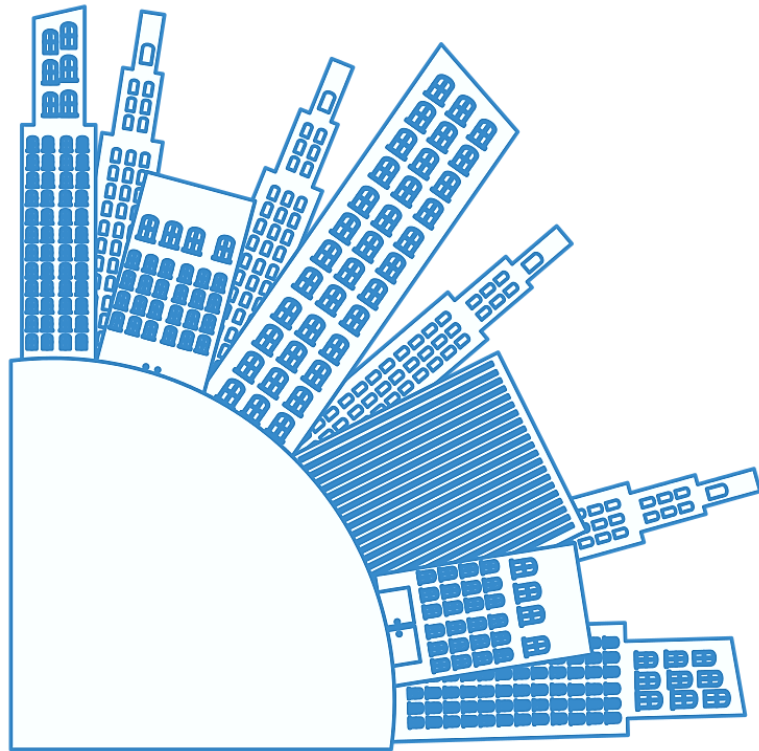# *Accelerating Frontier Technologies for Cities*

Reyna Ubeda
Project Officer
ITU

Our planet is becoming increasingly urban. **By 2050, 70%** of the world's population will live in cities.

