IRENA
International Renewable Energy Agency

15 March 2024

Fourteenth session of the Assembly
Abu Dhabi, 17-18 April 2024

Background Note

Ministerial Roundtable on Infrastructure for the Energy Transition: Utilities for Net Zero Alliance

1. The energy transition, characterised by a strategic shift towards renewable electricity and green hydrogen, is crucial for reducing global carbon emissions and necessitates a comprehensive redesigning and strengthening of energy infrastructure. Central to this evolution are advancements in power grids, requiring modernisation for efficient integration and diffusion of renewable energy, and the establishment of robust hydrogen infrastructure, including pipelines, ports, and storage facilities, essential for the use and transport of green hydrogen.

2. The current structures contain many barriers that hamper the transition. A diversified and interconnected energy system requires the modernisation and expansion of infrastructure. Transmission and distribution systems will need to accommodate the highly localised, decentralised nature of many renewable sources, along with the various trade routes involved. With regard to the interconnectors required to trade electricity and shipping routes for hydrogen and derivatives, planning must consider a staggering array of global dynamics, proactively linking countries to promote diverse and resilient energy systems. Public acceptance, which is critical for any large-scale undertaking, can be secured through transparency in planning and implementation and by providing opportunities for communities to voice their perspectives.

3. IRENA's analysis1 indicates that physical infrastructure upgrades, modernisation and expansion will increase resilience and build flexibility for a diversified and interconnected energy system. Transmission and distribution will need to accommodate both the highly localised, decentralised nature of many renewable fuels, as well as different trade routes. Planning for interconnectors to enable electricity trade, and shipping routes for hydrogen and derivatives, must consider vastly different global dynamics and proactively link countries to promote the diversification and resilience of energy systems. Storage solutions will need to be widespread and designed with geo-economic impacts in mind.

4. The report on tripling renewable power and doubling energy efficiency[2] flags that with variable renewable energy (VRE) sources becoming the major source of power

Enabling infrastructure

Barriers

- **Insufficient infrastructure to connect renewable energy to markets**, including energy storage and grid integration infrastructure.
- **Lack of readiness of the distribution infrastructure** for electricity, gases and fuels.
- **Unpreparedness of end-use sector facilities** to switch to renewables.

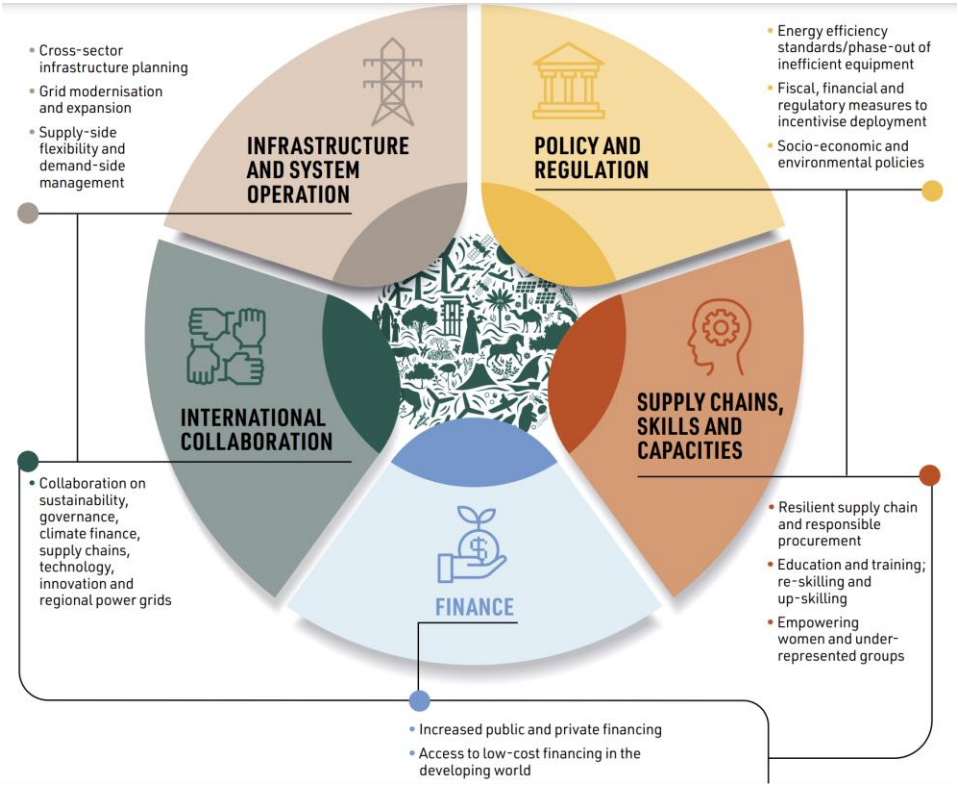
Solutions

Forward-looking planning, modernisation and expansion of supporting infrastructure both on land and sea to facilitate the development, storage, distribution, transmission and consumption of renewables.

