Plan to Accelerate Expansion and Resilience of Power Grids

Axis: 1. Transitioning Energy, Industry and Transport
Key objective: 1. Tripling renewables and doubling energy efficiency
Solution: Innovative solutions for power system long-term planning
Host initiative: Global Coordination for Acceleration of Expansion and Resilience of Grids (GGI)
Participating initiatives and institutions: Clean Energy Ministerial (CEM), Gender and Energy Compact, Global Coalition for Energy Planning, Global Energy Alliance for People and Planet (GEAPP), Global Renewables Alliance and Global Wind Energy Council (GRA / GWEC), Green Grids Initiative (GGI), International Energy Agency (IEA), International Smart Grid Action Network (ISGAN), Mission Innovation (Green Powered Future Mission – GPFM), Renewable Energy for Latin America and the Caribbean (RELAC), Utilities for Net Zero Alliance (UNEZA)

Scope: Advancing policies, technologies (e.g. ICT, data platforms, electric components, …), planning solutions and best practices for the deployment of affordable, reliable and secure smart grids.

- Geographic: Global
- Sectoral: Energy system
- Other aspects: Several key technologies and approaches are addressed, including advanced smart grids, digitalization, energy storage, demand-side management, interoperability frameworks, and system resilience measures, all supporting affordable, reliable, and secure integration of renewable energy

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

- **Risk-informed decision-making:** Medium maturity
  - *Rationale: Risk-based planning and operational strategies are increasingly incorporated into system development procedures supported by the exploitation of analytical tools. However, their integration into decision-making frameworks varies across regions, and continuous improvement is needed to strengthen resilience and security assessments.*
  - *Ex-ante/ex-post reviews of grid and flexibility packages are irregular, reducing investor certainty and slowing down approvals.*

- **Technology shifts:** Medium maturity
  - *Rationale: Smart grid controls, decision support systems and other key digital solutions such as data platforms are progressing rapidly and showing proven benefits for system flexibility and efficiency. Yet, differences in technological readiness, interoperability, and cybersecurity practices across markets still hinder the large-scale implementation of such technologies.*
  - *High-TRL solutions exist (grid-forming controls, dynamic ratings, advanced protection, storage as non-wires), yet are not routinely codified as default, tariffed products.*

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- **Knowledge & Capacity building:** High maturity
  - *Rationale: Effective international cooperation is facilitating knowledge exchange thus supporting capacity building on policies, technologies, and regulatory approaches for affordable, reliable and secure smart grids. Continued focus is required to close capacity gaps between different regions.*
  - *Training ecosystems and communities of practice are mature and active across utilities and regulators.*
  - *A key challenge is the conversion of training into measurable outcomes (queue-time reduction, faster permitting, bankable pipelines).*

- **Inclusive decision-making governance & design:** Medium maturity
  - *Rationale: Understanding of the value of participatory and inclusive grid planning is growing. Yet, structured mechanisms to involve consumers, local communities, and industry actors in decision processes are still at an early stage in many regions.*
  - *Cross-institution coordination has improved, but early, structured engagement with communities is inconsistent.*
  - *Permitting calendars and local benefit-sharing are not systematically aligned to project design.*

- **Standards & Taxonomies:** Medium maturity
  - *Rationale: Work on harmonized grids standards and interoperable frameworks has advanced with support from international institutions. Still, further alignment of technical, data, and market standards is needed to ensure secure and consistent integration of new technologies globally.*
  - *Intent to harmonize equipment and data interfaces is clear, but adoption waves with measurable procurement-cycle reductions are limited.*
  - *Divergent definitions for flexibility and storage in market and taxonomies hinder bankability and scale.*

- **Supply:** Medium maturity
  - *Rationale: Lead times for transformers, HV equipment and skilled labor are binding. Manufacturing expansion is gradual and concentrated, requiring diversification for increasing supply chain resilience. Lack of pooled demand signals and standard specifications, suppliers cannot deploy capacity additions at pace.*
  - *The availability of essential smart grid assets such as digital control systems, IoT sensors, and communication infrastructure components has notably increased. However, challenges like supply chain vulnerabilities, cybersecurity threats, and cost constraints continue to limit the pace towards smarter networks.*
- **Demand:** Medium maturity
  - *Rationale: Demand for smarter, more efficient, and secure electricity systems is rising with the expansion of renewables and electrification. However, consumer willingness to participate in flexibility services, data sharing, and active energy management remains limited and requires enhanced awareness and incentives. The development of standardized market products, baselines, telemetry and settlement rules are uneven.*
    Enrollment of flexible load and distributed resources is below potential, while curtailment reductions and other benefits have uneven tracking across geographies.

