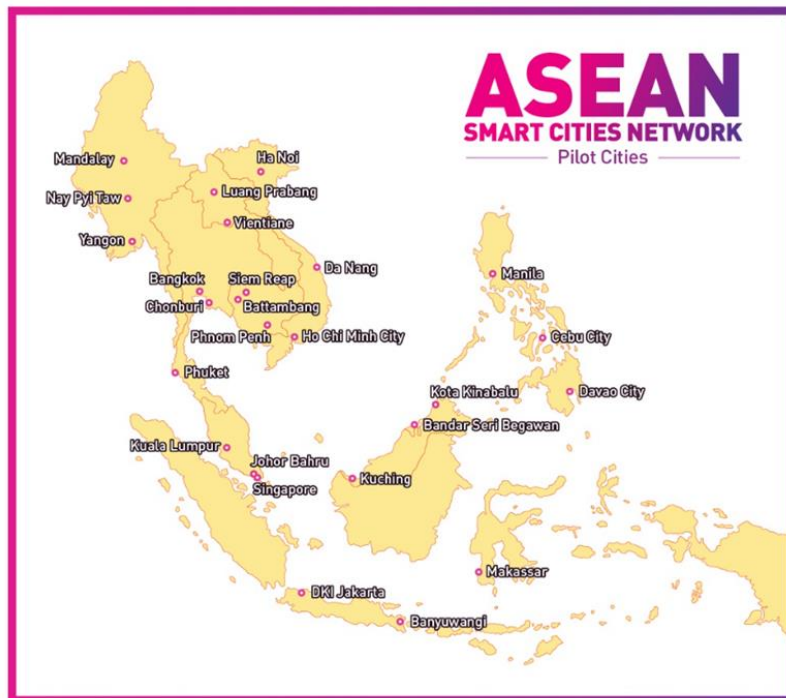
In Singapore, Smart Nation vision aims to transform all domains of the city-state through technology, to upgrade economy, provide its citizen a better home and offer more business opportunities.



Many initiatives across Asia

ASEAN Smart Cities Network (ASCN) is established as a collaborative platform for 25 ASEAN cities network towards the common goal of improve the lives of ASEAN citizens

India's mission of "100 Smart Cities" underscores the importance of effective funding and central coordination mechanism to provide sustainable and robust infrastructure systems.



Many initiatives in the world

Masdar City is one of the world's most sustainable urban communities, a low-carbon development made up of a rapidly growing clean-tech cluster, business free zone and residential neighborhood with restaurants, shops and public green spaces.



THE SOURCE OF
INNOVATION
AND SUSTAINABILITY



"The experimentation that takes place in this new community has the potential to demonstrate the viability of new smart city concepts and serve as an example for cities nationwide and globally," Brooks Rainwater, the director of the City Solutions and Applied Research Center at the National League of Cities (Business Insider).

UN-Habitat's projects and initiatives

❖ **United for Smart Sustainable Cities**

ITU and UNECE global platform for knowledge sharing on feasible smart city practices.

❖ **Rwanda Smart City Masterplan**

UN-Habitat works with the Rwanda Ministry for Youth and ICT and the Smart Africa Alliance to prepare Rwanda Smart City Masterplan.

❖ **Maji Wazi**

UN-Habitat and Ericsson investigated how digital technologies such as sensors, shared data and interaction platform could support access to water in informal settlements in Nairobi.

❖ **Future Cities Programme**

UN-Habitat is supporting the British Foreign and Commonwealth Office in the implementation of a project which uses data and technology to produce urban planning feasibility studies in 19 cities in 10 countries (Nigeria, Turkey, South Africa, Malaysia, Indonesia, Thailand and Brazil)