Infrastructure should facilitate national, regional and global strategies for new supply-demand dynamics.

[1] https://www.irena.org/Publications/2023/Jun/World-Energy-Transitions-Outlook-2023
[2] https://www.irena.org/Publications/2023/Oct/Tripling-renewable-power-and-doubling-energy-efficiency-by-2030

in a 1.5°C-compatible world, countries must start upgrading and expanding their power grid infrastructure to prepare for increasing end-use sector electrification.



Source: COP28, IRENA and GRA (2023), Tripling renewable power and doubling energy efficiency by 2030: Crucial steps towards 1.5°C

5. The utilities sector is a pivotal driver in catalysing the global economy towards a greener, more sustainable future. The essential role of infrastructure grid enhancement and expansion is as a prominent hurdle worldwide, not just confined to the global north or south.

6. To address the above challenges, 27 global utilities and power companies that collectively serve more than 267 million customers, united for a landmark joint commitment to advance electrification, renewables-ready grids, and clean energy deployment in line with 2030 Breakthrough goals and a net zero future by 2050. The companies have established the Utilities for Net Zero Alliance (UNEZA) as a vehicle for international cooperation to implement the Declaration of Action adopted at COP28. The utilities from IRENA Members are invited to join UNEZA.

7. The UNEZA is an international platform for cooperation among entities operating within the power utilities ecosystem, to address and overcome common barriers to the realisation of net zero ambitions and more near-term emissions reduction targets. Through it, shaping dynamic new partnerships, and forging effective channels for dialogue with key public and private stakeholders.

8. Under the guidance of IRENA and supported by the UN Climate Change High-Level Champions, UNEZA collaborates with various eco-system support partners with to address impediments to the net zero pathway. The six key areas UNEZA acknowledge and share a desire to work towards between now and 2030 to 2050 include the following:

    - Buildout of clean power and decarbonization of thermal power generation;
    - Build up reliable, resilient and flexible grid infrastructure;
    - Drive wide-spread adoption of electrification in end use sectors;
    - Improve energy efficiency;
    - Promote technological innovation; and
    - Sustainable execution of actions, to ensure that planned activities are designed and delivered in an equitable and environmentally responsible manner that delivers universally positive outcomes.

9. The members of UNEZA recognise that the key to unlocking the utility sector's global energy transition potential lies in the ability to deliberately target existing structural, regulatory, and financial impediments and challenges that may stand in the way of progress.

Objectives of the session

10. The objective is to have an exchange on the key role of infrastructure development in energy transition and the achievement of the Tripling Renewables objective by 2030, as well as launch the UNEZA Plan of Actions and Roadmap that will drive international cooperation among the utilities to deliver "Infrastructure for the Energy Transition" through:

    - Mobilization of low-carbon capital and de-risking instruments;
    - De-risking of the supply chain, materials availability and manufacturing capacity;
    - Facilitation of enabling regulatory and policy support; and
    - Continuous improvements in workforce capability.

Guiding Questions

- What must be done by governments, utility industry and key stakeholders to overcome existing barriers and rapidly advance solutions across infrastructure, policy, workforces and institutions in the next two years?
- How to advance a paradigm shift that fast tracks the energy transition and slashes emissions before 2030, triple renewable energy capacity and double the rate of energy efficiency by 2030?
- What is required to unlock the utility sector's global energy transition potential to deliberately target and remove existing structural, regulatory, and financial impediments and challenges that may stand in the way of progress towards Net Zero?

For more information please contact

Zafar Samadov, Programme Officer, Partnerships, CEP (zsamadov@irena.org)

Simon Benmarraze, Team Lead, Technology and Infrastructure, IITC (sbenmarraze@irena.org)