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- **Public/private finance:** Medium maturity
  - *Rationale: Public support for demonstration projects and research initiatives is becoming increasingly strong. Investment needs and principles are clearer, yet repeatable, capitalized blended vehicles tied to standardized utility revenues remain scarce in many EMDEs.*
  - *Local currency risk, regulatory lag and asset-liability mismatches result in higher cost of capital, particularly for EMDEs.*
  - *Large-scale deployment of smart grid technologies still depends on mobilizing private investment. Financial instruments that de-risk innovation and ensure affordability remain underdeveloped.*
- **Partnerships and collaboration:** High maturity
  - *Rationale: Coalitions among policymakers, operators, industry and finance are strong and have matured during the last few years..*
  - *Collaboration among governments, research institutions, and industry is well established and continues to expand. International partnerships facilitate policy exchange, joint analysis, and coordinated action toward affordable, reliable and secure smart grids.*
  - *Coalitions among policymakers, operators, industry and finance are strong.*
- **Policy & regulatory:** Medium maturity
  - *Rationale: Policies supporting affordable, reliable and secure smart grid are advancing in several countries. Yet, regulatory mechanisms that fully enable secure data exchange, flexible market participation, and consumer protection are still evolving.*
  - *Discussions regarding reforms are advancing on interconnection governance, flexibility remuneration and fast-track corridors, but uneven across jurisdictions.*
- **Public opinion:** Medium maturity
  - *Rationale: Public awareness of the importance of modern, reliable, and affordable electricity networks is growing Still, there is no mainstream narrative that connects corridors, reconductoring and flexibility to reliability and bills.*
  - *Wider understanding of digitalisation, benefits of the expansion of grids, and the role of digital technologies remains limited, requiring sustained outreach and education.*

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Expected impact of this plan on the 2030 targets (if any): High

The implementation of this Plan will have a significant and measurable impact on several 2030 targets by addressing the infrastructure, financing, and interoperability barriers that currently limit the deployment of renewable energy and storage, including to the strengthening and acceleration of ongoing actions and through the deployment of new individual and collaborative solutions

The plan's activities aim to strengthen the resilience, flexibility, and efficiency of electricity networks globally, by promoting smart grid deployment, digitalised demand response, integration of distributed energy resources, enhanced system planning, and advanced grid management practices. The plan supports the acceleration of renewable energy integration while ensuring affordable, reliable, and secure energy supply.

Through the modernisation and digitalisation of power grids, the Plan will strengthen the flexibility, resilience, and reliability of power systems and enable the connection of new renewable capacity now stranded in interconnection queues. By 2030 it will contribute directly to the achievement of the global objective of tripling renewables and doubling the rates of improvements of energy efficiency established in the First Global Stocktake and the COP29 Pledge on Storage and Grids, supporting delivery of about **1,500 GW of storage** and a doubling of annual grid investment towards **USD 1 trillion per year by 2035**, providing the backbone for reliable clean-energy supply.

Early implementation, including the proposed delivery mechanisms, will reduce financing risk, shorten procurement cycles, and demonstrate replicable models for small and island systems. The Plan will accelerate standardisation and interoperability of grid equipment and data systems, lowering lead times and costs across markets, while promoting advanced digital solutions, non-wire alternatives, and demand-side flexibility that enhance operational efficiency and system adequacy.

Strengthened regulatory frameworks and coordinated planning among governments, utilities, financiers, and industry will de-risk investment, improve cost recovery for flexibility and storage, and generate stable revenue pathways for transmission and distribution expansion. The Plan also reinforces institutional and technical capacities through tracking, training and knowledge exchange, ensuring that utilities and regulators can plan, procure, and operate the next generation of smart grids.

Key expected impacts include:

- **Enhanced International collaboration and knowledge exchange:** Establishing a Global Coordinating Council, enhancing tracking, fostering partnerships between countries, research institutions, and industry stakeholders to harmonize standards, share best practices, and scale up deployment of smarter, cleaner, and more resilient networks.

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- **Grid modernization and flexibility:** Enhancing network planning, deployment of advanced monitoring, control, and digital systems, and promoting AI-enabled solutions that improve operational efficiency, reliability, and resilience.

- **System integration of distributed resources:** Facilitating seamless incorporation of diverse energy assets, storage solutions, and consumer participation mechanisms to strengthen grid security and support sustainable system performance through affordable, reliable, and secure smart grids.

- **Finance mobilization and de-risking:** Establishing regional facilities, guarantee instruments, and standardized contracts that can unlock **new investments** and reduce cost of capital for grid and storage projects in emerging markets.

- **Policy and regulatory support:** Aligning rules, market design, and permitting procedures to accelerate investments in smart-grid technologies, storage systems, and innovative flexibility products, ensuring transparent, time-bound interconnection processes.

- **Knowledge and capacity building:** Strengthening technical expertise, policy frameworks, and operational skills for system operators, regulators, and stakeholders to manage flexible and clean electricity networks.

By 2030, these efforts will contribute directly to **SDG 7 (Affordable and Clean Energy), including** increased reliability, resilience, and fostering universal access to energy for all. It indirectly contributes as well to delivering **SDG 9 (Industry, Innovation and Infrastructure)**, **SDG 13 (Climate Action)**, and **SDG 17 (Partnerships for the Goals)**, by catalysing large-scale investment, regional cooperation, and innovation across power-system value chains.

