International Renewable Energy Agency

Fifteenth session of the IRENA Assembly

Side Event
12 January 2025, 13:00 – 14:30 GST
St. Regis Hotel, Saadiyat Island, Abu Dhabi

Climate Principles to Unlock Grid Financing

Background

According to IRENA's WETO 2024[1], aligning with a 1.5°C-compatible pathway requires tripling renewable energy capacity and doubling energy efficiency by 2030. This would translate into tripling renewable power capacity to 11.2 TW, with average annual additions of 1,044 GW from 2024 to 2030. The COP28 further strengthened this ambition as a global political commitment as part of the UAE Consensus, demands a cumulative investment of USD 31.5 trillion across renewables, grids, flexibility, energy efficiency and conservation by 2030. Investments in grids and flexibility measures need to double from current levels, requiring an average of USD 717 billion per year needed in grids and flexibility between 2024 and 2030.

IRENA's Tracking Report on tripling renewable power and doubling energy efficiency[2] flags that with variable renewable energy (VRE) sources becoming the major source of power 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.

Flexibility across the entire power system is key for enabling high shares of VRE and extensive electrification. Flexibility requires, among others, swift and carefully planned grid infrastructure upgrades, modernisation, and expansion on a significant scale. Optimised power system operation, strengthened interconnections for cross-border trade, and availability of various forms of storage capacity (electrical, thermal, etc.) are key components for increased system flexibility.

Adapting existing and new grid capacity to support new patterns and high variability in electricity flows is essential for a renewables-based energy transition.

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[1] https://www.irena.org/Publications/2024/Nov/World-Energy-Transitions-Outlook-2024
[2] https://www.irena.org/Publications/2023/Oct/Tripling-renewable-power-and-doubling-energy-efficiency-by-2030

This involves making grids adaptable and resilient enough to accommodate fluctuations in electricity supply as power consumption continues to rise. Currently, investments to refurbish outdated grids and expand grid capacity are almost half of what is needed to meet the 2030 targets for renewable generation capacity, presenting a challenge for integrating VRE and ensuring energy supply.

Regions face these challenges in various contexts. For example, Europe and North America struggle to accommodate the current growth of renewables, having increased levels of curtailment, due to delayed acceleration of grid investments and aging infrastructure. Developing economies, such as those in sub-Saharan Africa, need to expand their grid infrastructure to meet increasing demands, but encounter difficulties in securing investments due to technical, regulatory, and financial obstacles. The critical consequences of outdated infrastructure and insufficient investment in adequate grid expansion include grid congestion, which can result in curtailment, increased operational costs from underutilised least-cost generation resources and load shedding, potentially jeopardising energy security.

Modernising grids involves investments in grid-enhancing technologies, such as advanced sensors and power flow optimisation hardware and software tools, which are becoming increasingly important due to advancements in digitalisation. These technologies can also facilitate the integration of demand flexibility and storage solutions, expanding the range of flexibility options that can be employed to meet infrastructure needs. Implementing these measures is crucial for balancing supply and demand under varying conditions. Additionally, non-technical measures must be considered to ensure adequate incentives for grid investments and efficient grid operation. These include regulatory reforms, improved permitting processes, and enhancements in spatial planning.

The COP29 Presidency officially launched several energy initiatives and called on Party and non-Party stakeholders for endorsement[3]. The COP29 Global Energy Storage and Grids Pledge established a collective goal of deploying 1,500 GW of energy storage globally by 2030 - more than six times the capacity of 2022. It also includes a commitment to add or refurbish 25 million kilometres of grids globally by 2030, recognising the need to add or refurbish an additional 65 million kilometres by 2040. The COP29 Green Energy Pledge: Green Energy Zones and Corridors committed to promoting in green energy zones and corridors to connect sources of abundant green energy generation with the communities most in need by developing larger intraregional and interregional interconnected power grids. These grids will enable cost-effective and secure transmission of electricity over long distances.

