

Plan to Accelerate

Axis: 6. Unleashing Enablers and Accelerators including on Financing, Technology and Capacity Building ▾

Key objective: 27. Artificial Intelligence, Digital Public Infrastructure and digital technologies ▾

Solution: AI for Power Innovation Platform for the Global South (powered by ElectronVibe)

Host initiative: South South Collective for the Climate

Scope:

- Geographic: Global South (South Asia, LatAm, Southeast Asia, Africa)
- Sectoral: Power Grid Transformation - target beneficiaries are Electric Utilities.
- Other aspects: Focus on (a) Open Innovation, enabling utilities achieve their decarbonisation and modernisation goals (via our ElectronVibe program); (b) a repository of vetted solutions (AI + digitalisation); (c) a data layer for developing new AI solutions; (d) a South-South-North knowledge exchange platform - all to accelerate the deployment and development of AI solutions for electric utilities (also including Independent Power Producers/IPPs).

Levers assessment: *(each lever is described in the guidance document)*

- **Risk-informed decision-making:** Medium maturity ▾
 - *Rationale: Utilities are generally risk-averse, and understandably so given they manage critical assets. Our aim is to improve their risk tolerance of new innovative solutions as a pathway to grid transformation.*
- **Technology shifts:** Medium maturity ▾
 - *Rationale: Utilities know how to manage high-technology assets; however, because this infrastructure is long lock-in (thereby, the pace of technological change is slow), there is hesitation in adopting emerging technologies in AI / digitalisation toward better prediction, optimisation, detection, simulation and discovery.*
- **Knowledge & Capacity building:** Low maturity ▾
 - *Rationale: Utilities are organisationally designed for optimising EPC and O&M - not to engage with innovation. Therefore, very few utilities have internal capacity to engage with startups and innovators developing new technological solutions.*
- **Inclusive decision-making governance & design:** Low maturity ▾
 - *Rationale: Grid & operations planning is centralised with limited stakeholder consultation. Open innovation (i.e. bringing external innovation into utility operations) among utilities is very new (the only program in the Global South that does this is our ElectronVibe program, running since 2020).*
- **Standards & Taxonomies:** Low maturity ▾

- *Rationale: Technical standards exist (e.g., IEEE); but there is limited agreement on green-grids taxonomy (recently the GGI introduced one for green grids finance) and no taxonomy for power-sector innovation (some work on this by IEA and IRENA exists, but is not yet widely used by the innovation community; we have developed an extensive power-innovation taxonomy).*
 - **Supply:** Medium maturity ▾
 - *Rationale: Considering the development of new AI/digitalisation solutions as the 'supply' side of the power-sector ecosystem, there are a few hundred AI for power solutions (we have documented a large number of these in India). This is set to grow; however it is hindered by a perception among innovators that it is difficult to work with utilities.*
 - **Demand:** Low maturity ▾
 - *Rationale: Due to risk aversion, and the fact that demand for grid modernisation / decarbonisation is highly driven by policy & regulations, the core business drivers for utility demand for AI solutions are limited.*
 - **Public/private finance:** Low maturity ▾
 - *Rationale: Utilities in developing countries are often State-owned, and thus have limited budgets (and ability to allocate to innovation), along with sub-optimal operations; private-sector utilities have greater budgets, but investments are constrained by regulatory risk and uncertain returns*
 - **Partnerships and collaboration:** Low maturity ▾
 - *Rationale: Utilities in developing countries are often natural (geographical) monopolies, so do not face the same competitive dynamics like other industries; however, this also means the incentives to collaborate are limited. Some multi-stakeholder alliances for knowledge sharing exist (e.g. Utilities for Net Zero Alliance/UNEZA, where we are a Knowledge Partner, and with whose support we will build this out; plus, our own ElectronVibe platform).*
 - **Policy & regulatory:** Low maturity ▾
 - *Rationale: Policy & regulations in developing countries do not recognise or prioritise innovation in the power sector.*
 - **Public opinion:** Low maturity ▾
 - *Rationale: Grid transformation is a technical topic, and the public is rarely if ever engaged with it. However, there is no opposition to it either.*
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Expected impact of this plan on the 2030 targets (if any): **High** -

The AI for Power Innovation Platform for the Global South directly advances the 2030 energy transition goals outlined under the Paris Agreement, the Global Stocktake (GST), and the IRENA 2030 framework, while contributing to multiple Sustainable Development Goals (SDGs) - notably SDG 7 (Affordable and Clean Energy), SDG 9 (Industry, Innovation and Infrastructure), and SDG 13 (Climate Action).

Importantly, this solution was included as a new initiative in the 2025 strategy document of the Utilities for Net Zero Alliance (UNEZA; with its secretariat at IRENA).

By enabling large-scale adoption of AI-driven grid optimization and digitalization, the platform creates measurable impact across three key levers for the 2030 transition:

1. Accelerating renewable integration to triple global capacity

IRENA's Tripling Renewable Power Capacity by 2030 roadmap calls for global renewable generation to rise from ~3,382 GW (2022) to 11,174 GW by 2030, requiring annual additions of ~1,000 GW. The platform directly supports this target by helping utilities in the Global South:

- Deploy AI-based grid forecasting and flexibility tools that enable higher renewable penetration and reduce curtailment;
- Pilot AI-enabled distributed energy management systems (DERMS) and storage optimization to handle variability;
- Build operational confidence to integrate intermittent solar and wind resources at scale.