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Output	Action Scope	Action	Type of action	Implementation Lever	Responsible	Time horizon	Stakeholder engagement[1]	Committed Stakeholders
Overarching								
[Green Grids Initiative] Secretariat to support Grids expansion and resilience coordinating council (proposed)	Global	Coordinate the grids ecosystem to deliver on COP30 Plans to Accelerate, Promote Grids and match make TA offerings	Strategic communication and convening	Partnerships and collaboration; Public opinion	GGI Secretariat	Q1 2025 – Q4 2028	Governments; international organisations; finance institutions	UK Government; partner organisations, NREL Foundation
[International Energy Agency] Countries agree to a target of USD 1 trillion in annual **grid investment** by 2035 (2.5 fold increase from 2024)	Global Expansion and resilience of power grids	Potential commitment to 2035 grid investment benchmark.	New	Public and private finance	Countries	2026	Multi-stakeholder Countries Investors	
[IEA] 1 100 GW of **energy storage capacity** is reached globally by 2028, consistent with the COP29 pledge of 1 500 GW by 2030.	Global Expansion and Resilience of Power Grids	Advance implementation of key policy actions set out in COP29 pledge (further detail in IEA World Energy Outlook *Batteries and Secure Energy Transitions* 2024 publication)	Existing	Multiple	Countries	2028	Multi-stakeholder	
[IEA] Countries agree to a **target of reaching 3000 GW of energy storage capacity by 2035**, including	Global Expansion and resilience of power grids	Potential commitment to 2035 storage benchmark.	New	Partnerships and collaboration	Countries	2026	Countries	

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

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batteries and other storage technologies								
[UNEZA] Increase energy storage, enhance grids, green energy zone and corridors	Global grids & storage	Identify and advocate recommendations to relieve challenges and bottlenecks hindering the sustainable build out of a resilient future energy system and implement initiatives Prepare and publish report Delivering large -scale grid infrastructure projects Prepare and publish report Global progress on Energy Storage and Grids Pledge Develop and demonstrate effectiveness of storage / long duration storage as non-wire solutions to relieve congestion / constraints. Identify countries where	New action	Technologies	UNEZA	2025-2026	Multi-stakeholders	Members and ecosystem partners of UNEZA

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		this can be remunerated and prepare report showcasing effectiveness for other jurisdictions.						
International and regional partnerships and Collaboration								
[International Energy Agency]	Global Expansion and resilience of power grids	Track evolution in global energy storage capacity	Existing	Partnerships and collaboration	IEA	Ongoing	Countries	
[International Energy Agency] Enhanced **indicators to track** grid investment	Global Expansion and resilience of power grids	Advance international discussion on potential indicators to track grid investment	Existing	Partnerships and collaboration Policy and regulatory frameworks	IEA	2028	Multi-stakeholder Countries	
[IRENA] Foster Cross-Border Cooperation for Enhanced Regional Grid Resilience and Market Integration.	Global grids & storage	Convene regional dialogues and deliver targeted capacity-building workshops to support the development and updating of power pool masterplans and enhance regional market integration.	Existing	Partnerships and collaboration; Policy and regulatory frameworks	IRENA	2026-2027	Regional power pools, intergovernmental organizations (e.g., ASEAN, AU), national governments, and MDBs.	CAPP, EAPP
[IRENA] Unlock Grid Flexibility from Electric Vehicle Smart Charging.	Global grids & storage	Facilitate international dialogues to advance interoperability standards and	Existing	Standards and taxonomies; Policy and regulatory frameworks; Demand	IRENA	2026-2027	Automotive manufacturers, charging point operators, DSOs,	G7 Members

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		regulatory frameworks for EV smart charging (V1G) and bidirectional charging (V2G), enabling EVs to participate in grid services and flexibility markets.					regulators (e.g., ENTSO-E), and standards bodies.	
[IRENA] Promote Regulatory Frameworks and Market Designs that Value Flexibility.	Global grids & storage	Convene a series of regional regulatory roundtables to facilitate the reform of electricity market designs, focusing on increasing time granularity, introducing new ancillary services, and enabling the participation of demand-side resources.	Existing	Policy and regulatory frameworks; Partnerships and collaboration	IRENA	2026-2027	Energy regulators, system operators, consumer groups, and large energy users.	European Union (ACER)
[GRA/GWEC] Global advocacy and political alignment	Global	Develop and implement a global advocacy and communications strategy on grids, retaining a global communications agency and establishing relationships with Tier-1 media	Strategic communications and diplomacy	Public opinion; Partnerships and collaboration	GRA	Jan 2026 – Aug 2027	COP, G7, G20, UNGA, CEM, IRENA, IEA; Tier-1 media	GRA members; communications agency; partner NGOs and CSOs
[GRA/GWEC] Global policy integration	Global	Build partnerships with COP31 and COP32	Policy influence and coordination	Policy and regulatory; Partnerships and	GRA	Aug 2026 – Apr 2028	COP Presidencies; national	COP Presidencies; supportive

