

## High-level Dialogue on Energy

### Track 4: Innovation, Technology and Data

#### Technical Working Group (TWG) Process

##### Innovation, Technology and Data theme:

*This cross-cutting theme will focus on advancing energy access, energy transitions as well as enabling the SDGs through the development and application of data; technology, innovation, research and capacity building measures, as well as through integrated policy making and regulation that are necessary to achieve the Energy Compact commitments, and SDG7.*

##### Dialogue Deliverables:

The Co-Leads of each thematic Technical Working Group, with inputs from all members of the group, will compile a Theme Report, of approximately 10,000 ~ 12,000 words, which provides substantive recommendations with a plan of action for the Theme, which, together with other Theme Reports, will contribute towards an action-oriented global roadmap towards the achievement of SDG 7 by 2030 and net-zero emissions by 2050. The report should be made succinctly and can be widely consumed by a nontechnical audience. Each report must include the following components:

**Goal (~1000 word):** Present the overall goal and targets for the Theme, setting clear ambition in support of the 2030 Agenda and the Paris Agreement.

- **Context (~1000 words):** Introductory section with a state of the sector assessment, providing background and current landscape of the thematic area.
- **Challenges (~2000 words):** Identification of critical barriers to progress by Theme. These may be categorised, e.g., as political, policy and regulatory, financial, market design, and/or behavioural, and levels of urgency can be attached to each barrier, with due consideration to the different circumstances of countries and regions.
- **Recommendations/Plan of Action (~ 5000/6000 words):** A proposed menu of solutions and policy options that respond to the challenges identified and presented in the form of a plan of action to achieve the goal of the Theme, taking into account unique and diverse challenges faced across counties/regions. To be action-oriented, concrete examples of transformational action should also be provided, including where possible implementation details and potential co-benefits.
- **Impacts (~1000/2000 words):** Assessment of catalytic potential impacts of the proposed recommendations on SDG7 in support of the SDGs and net-zero emissions by 2050.

##### Timeline:

The group will meet four times before the High-Level Dialogue:

First Meeting (2 March 2021): Introduction & Concept Note including objectives, deliverables, timeline.

Second Meeting (week of 12 April 2021): First draft, with a draft Matrix of Actions.

Third Meeting (Last week of April 2021): Cross-Technical Working Groups discussions to ensure synergies and coherence.

Fourth Meeting (week of 17 May 2021): Final report, with the final Matrix of Actions.

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#### Concept Note for Thematic Report

##### Background

Innovation has played a critical enabling role in progressing towards the SDG7 targets. While the uptake of renewable energy technologies and more positive engagement with renewable energy sources, has been growing and prices declining over the past few years, innovation in enabling technologies such as smart metering, energy storage and battery technologies will be critical in transforming power systems to manage the ever-increasing share of variable renewable energy and driving further electrification. The same can be said about financial and social innovation where disruptive business models and behavior change will be the key drivers in rethinking the future energy systems and guiding future investments in the field.

The interlinkage of energy to all sectors of the economy and broad human development capabilities, has consequent implications for making progress across the SDGs and the Paris agreement. The need to deliver the SDGs within the next 9 years, is further driving a shift in innovation priorities emanating from the role of energy in the power sector to addressing a broader range of challenges and opportunities of the energy system and the intersection with end-use sectors such as transport, health, agro-industries and food-value chains, manufacturing, buildings and urban infrastructure and the role that women and men, girls and boys can play in advancing a just energy transition. It is also now seen as a mechanism to address issues of exclusion where renewable energies provide an opportunity to improve the lives of those living in slums and informal settlements for example or as a mechanism to improve gender equality for women and girls through the interface of renewable energy sources reducing domestic workloads and offering livelihood opportunities.

It is worth pointing out the possible synergies between energy use sectors – for instance energy systems for food chains can also be used for health purposes, such as pumping good quality water and powering local clinics. Such innovations offer development improvements to many in different contexts around the world.

This shift is further enabled by the convergence of digital technologies, data and information networks and related disciplines, which are accelerating the speed and scale of progress toward the SDG7 targets. Emergent applications in data capturing technologies such as sensors and GIS with advanced analytics are enabling transformative solutions in energy efficiency and energy access. Demonstrations are showing how for instance the large-scale and often real-time collection, analysis and use of all kinds of datasets can transform off-grid electrification and further help manage and reduce risks related to high transaction costs and lack of reliable data for planning and monitoring that have hampered the mini-grids industry. This applies for instance to information on costs and benefits of investing in renewable energy for food chains. On the other end of the spectrum, the application of cloud-enabled artificial intelligence (AI) and machine Learning has shown promising potential for improving efficiency, reducing costs, and creating dynamic flexibility in managing energy use in large industrial facilities, commercial buildings and critical urban infrastructure. Using real-time traffic applications is now common as it allows people to plan their trips accordingly, avoid roads with traffic congestion and reduce air pollution.

While this is all good news, the rate and scale of leveraging all the transformational opportunities and interlinkages is not fast enough. Precisely because they are constrained by competing development commitments, governance challenges which affect how stakeholders are engaged (who and how but especially local authorities) and both the financing commitments and the capacity development required to embrace new thinking around energy. The capacities and commitments to drive innovation in policy and regulations due to the uneven access and distribution of resources across actors, countries and regions, national and local governments; and the awareness and knowledge needed to change behaviors and reform institutions, standards and norms, are also ongoing issues. Cities and local governments demonstrate that they have the will power and incentives to make cities greener and support the shift towards energy demand management and renewable energy.

We still need to commit a great deal for future innovation to drive energy systems toward net-zero carbon and universal energy access. Therefore, achieving system wide, low carbon, affordable and just transformation of the energy system will continue to demand innovation across a broad range of areas including innovation in policy, governance, finance and social aspects. Addressing these innovations at the pace required to deliver the SDGs requires collective actions from national and local governments, other influential urban leaders such as traditional authorities and NGO sector, international actors and the private sector.

Guiding questions:

- 1- What good practices illustrate the key role of innovation and data in fostering the implementation of SDG 7 targets in relation to (energy efficiency) and renewable energy in cities of different size and context?
- 2- Which innovative responses are improving energy ecosystems specifically in the lives of vulnerable groups and how? Which groups?
- 3- What challenges face the scaling up of such and other examples, including regarding infrastructure, investment, policies, regulation and capacities., partnerships (including with the private sector and local communities)?
- 4- What priority actions and pre-conditions are needed to create the enabling conditions (policy, capacity, investment etc.)? Which solutions to scale up to accelerate progress; for both national action and international cooperation)?
- 5- What priority actions/support is needed to create the enabling conditions (policy, capacity, investment etc.)? Which solutions to scale up to accelerate progress; for both national action and international cooperation)?
- 6- What is the best and most cost effective system for tracking the implementation progress ?