Smart City Master Plan for Rwanda



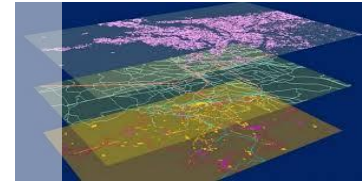
PILLARS		BUILDING BLOCKS		ACTION INITIATIVES	
1	Smart governance and planning	A	Data-led urban planning and management	1	GIS-based urban management platforms
				2	Cross-ministry finance and project management platform
				3	Multi-stakeholder safer cities programme
		B	Smart policies and regulations	4	Dynamic data-led master planning
2	Smart and efficient services and utilities	C	Public engagement and open data	5	Enabling environments for urban technology testing
				6	Data strategies including open data, privacy and cybersecurity
				7	Free internet zones in strategic and residential areas
				8	Digital citizen engagement tools
				9	Ensure citizen engagement tools are accessible to all
		D	Shared local infrastructure	10	Digitally monitor and manage utility infrastructure
		E	Efficient, demand based services	11	Explore smart micro grids based on the prosumer model
				12	Introduce regulatory frameworks for virtual power plants and other demand based management systems
				13	Promote smart data-led 'door-to door' mobility solutions
				14	Collaborative multi-ministry one-stop platform for e-services
3	Localized innovation for social and economic development	F	Sustainable and resilient resource management	15	Digital access points for rural villages
				16	Use sensor networks to collect environmental data
				17	Smart and resilient buildings and neighbourhood pilot projects
		G	Education, innovation and digital literacy	18	Designate some public buildings as smart and green buildings and educational labs
				19	Innovation in education, from primary school to higher education
				20	ICT skill training in education, for local authorities and the general public
				21	Provide a national fund for startups and innovation accelerator centers
				22	Establish innovation teams in ministries and local authorities
		H	Localized and challenge-based financial opportunities	23	Promote local digital business platforms
				24	Create collaborative community co-working spaces and digital excellence centers
				25	Establish collaborative urban innovation labs with academy, community and industry
		I	Digital transformation of financial services	26	Introduce a one-stop e-payment platform for all life-time services
				27	Enable electronic due-diligence and business loan systems for SMEs

Smart cities for all

Leaving no one and no place behind
Empowering locally developed technological solutions 'fit-for-purpose' – affordable – feasible and rooted in communities.

Respect and uphold human rights
Empowering youth creativity and entrepreneurialism

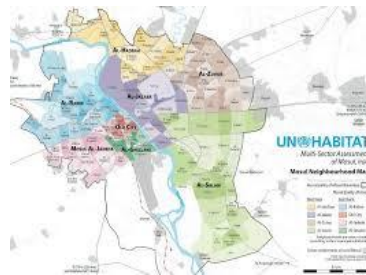
Harnessing local capabilities and resources
(human & financial) in emerging economies for scaling projects



Artificial intelligence, remote sensing and big data for detecting illegal dumpsites



Augmented reality for participatory mapping of infrastructure, housing, in slums



Artificial intelligence for mapping post conflict reconstruction of destroyed cities



Water ATMs in slums with IoT devices



Biosensor helmets for mapping cyclists' stress and improving streets



Mobile apps to connect waste pickers / producers



Using Minecraft Mixed reality for participatory urban design



Mobile app for sustainable building materials



Smart Cities Master Plan Rwanda

Implications and challenges

- ❖ Emerging innovations based on smart technologies are increasingly connecting various urban functions to create smart cities.
- ❖ Smart cities are not panacea to all issues that cities are facing today. Successful smart city projects are limited or many projects still remain at an experimental stage.
- ❖ In some cases, it is observed that society's or people's needs do not commensurate with fast advancing technologies and possibilities they can facilitate.
- ❖ Solid governance system and institutional capacity are a prerequisite to maximize the effects of such highly-advanced technologies.