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		Presidencies to ensure ambitious grids language and outcomes in key fora (CEM, UNGA, G7, G20, COP)		collaboration			governments; international institutions	governments
[GRA/GWEC] Regional coordination and visibility	Regional	Map high-impact grid projects and stakeholders; engage ACE, UNIDO, SEforALL, WB, IMF; sign MoU with ACE; publish regional grid position papers and roadmaps	Research and advocacy	Partnerships and collaboration; Knowledge and capacity building	GWEC and GRA	Feb 2026 – Feb 2027	ACE, UNIDO, SEforALL, regional MDBs	ACE; consultants; regional associations
[International Energy Agency]	Regional Expansion and resilience of power grids	Articulate priority policy pillars for grid action by region to support country policy action	New	Partnerships and collaboration Policy and regulatory frameworks	IEA	2028		Multi-stakeholder Countries
[CEM] Facilitate dialogue amongst Policy Makers and Energy Regulators	Global	Convening policy makers and regulatory agencies to align policy goals with regulatory action for the clean energy transition (Regulatory Forum)	Existing	Policy and Regulation	CEM Empowering Regulators Campaign	ongoing	Policy Makers and Regulatory Agencies	

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Boost Responsible renewable deployment	Global	Joint CEM and WEF work, with the publication of a Report showcasing real-world use cases of responsible renewable deployment, balancing biodiversity, social inclusion, and system resilience	Existing	Inclusive decision-making governance & design Policy & regulatory, Public Opinion, Knowledge & Capacity building	CEM and WEF	ongoing		Several CEM members have shared case studies
[MI GPFM] GPFM Annual Conference: MI Green Power Innovation Conference	Annual forum which aims to create bridges between policy makers, researchers and investors to accelerate the development and demonstration of innovative green power solutions.	The 1st and 2nd MI Green Power Innovation Conference have been successfully held in Yancheng, Jiangsu, China in 2023 and 2024. The 2025 Conference is planned on 29-31 October 2025, in Yancheng.	Existing	Knowledge	GPFM co-leads	November	Multi-strakeholder	GPFM members, including MI countries, international organizations, and key actors from the private sector
[Green Grids Initiative] Asia-Pacific Regional Dialogue	Regional	Co-host ASEAN and APAC dialogues with ESCAP, ADB, Agora, and NUS;	Regional coordination and analysis	Technology shifts; Partnerships and collaboration	GGI Asia-Pacific Working Group	Q2–Q4 2025	ESCAP; ADB; Agora; NUS; ASEAN stakeholders	ESCAP, ADB; ASEAN Centre for Energy; private sector partners
[GRA/GWEC] National reform – Philippines	National	Establish national Working Group and grid engagement strategy involving government, utilities, industry, and civil	Stakeholder coordination	Inclusive decision-making governance and design; Knowledge and capacity building	GWEC	Jan – May 2026	Government agencies; NGCP; Transco; utilities; industry; CSOs	National associations; local partners

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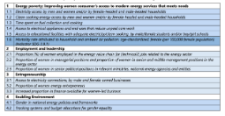
		society						
[Gender Energy Compact] Expanded and diversified coalition membership actively engaged in advancing gender equality across the energy sector, leveraging multi-sector partnerships to scale impact and foster innovation. ***Cross cutting across all activation groups under Axis 1 and Group18***	Global	Facilitating collaboration among governments, private sector, civil society, and international organizations to coordinate efforts; includes outreach and network expansion.	Existing Action	Partnerships and collaboration	Gender and Energy Compact	November 2028	Multi-stakeholder	UNIDO, ENERGIA, SEforAll, GWNET
[Gender Energy Compact] Robust gender-responsive policies established through collection and analysis of sex-disaggregated data to inform energy transition strategies and strengthen accountability mechanisms. ***Cross cutting across all activation groups under Axis 1 and Group18***	Global	Establish gender idnicators to gather, analyze, and disseminate sex-disaggregated data; supporting accountability via progress reports and evidence-based recommendations. **Sample indicators:**  Reference: Policy Brief on Addressing	Existing Action	Inclusive decision-making governance & design	Gender and Energy Compact	November 2028	Multi-stakeholder	UNIDO, ENERGIA, SEforAll, GWNET

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		Energy's Interlinkages With Other SDGs https://sdgs.un.org/sites/default/files/2022-06/Policy%20Briefs%20-2022%20Energy%27s%20Interlinkages%20With%20Other%20SDGs.pdf						
Knowledge and capacity building								
[Green Grids Initiative] Electricity Transition Playbook (ETP) implementation and country trainings	Global/Regional	Conduct ETP training and country implementation support in Africa, Central Asia, Lat Am and MENA; develop open-source tools for decarbonisation strategies	Training, capacity buildings and knowledge transfer	Knowledge & Capacity building; Risk-informed decision-making	GGI and CCG ETP Programme	Q3 2025 – Q4 2026	IADB, RELAC Initiative, FCDO; MENA and CA governments; local utilities	National governments; regional partners
[MI GPFM] Knowledge sharing activities	Technical webinars dedicated to the national pilot projects -Dedicated pillar workshops and -Development of technical factsheets aimed to share knowledge, progress, and lessons learned in order to accelerate	Technical webinars have started in July 2024, occurring monthly, and featuring presentations from project leads of GPFM national pilot projects on relevant activities fully aligned with	Existing Action	Knowledge	GPFM co-leads		Multi-stakeholder	GPFM members, including MI countries, international organizations, and key actors from the private sector