Together, these interventions help unlock latent renewable capacity by removing digital and operational bottlenecks.

2. Doubling energy efficiency through smart grid operations

IRENA's 2030 framework calls for doubling the annual rate of global energy efficiency improvement (energy intensity reduction). Plus, it aligns with Paris Agreement mitigation goals (Article 4) and GST benchmarks for system-level efficiency. The proposed initiative advances this goal through:

- Predictive maintenance and loss detection AI models that reduce technical and commercial losses;
- AI-assisted load management and demand-side optimization, improving system efficiency and reliability;
- Data-driven asset utilization and scheduling, reducing waste and fuel use.

These interventions collectively improve grid performance and contribute to lower energy intensity in national power systems.

3. Accelerating innovation and local capacity in the Global South:

The platform will mobilize AI startups and innovators to co-develop solutions with utilities, building domestic innovation ecosystems that can sustain low-carbon transitions. This aligns with the GST's call for enhanced technology transfer and innovation partnerships, and supports SDG 17 (Partnerships for the Goals). Plus, it supports IRENA's estimates that achieving the 2030 goals will require ~US \$1.3 trillion per year in renewable investment. This platform catalyzes the above by:

- De-risking early adoption through utility-startup pilot projects;

- Establishing a Digital Public Infrastructure-based AI Solutions Platform that lowers transaction and discovery costs for innovation partners.

By operationalizing the technology and innovation partnerships emphasized in the Global Stocktake, the initiative makes clean power investments more efficient, scalable, and replicable across the Global South.

Expected Quantitative and Systemic Impacts by 2030

- 50+ utilities in 10+ Global South countries actively piloting or adopting AI-based grid optimization tools;
- 20-40 MtCO₂e annual emission reduction potential through operational efficiency and renewable integration;
- 100+ validated AI business cases enabling replication across regional utilities;
- Creation of an open, interoperable AI for Power Innovation Platform accelerating South-South technology diffusion.

In summary

This initiative transforms AI adoption in the power sector from isolated experimentation to systematic implementation. It provides a direct pathway for utilities in emerging markets to contribute meaningfully to:

- IRENA's 2030 goals of tripling renewable capacity and doubling efficiency,
- The Paris Agreement's 1.5 °C-aligned mitigation pathways, and
- The GST's call for innovation-led, equitable transitions.

In doing so, it builds a digital bridge for decarbonisation - ensuring that the Global South's power transition is smart, inclusive, and future-ready.

Output	Action Scope	Action	Type of action	Implementation Lever	Responsible	Time horizon	Stakeholder engagement ¹	Committed Stakeholders
Open Innovation program	Global South / Grids	10+ Utilities define problem statements and co-develop 50+ business cases with startups by 2027	Existing a... ▾	Risk-informed... ▾ Partnerships ... ▾	Climate Collective Foundation	Novemb... ▾	Utilities & Sys... ▾ Companies ▾	Climate Collective Foundation; BRPL; APEPDCL
Open Innovation program	Global South / Grids	15+ Pilots implemented (with minimized risk) and majority lead to large-scale deployment by 2027	Existing a... ▾	Technology sh... ▾ Risk-informed... ▾	Climate Collective Foundation	Novemb... ▾	Utilities & Sys... ▾ Companies ▾	Climate Collective Foundation; BRPL; APEPDCL; GUVNL
AI for Power Solutions Database (AI + digitalisation)	Global South / Grids	Create an landscape report of AI for Power solutions globally	New action ▾	Supply ▾ Risk-informed... ▾	Climate Collective Foundation	June 20... ▾	Utilities & Sys... ▾ Companies ▾	Climate Collective Foundation
AI for Power Solutions Database (AI + digitalisation)	Global South / Grids	Expand our open-access, vetted solutions database for utilities (existing Startup Hub) to include 200+ solutions.	Existing a... ▾	Supply ▾ Risk-informed... ▾	Climate Collective Foundation	June 20... ▾	Utilities & Sys... ▾ Companies ▾	Climate Collective Foundation
AI for Power Solutions Development Data Management portal	Global South / Grids	Build an open-data sandbox for startups to build AI tools using anonymized utility data (modeled on DPI).	New action ▾	Risk-informed... ▾	Climate Collective Foundation	Novemb... ▾	Utilities & Sys... ▾ Companies ▾	Climate Collective Foundation; APEPDCL

¹ Such as countries, companies, investors, cities and local governments, technical institutions, MDBs, regulators & public agencies, utilities & system operators, youth & indigenous groups, multi-stakeholders platform (non-exhaustive)

Output	Action Scope	Action	Type of action	Implementation Lever	Responsible	Time horizon	Stakeholder engagement ¹	Committed Stakeholders
South-South-North AI for Power Knowledge Hub	Global South / Grids	5+ Knowledge Sessions held to demystify AI, share peer learning (e.g., at COP / NYCW / LCAW / WUC / WFES).	Existing a... ▾	Knowledge & ... ▾	Climate Collective Foundation	June 20... ▾	Utilities & Sys... ▾ Regulators & ... ▾	Climate Collective Foundation
South-South-North AI for Power Knowledge Hub	Global South / Grids	2+ AI Startup Showcases held (curated demo days for technology demonstration)	Existing a... ▾	Knowledge & ... ▾	Climate Collective Foundation	June 20... ▾	Companies ▾ Utilities & Sys... ▾	Climate Collective Foundation