[3] https://cop29.az/storage/1135/COP29-Declarations-and-Pledges-Letter.pdf

The world's leading utilities and power sector companies under the Utilities for Net Zero Alliance (UNEZA) endorsed the pledges as it will support global efforts to triple renewable energy capacity by 2030 and transition to a net zero energy system. The 46 partners of UNEZA, including 38 of the largest utilities and energy companies in the world serving more than 340 million customers globally and with ambitions to scale renewables portfolios by 2.6 times by 2030, announced a joint intent to invest more than US$117 billion per year in clean power generation and power system grid infrastructure globally in the coming years. 48% per cent of the total investment planned and committed in the coming years targets transmission and distribution infrastructure.

The Energy Transition Accelerator Financing (ETAF) has mobilised more than USD 4.0 billion in pledges to support the implementation of renewable energy projects. The Platform facilitates access to funding and de-risking services. Currently, 14 ETAF Partners, including MDBs, DFIs, and private sector entities, have committed to the initiative. . Many of these Partners are key players in financing grid infrastructure projects worldwide. Notably, several Partner institutions, such as AIIB, EBRD, and HSBC, are active members of the GGI Finance Working Group. During 2024, UNEZA and the Green Grids Initiative (GGI) consulted within their respective constituencies that there is a lack of clear unified criteria for defining a "Green Grid". The financial world remains divided on which grids qualify for green and climate finance. This lack of consensus risks holding back the investments, co-financing, and securitization needed to develop the grid enhancements and interconnections essential for the transition to renewable energy, especially in the fossil fuel intensive emerging markets and developing economies (EMDEs) where financing is needed most. According to GGI, the current classification approaches tend to exclude grid investment from climate finance in regions which are currently fossil fuel intensive, even if those countries are moving in the right direction in terms of decarbonisation. This creates a barrier for climate investors.

Objectives

This event will present the Climate Finance Principles for Green Grids that aims to overcome the lack of consensus and set out a basis for interoperability, dialogue and trust among different stakeholders. This will facilitate co-financing, securitisation and the scale-up of investments on the full, global scope of grid infrastructure expansion and transformation, subject to an effective and measurable decarbonisation and sustainability performance.

The objective of the event is to conduct consultation among utilities represented by UNEZA, finance partners of ETAF, IRENA Members and key stakeholders over the Climate Finance Principles for Green Grids. The consultation will help refine the approach, with the goal of building consensus among a critical mass of investors. The Climate Finance Principles for Green Grids will be instrumental to advancing implementation of the COP28 UAE consensus on tripling and COP29 Global Energy Storage and Grids Pledge.

Upon the consultation at the fifteenth IRENA Assembly and other international for a, UNEZA and GGI plan to issue a joint Open Letter addressed to the heads of multilateral development banks (MDBs) asking to scale up investments in modernisation and expansion of grid infrastructure and call to adopt the Climate Finance Principles for Green Grids which will form the basis for a harmonised definition for what constitutes a "green grid".

Guiding Questions

- What are the critical factors, barriers, and solutions to scale up investments in modernisation and expansion of grid infrastructure?

- What do you consider to be appropriate financial structures and mechanisms to successfully mobilise and scale up investments in the modernisation and expansion of grid infrastructure, particularly in alignment with sustainability and decarbonisation goals?

- How to overcome the consensus divide in a way that aligns with the existing methodologies acceptable to climate financiers, addresses reputational risks, and enables financing for the full scope of grid infrastructure expansion and transformation across all countries, subject to effective decarbonisation and sustainability performance?

- Is the Climate Finance Principles for Green Grids are fully addressing all key matters to form the basis for a harmonised definition for what constitutes a "green grid"? If any element is missing what shall be considered in 2025?

Associated Publications

World Energy Transitions Outlook 2024: 1.5°C Pathway (IRENA, 2024)

Delivering on the UAE Consensus: Tracking progress toward tripling renewable energy capacity and doubling energy efficiency by 2030 (International Renewable Energy Agency, COP28 Presidency, COP29 Presidency, Ministry of Energy of the Republic of Azerbaijan, and Government of Brazil, Abu Dhabi, 2024)

Climate Finance Principles for Green Grids (GGI, 2024)

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