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	innovation and prevent duplication of effort.	GPFM scope and priorities. The technical Factsheets provide in-depth case studies and related recommendations on the identified GPFM Innovation Priorities. Moreover, as part of the collaboration activities among MI Missions, GPFM and Clean Hydrogen Mission (CHM) have developed a joint factsheet on “Clean Hydrogen for a Green Powered Future” with contributions from members of both Missions’ coalition						
[MI GPFM] Knowledge sharing by Continental Task Force monitoring pilots and demos	GPFM launched the Continental Task Forces which aim to share progress and insights from national pilots and enhance collaboration among coalition members. By monitoring Activitiesthroug surveys, meetings,	Periodic Continental Task Force meetings and several preparatory meetings with Task Forces co-leads are planned throughout 2025, to elaborate main outcomes and identify	Existing	Knowledge	GPFM co-leads, Task Force leads	June	Multi stakeholders	PFM members, including MI countries, international organizations, and key actors from the private sector

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	and ongoing engagement, this activity aims to identify key exploitable results and best practices for further analysis and replication. This approach enables the demonstration of different innovative technical, regulatory and marketsolutions to be implemented and validated in different climates and geographies	main synergies and complementarities. The updated version of the National Pilots Report will be released in Q2 2026.						
[IRENA] Establish De-risked and Streamlined Regulatory Environments for Grid Investment.	Global grids & storage	Develop and disseminate targeted policy packages and best-practice guides on modern grid codes and fast-track permitting processes for grid infrastructure.	Existing	Policy and regulatory frameworks; Risk-informed decision-making	IRENA	2026-2027	National and regional energy regulators, policymakers, grid operators (TSOs/DSOs), public utility commissions.	IRENA Members, NDC Partnership
[IRENA] **Increase Market Transparency and Confidence in Advanced Grid Technologies.**	Global grids & storage	Conduct and publish detailed cost analyses that go beyond LCOE, assessing grid integration costs, system flexibility requirements, and the economics of BESS and other enabling technologies.	Existing	Technology shifts; Public and private finance; Risk-informed decision-making	IRENA	2026-2027	Technology developers, investors, utilities, research institutions, and industry associations.	IRENA Members
[IRENA] **Build Human and Institutional Capacity for the**	Global grids & storage	Leverage existing platforms like the Energy Transition	Existing	Knowledge and capacity building	IRENA	2026-2027	Universities, vocational training centers, utilities, labor	ETEN participants, Youth Council

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Grid-Ready Workforce of the Future.		Education Network (ETEN) and the IRENA Youth Council to map skill gaps and foster knowledge exchange on operating modern, digitalized grids.					unions, and ministries of education and labor.	members
[IRENA] **Enhance Grid Resilience and Energy Access through Distributed Energy Resources.**	Global grids & storage	Convene global dialogues (e.g., IOREC) and provide technical guidance on the integration of mini-grids and rooftop solar to support grid stability and expand energy access in urban and remote communities.	Existing	Technology shifts; Policy and regulatory frameworks; Inclusive decision-making	IRENA	2026-2027	Rural electrification agencies, municipal governments, community organizations, and private mini-grid developers.	IRENA Members, SADC
[IRENA] **Prepare Power Grids for the Decarbonization of Hard-to-Abate Industries.**	Global grids & storage	Through the Alliance for Industry Decarbonization, analyze and promote policy frameworks for industrial electrification, assessing the required grid infrastructure investments and operational strategies.	Existing	Demand; Technology shifts; Partnerships and collaboration	IRENA	2026-2027	Heavy industry sectors (steel, cement, chemicals), industry associations, ministries of industry, and labor unions.	Alliance for Industry Decarbonization partners
[IRENA] **Anchor Grid Development in Just Transition and Socio-Economic Benefit Frameworks.**	Global grids & storage	Conduct and disseminate analysis on job creation, local value chains, and skills development associated with grid expansion, as detailed in reports like	Existing	Knowledge and capacity building; Inclusive decision-making	IRENA	2026-2027	Ministries of labor and finance, local communities, labor unions, and civil society organizations.	IRENA Members

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		"A just energy transition for communities."						
[IRENA] **Accelerate Adoption of Digitalization and AI for Grid Management.**	Global grids & storage	Convene the biennial IRENA Innovation Week and targeted Innovation Days to share best practices and showcase innovative solutions using AI, IoT, and Digital Twins to enhance grid efficiency and resilience.	Existing	Technology shifts; Knowledge and capacity building	IRENA	2026-2027	Technology companies, startups, utilities, regulators, and academic institutions.	Innovation Week Partners
[IRENA] **Strengthen Grid Flexibility in Africa through Targeted Technical Assistance.**	Global grids & storage	As part of the APRA framework, deliver targeted capacity-building training using the IRENA FlexTool to help countries (e.g., Ethiopia, Zimbabwe) design strategies for integrating high shares of solar and wind energy.	Existing	Knowledge and capacity building; Technology shifts	IRENA	2026-2027	APRA member countries, national utilities, energy regulators.	APRA Partners
[IRENA] **Enhance Climate Resilience of Energy Infrastructure.**	Global grids & storage	Develop and disseminate guidance on integrating robust Quality Infrastructure (QI) measures (standards, testing, certification) into grid project lifecycles to mitigate risks from extreme weather events.	Existing	Standards and taxonomies; Risk-informed decision-making	IRENA	2026-2027	Standards bodies, project developers, insurance providers, policymakers.	WMO, ECMWF