Cities produce **over 70% of energy-related CO_2** emissions. Cities will also incur **over 80% of the global costs of adaptation** to climate change.
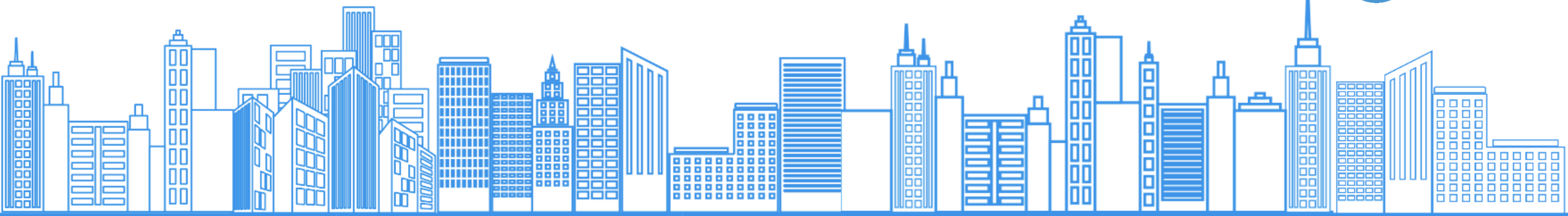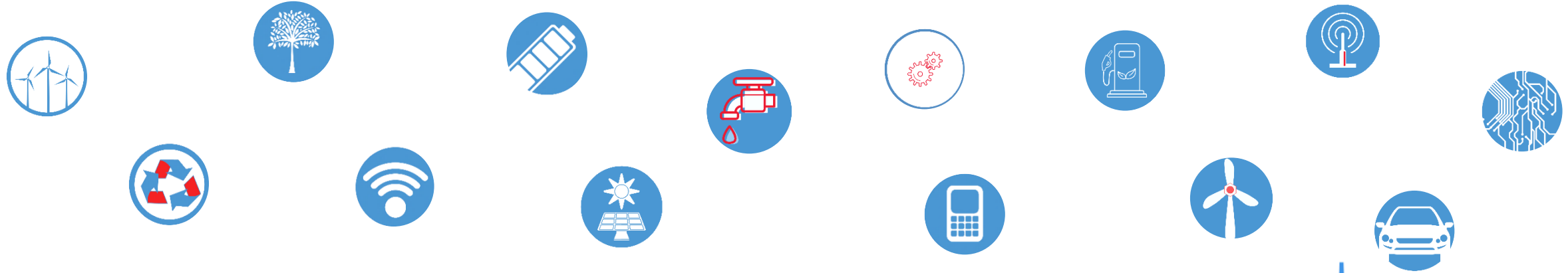
How can we **accelerate response** to this issue and **achieve** **SDG 11**: "Make cities and human settlements inclusive, safe, resilient and sustainable"?
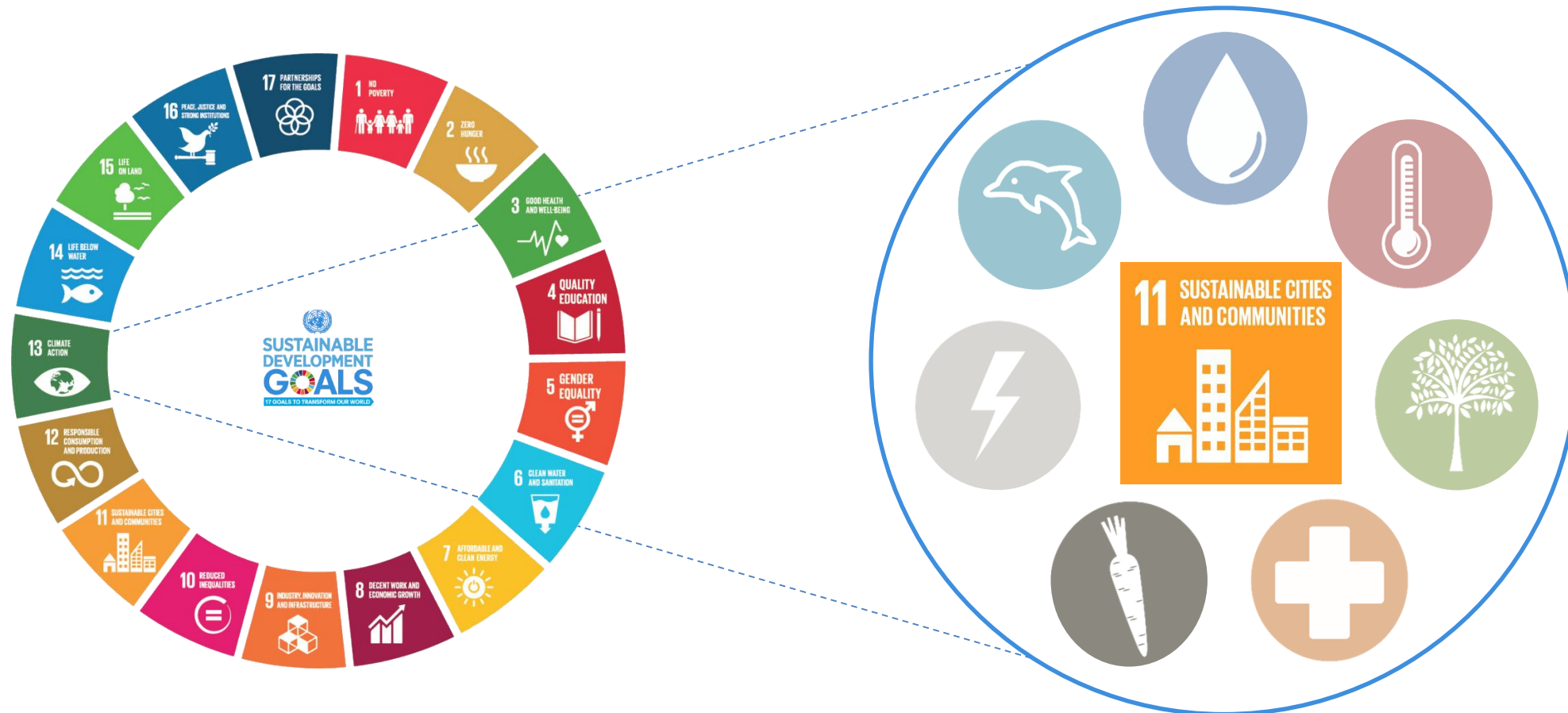
The answer lies in
leveraging frontier technologies

What are frontier technologies?

Frontier technologies are:

- new,
- emerging,
- cutting-edge,
- innovative, and
- often disruptive.

→ Artificial Intelligence (AI)

→ Internet of Things (IoT)

→ Fifth Generation Mobile (5G)

→ Digitization and Big Data

→ Robotics

→ Clean Energy Technologies

→ Digital Twins

Ways frontier technologies can help achieve the SDGs

→ **AI:** smart traffic management to reduce air pollution & improve public health

→ **IoT:** smart energy infrastructure management to reduce CO2 & GHG emissions

→ **5G:** smart water supply management to reduce water loss

→ **Clean Energy Tech:** generating renewable electricity to reduce fossil fuel consumption

→ **Digital Twins:** disaster risk planning to increase local resilience

→ **Space 2.0:** precise monitoring of geological features to accurately predict global weather patterns

→ **Digitization and Big Data:** leapfrogging traditional pathways to increase agricultural efficiency and food security

→ **Robotics:** discovery and observation of marine life to protect biodiversity

Key takeaways

➡ Cities form the perfect backdrops to test-bed frontier technologies to close the infrastructure gap.