Moving forward

- ❑ **Smart Cities for All – leave no one behind –**
- ❑ **Studies on smart cities from policy perspectives:**
“Future of Asia-Pacific Cities Report 2019” (UNESCAP, UN-Habitat) is underway, one chapter “Sustainable Smart City Systems in Asia Pacific
- ❑ **Smart City KPI (Key Performance Indicators) :**
UN-Habitat’s City Prosperity Indicators (6 dimensions and 32 variables) can provide food for thought for Smart City KPI.
- ❑ **Policy guidelines to support smart city initiatives, addressing:**
 - ❖ *Dynamic and efficient urban governance system*
 - ❖ *Integrated planning and development approach*
 - ❖ *Financial sustainability*
 - ❖ *Enhanced communication and wider stakeholder consultations including end users, vulnerable groups and urban poor.*
- ❑ **G20’s Initiatives for Smart Cities, e.g. expert group meeting, are welcome.**

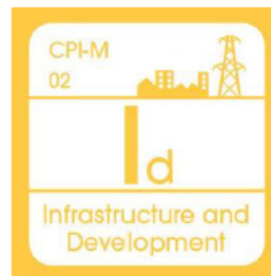
The City Prosperity Initiative – the basic CPI

Cities are evaluated across 6 dimensions and 32 variables



PRODUCTIVITY

City product per capita
Old Age Dependency Ratio
Unemployment Rate



INFRASTRUCTURE & DEVELOPMENT

Improved Shelter
Improved Water
Physician Density
Internet Access
Use of Public Transport

Traffic Fatalities
Length of Mass Transport
Intersection Density
Street Density
Land Allocated to Streets



QUALITY OF LIFE

Life Expectancy at Birth
Under-Five Mortality Rate
Literacy Rate
Mean Years of Schooling
Homicide Rate
Green Area per capita



EQUITY & SOCIAL INCLUSION

Gini Coefficient
Poverty Rate
Slum Households
Youth Unemployment
Equitable Secondary School Enrollment



ENVIRONMENTAL SUST.

PM2.5 Concentration
CO₂ Emissions
Solid Waste Collection
Waste Water treatment
Share of Renewable Energy Consumption