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[IRENA] **Translate Regional Outlooks into National and Cross-Border Action Plans.**	Global grids & storage	Facilitate a series of regional capacity-building workshops and policy dialogues based on the findings of published RETOs to support the translation of key recommendations (e.g., on infrastructure expansion, market integration) into national policies and regional cooperation agreements.	New action	Knowledge and capacity building; Partnerships and collaboration; Policy and regulatory frameworks	IRENA	2026-2027	National policymakers, regulators, grid operators, and regional economic communities.	IRENA Members in target regions
[IRENA] **Accelerate the Adoption of AI-Enhanced VRE Forecasting.**	Global grids & storage	Develop and disseminate a best-practice toolkit on implementing AI/ML algorithms for wind and solar forecasting to reduce curtailment, optimize reserve dispatch, and lower ancillary service costs.	New action	Technology shifts; Knowledge and capacity building	IRENA	2026-2027	Grid operators, meteorological services, renewable energy developers, and technology providers.	G7 Members, Energinet
[IRENA] **Enhance Grid Resilience through Automated Restoration Systems.**	Global grids & storage	Facilitate the development of a policy and technical guide on deploying Automated Fault Location, Isolation, and Service Restoration (FLISR) systems, showcasing international case	Existing	Technology shifts; Policy and regulatory frameworks	IRENA	2026-2027	Distribution System Operators (DSOs), utility regulators, technology vendors, and consumer associations.	G-PST Consortium

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		studies on reducing outage duration and improving reliability indices (SAIDI/SAIFI).						
[IRENA] **Establish Foundational Frameworks for Grid Data Interoperability.**	Global grids & storage	Convene a multi-stakeholder expert group, leveraging platforms like the Collaborative Frameworks, to develop a reference architecture and best-practice principles for secure, interoperable data exchange platforms ("DataHubs") for the power sector.	New action	Partnerships and collaboration; Standards and taxonomies	IRENA	2026-2027	TSOs/DSOs, regulators, government data agencies, and digital technology platforms (e.g., Energy Web).	European Commission (DG ENER)
[IRENA] **Strengthen Cyber Resilience in Digitalized Power Systems.**	Global grids & storage	Facilitate a knowledge-sharing program for utilities, particularly in EMDEs via partnerships like APUA, on best practices for cyber security risk management, incident response, and "security-by-design" principles for digital grid projects.	New action	Risk-informed decision-making; Partnerships and collaboration; Knowledge and capacity building	IRENA	2026-2027	National cybersecurity agencies, power utility associations, industry-led alliances, and international security experts.	APUA
[IRENA] **Mainstream Power System Flexibility into National Energy Planning and**	Global grids & storage	Publish a global assessment of flexibility needs across daily, weekly, and seasonal	New action	Public opinion and political will; Policy and regulatory frameworks	IRENA	2026-2027	National ministries of energy and climate, regulators, international	IRENA Members, G20

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NDCs.		timescales under the 1.5°C Scenario, and convene a dedicated ministerial dialogue to elevate flexibility as a key priority alongside renewable capacity targets.					organizations, and the G20/G7 Presidencies.	
[IRENA] **Accelerate Investment in Short-Duration Flexibility Solutions.**	Global grids & storage	Launch a knowledge-sharing initiative focused on de-risking and scaling up investment in battery energy storage by disseminating best practices on market participation rules, ancillary service procurement, and hybrid project configurations.	New action	Public and private finance; Technology shifts	IRENA	2026-2027	Project developers, MDBs, private investors, utilities, and technology providers.	CIP & ETAF Partners
[IRENA] **Empower Energy Communities as Providers of Local Grid Services and Resilience.**	Global grids & storage	Develop innovative business models and regulatory frameworks that allow energy communities to participate in local flexibility markets, enabling bi-directional power flow and peer-to-peer trading to enhance local grid stability.	Existing	Inclusive decision-making; Policy and regulatory frameworks; Technology shifts	IRENA	2026-2027	Community energy groups, DSOs, local governments, and civil society organizations.	World Wind Energy Association (WWEA), IRENA Coalition for Action