➡ Buy-in from and investment by governments is critical to ensuring the continued progression and proliferation of frontier technologies.

➡ Also vital is engagement of academia and citizen stakeholders.

Key takeaways

→ Ensuring the affordable and wide-scale deployment of enabler technologies such as IoT, AI and 5G will ensure further advancement and adoption of other frontier technologies.

→ Frontier technologies should be deployed as part of well-planned, integrative strategies that would see these technologies bring concrete positive results for cities, and to avoid aimless innovation.

→ The development and implementation of international standards is a necessary part of the adoption of new frontier technologies to bridge the infrastructure gap.

Key takeaways

→ The disruptive potential of frontier technologies can lead to certain downsides arising from inconsistency in affordability and access to these technologies.

→ This should be mitigated through the proactive implementation of policies aimed at minimizing any resulting socio-economic costs.

→ Fostering exchange of technology and innovation, reducing barriers posed by restrictive intellectual property rights mechanisms, and promoting ICT standards are key ways in which frontier technologies can be best leveraged.

ITU-T Study Group 5 (SG5):
Environment, climate change and circular economy

ITU-T Study Group 5 (SG5):
Environment, climate change and circular economy

- SG5 is tasked to develop international standards (ITU-T Recommendations) on:
  - the evaluation of ICT effects on climate change and the environment.
  - the use of ICTs (including new frontier technologies) in an eco-friendly way.
  - how to reduce ICTs and e-waste's adverse environmental effects, for example, through recycling of ICT facilities and equipment and in order to achieve a circular economy.

- ITU also helps:
  - countries and the ICT sector to adapt to the effects of environmental challenges, including climate change, in line with the Paris Agreement and in order to achieve the SDGs

SG5 Regional Groups	
SG5RG-ARB	ITU-T SG5 Regional Group for the Arab Region
SG5RG-LATAM	ITU-T SG5 Regional Group for Latin America
SG5RG-AFR	ITU-T SG5 Regional Group for Africa
SG5RG-AP	ITU-T SG5 Regional Group for Asia and the Pacific

SUSTAINABLE DEVELOPMENT GOALS

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

Call4Action: Use of Frontier Technologies in Combating Climate Change and Achieving a Circular Economy

Using AI to accelerate climate and circular economy actions.

Comprehensive framework to ensure positive technological disruption.

Multi-stakeholder partnerships and international cooperation to facilitate sustainable and inclusive growth.

Implementation of international standards to harmonize the deployment of next-generation ICT infrastructure and evaluate the environmental impacts of frontier technologies.

Raising awareness on the role of frontier technologies in combating climate change and achieving a CE.

Reducing the negative impact of ICT-related e-waste to contribute to tackling climate change and moving to a CE.

Frontier technologies to reduce societal greenhouse gas emissions in line with scientific trajectories and to foster a CE.

Focus Group on Environmental Efficiency for AI and other Emerging Technologies (FG-AI4EE)

Main objectives:

- Identify the standardization gaps related to the environmental performance of AI and other emerging technologies.

- Develop technical reports and technical specifications to address the environmental efficiency, as well as water and energy consumption of emerging technologies.

Management team:

Acting chairman: Paolo Gemma, Huawei Technologies Co., Ltd., China

Vice-Chairmen:
- Neil Sahota, Technossus, IBM & University of California
- Barbara Kolm, Austrian Economics Center & Austrian National Bank
- Kari Eik, Organization for International Economic Relations (OiER)
- Joel Alexander Mills, AugmentCity AS

- Mats Pellbäck Scharp, Ericsson
- World Economic Forum (WEF)
- Lucy Lombardi, Digital & Ecosystem Innovation, TIM
- Peter Ulanga, Universal Communications Service Access Fund, United Republic of Tanzania

9th Green Standards Week
1-4 October 2019
VALENCIA, SPAIN

Connecting Smart Sustainable Cities with the Sustainable Development Goals

Main discussions on:

- "Frontier Technologies to Tackle Climate Change and Achieve a Circular Economy"

- Leadership panel   Valencia Smart City   Smart Governance in cities

- 4th U4SSC meeting and Award Ceremony

- Training on Building smarter and more sustainable cities

Hosted by:

AJUNTAMENT DE VALÈNCIA

In collaboration with:

UN Agencies and more than 20 partners

GOBIERNO DE ESPAÑA   MINISTERIO DE ECONOMÍA Y EMPRESA   SECRETARÍA DE ESTADO PARA EL AVANCE DIGITAL

ITU

Connecting the world, together.