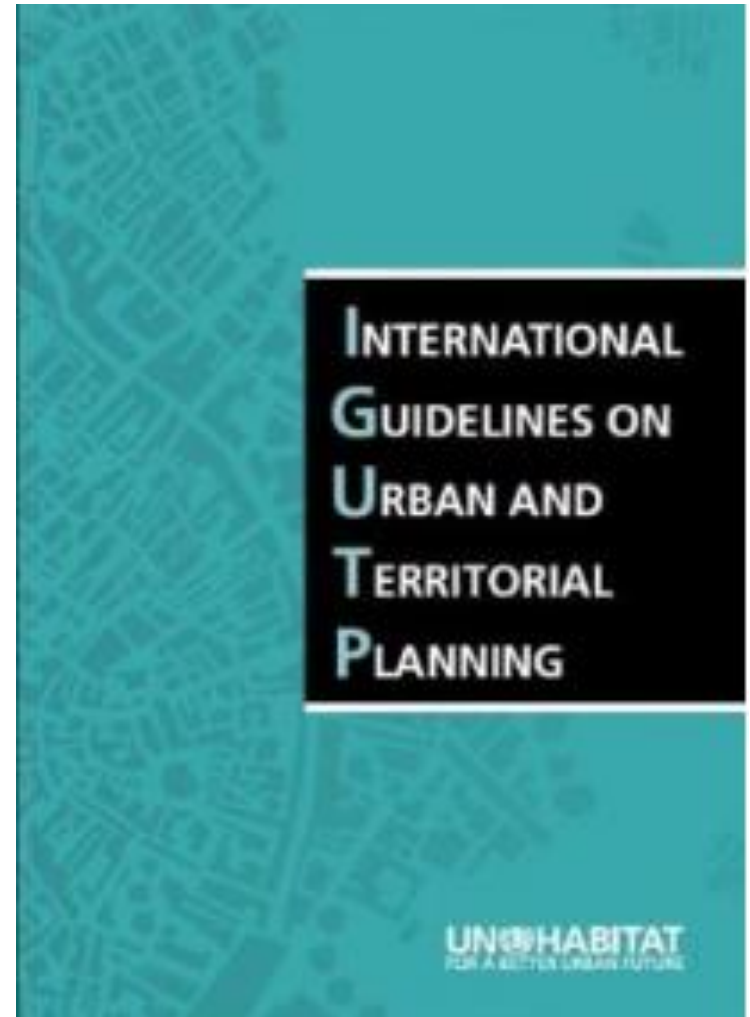


GOVERNANCE & LEGISLATION

Voter Turnout
Own Revenue Collection
Days to Start a Business

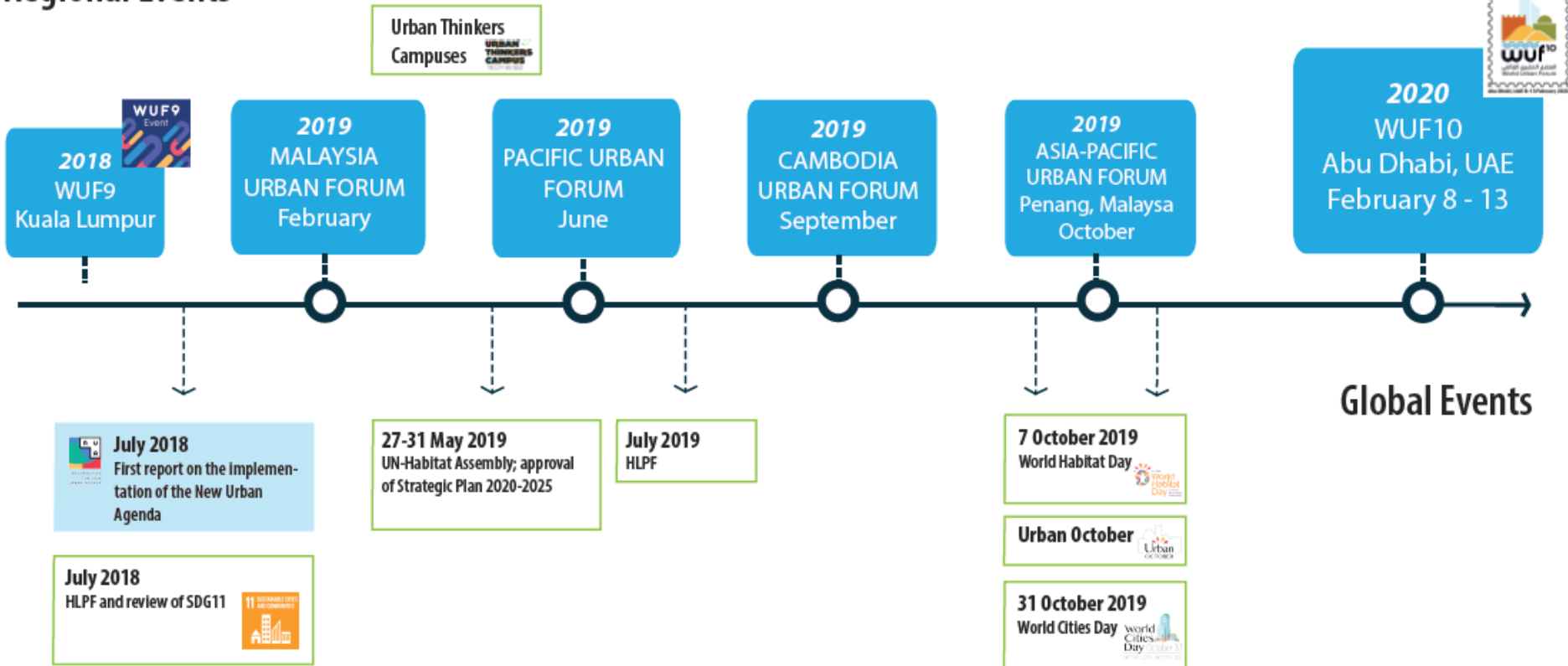
International Guidelines (example)

*The Guidelines provide national governments, local authorities, civil society organizations and planning professionals with **a global reference framework** that promotes more compact, socially inclusive, better integrated and connected cities and territories that foster sustainable urban development and are resilient to climate change.*



Moving forward

Regional Events



UN-HABITAT
FOR A BETTER URBAN FUTURE

UN-Habitat is a partner to find solutions/pathways to address these issues in bridging governments, communities and other stakeholders with smart solutions providers.

THANK YOU