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Output	Action Scope	Action	Type of action	Implementation Lever	Responsible	Time horizon	Stakeholder engagement[1]	Committed Stakeholders
[ISGAN] Organization of series of public webinars	Aimed to share knowledge, progress, and lessons learned	Webinars are under way, very well-established communication channel of ISGAN	Existing a…	Knowledge & …	WGs Members	[]	Technical insti…	ISGAN members and key partners
[ISGAN] Lighthouse Project Outcomes	Case Book on Long term planning of smart distribution grids. Knowledge hub including the publications of ISGAN on long term planning of smart distribution grids.	Phase 2: pilot started	Existing a…	Knowledge & …	Communication Working Group	[]	Multi-stakehol…	ISGAN members and key stakeholders
[ISGAN] Publications and releasing of tools developed by ISGAN Working Group 3 (WG3) Cost-Benefit Analysis & Toolkits	Delivering analytical frameworks for evaluating smart grid impacts, with tasks on AC/DC systems, hosting capacity, hydrogen integration, and collaborative KPIs for decision support.	Continuous enhancement of functionalities of the well-established toolkit	Existing a…	Risk-informed…	WG3 Managers	[]	Multi-stakehol…	WG3 members
[ISGAN] Publications and releasing of tools developed by ISGAN Working Group 5 (WG5) Smart Grid International Research Facility Network - SIRFN	Driving international collaboration through shared data spaces, testing grid-forming inverters, and advancing testing automation via openSVP enhancements	Work in progress; reports and / or policy briefs will be published	Existing a…	Technology sh…	WG5 Managers	[]	Multi-stakehol…	WG5 members
[ISGAN] Publications and releasing of tools developed by ISGAN Working Group 6 (WG6) Transmission & Distribution Systems	Addressing hydrogen's impact on grids, the role of grid-forming units, and fostering insights through discussion papers and pilot projects on active system management	Work in progress; reports and / or policy briefs will be published	Existing a…	Technology sh…	WG6 Managers	[]	Multi-stakehol…	WG6 members

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[ISGAN] Publications and releasing of tools developed by ISGAN Working Group 7 (WG7) Power System Transitions	Exploring pathways for modernizing energy systems, including regulatory experimentation, governance processes, institutional readiness, and equitable energy service frameworks	Work in progress; reports and / or policy briefs will be published	Existing a…	Policy & regul…	WG7 Manager	[]	Multi-stakehol…	WG7 members
[ISGAN] Publications and releasing of tools developed by ISGAN Working Group 9 (WG9) Flexibility Markets	Developing innovative market mechanisms and strategies for flexibility, operational planning, and consumer engagement through price signals and spatial/temporal analyses.	Work in progress; reports and / or policy briefs will be published	Existing a…	Supply	WG9 Managers	[]	Multi-stakehol…	WG9 members
[ISGAN]ISGAN Awards of Excellence	The “Awards of Excellence” to recognise exemplary smart grid projects, policies, and programmes across the globe. The Awards aim to foster international collaboration by promoting the exchange of best practices and encouraging the replication or adaptation of proven solutions in different markets and regions.	At CEM16/MI-10 Ministerial in August 2025 ISGAN organized the 11th edition of the ISGAN Awards, with further editions already planned for the coming years.	Existing a…	Knowledge & …	ISGAN Presidium/ Co-Secretariat	[]	Multi-stakehol…	ISGAN members and key partners
[ISGAN] Communication Working Group (CWG) activities	Creating and curating knowledge that relates and reinforces the vital role of ISGAN activities and smart grids in the energy transition; maximizing the impact of ISGAN’s various activities by engaging with diverse stakeholders, internally and	Continuous effort	Existing a…	Knowledge & …	CWG Managers	[]	Multi-stakehol…	CWG members

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Output	Action Scope	Action	Type of action	Implementation Lever	Responsible	Time horizon	Stakeholder engagement[1]	Committed Stakeholders
	externally; maintaining current members and increasing the audience for ISGAN activities							
[ISGAN] Hold Workshops and Side-Events at CEM-Ministerials	ISGAN strongly contributes to knowledge sharing opportunities at CEM meetings partnering with other Smart-Grid related partners (GPFM, 21CPP, …)	Continuous effort	Existing a…	Knowledge & …	ISGAN Presidium	[]	Countries	ISGAN members and key partners
[GRA/GWEC] Regional capacity and peer learning	Regional	Deliver capacity-building activities under GWEC's Global Associations Platform (GAP), including workshops, case studies, and study tours	Capacity building	Knowledge and capacity building; Inclusive decision-making governance and design	GWEC	Mar 2028	National RE associations; grid companies; policymakers	GAP members; regional partners
[MI GPFM] GPFM Young Talent Exchange Program	Foster enhanced research and scientific cooperation among GPFM coalition members, promoting research, training and skill development of promising young professionals and students. By supporting at least five young scholars annually for around two months on-site	The GPFM Young Talent Exchange has been launched at the CEM16/MI-10 Ministerial. The first exchange, starting in early 2026, will involve Italy and China, and will foster enhanced research cooperation among young scholars on topics	Existing	Knowledge	cPFM co-Leads and in particular Italy and China for the first exchange	Novembet	Tecnichal institutions	GPFM co-leads from China and Ital

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Output	Action Scope	Action	Type of action	Implementation Lever	Responsible	Time horizon	Stakeholder engagement[1]	Committed Stakeholders
	academic visits, this program will facilitate the exchange of knowledge, methodologies, and expertise with the aim of advancing scientific cooperation around GPFM innovation priorities	such as floating PV technology and other innovative clean energy solutions in line with GPFM innovation priorities.						
Enhanced skills and knowledge among stakeholders, fostering a collaborative environment through continuous learning on RELAC-related topics.	RELAC Member Countries	Capacity building, study tours, technical visits and knowledge sharing products.	Existing action	Knowledge and capacity building	RELAC's Technical Secretariat	2030	Multistakeholder	RELAC's Technical Secretariat + member countries + Partner Agencies
Enhanced skills and knowledge among stakeholders, fostering a collaborative environment through continuous learning on RELAC-related topics.	RELAC Member Countries	RELAC Public Events and knowledge dissemination.	Existing action	Partnerships and collaboration	RELAC's Technical Secretariat	2030	Multistakeholder	RELAC's Technical Secretariat + member countries + Partner Agencies
[MI GPFM] Collaboration with MI Missions: Urban Transitions Mission (UTM) Joint GPFM – UTM pilots to showcase 100% RES communities and cities and strategic	Share knowledge and accelerate the decarbonisation of the urban environment. This joint initiative supports	Kisumu's ambitious Roadmap towards achieving 100% renewable energy by 2050, aligning with global climate goals and the principles of just, inclusive, and	Existing	Partnerships	GPFM and UTM co-leads	November	Multi-stakeholders	Share knowledge and accelerate the decarbonisation of the urban environment. This joint initiative supports

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collaboration aimed at accelerating sustainable urban development.		resilient transitions. This partnership marks a significant milestone in advancing the vision of decarbonized, inclusive cities in EMDEs and Global South, and underscores the power of joint collaboration between GPFM and UTM in mobilizing finance, expertise, and innovation to support cities like Kisumu, Kenya on their path toward a sustainable, renewable energy future.						
Deployment of smart grid technologies and related policies and regulations	global	Series of ISGAN Award of Excellence, that recognize outstanding smart grid projects on varies thematic areas.	Existing	Knowledge & Capacity building	CEM ISGAN	ongoing		All ISGAN members
[Gender Energy Compact] Enhanced capacity and leadership	Global	Conduct capacity building, mentoring and training	Existing Action	Knowledge & Capacity building	Gender and Energy Compact	November 2028	Multi-stakeholder	UNIDO, ENERGIA, SEforAll,

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Output	Action Scope	Action	Type of action	Implementation Lever	Responsible	Time horizon	Stakeholder engagement[1]	Committed Stakeholders
of women energy and climate entrepreneurs and workforce through targeted, high-impact capacity building, mentorship, and skills development programs. ***Cross cutting across all activation groups under Axis 1 and Group18***		programmes for women in the energy/ climate workforce and women energy/ climate entrepreneurs.						GWNET
Power System resilience and Renewable integration	Global	A series of white paper and publications highlighting storage's role in integrating renewables, improving grid reliability and resilience, reducing costs, strengthening energy independence, and lowering emissions	Existing	Knowledge & Capacity building	CEM Supercharging Battery Storage Initiative	ongoing		Australia, European Commission, Canada, US,
Deployment of smart grid technologies and related policies and regulations	Global	Smart Distribution Networks provide a critical pathway to achieving these goals, and the ISGAN Lighthouse Project Knowledge Hub offers a platform for sharing international experiences to de-risk country-level action	Existing	Knowledge & Capacity building	CEM ISGAN	ongoing		All ISGAN Members

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Advance Digital and AI solutions	Global grids & storage	Collaborate with starts-ups through Open innovation program leveraging digital and AI to optimise grid operations	Existing	Digital	UNEZA	2025-2026	Multi-stakeholders	Members and ecosystem partners of UNEZA
[Gender Energy Compact] Integration of gender-responsive approaches by project developers and policymakers. ***Cross cutting across all activation groups under Axis 1 and Group18***	Global	Providing tools and guidelines to embed gender into energy & climate projects and policies, including capacity building for gender audits and gender-responsive project design.	Existing Action	Knowledge & Capacity building	Gender and Energy Compact	November 2028	Multi-stakeholder	UNIDO, ENERGIA, SEforAll, GWNET
[Gender Energy Compact] Inclusion of women in off-grid energy workforce Increased gender diversity in grid infrastructure jobs ***Specific to PAS on Universal access to electricity and PAS on Expansion and***	Global	Provide training and job placement support for women in mini-grid and off-grid services. Pomote inclusive hiring practices and offer technical training to women engineers	Existing Action	**Knowledge & Capacity building**	Gender and Energy Compact	November 2028	Multi-stakeholder	UNIDO, ENERGIA, SEforAll, GWNET

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resilience of grids and Group18								
Finance and de-risking								
[Green Grids Initiative] Climate Finance Principles (CFPs) backed and implemented	Global	Secure backing of Climate Finance Principles (CFPs) for grid investment; with MDBs and financial institutions	Research, coordination, and policy dialogue	Public/private finance; Standards & Taxonomies	GGI Finance Working Group	Q1–Q4 2026	UNEZA, IRENA, IADB, HSBC, Barclays, ADB, WB, Climate funds	MDBs; financial institutions; national development banks
Invest 67 bln USD/year in grids	Global grids & storage	Further enhance the joint target Reach FID	New action	Public and private finance	UNEZA members	2023-2030	Companies	Members of UNEZA
Invest 3 bln USD/year in energy storage	Global grids & storage	Further enhance the joint target Reach FID	New action	Public and private finance	UNEZA members	2023-2030	Companies	Members of UNEZA
Mobilize capital for grids	Global grids & storage	Collaborate with MDBs, IFIs, and private banks on lending criteria for grids Back up Climate Finance principles to unlock funding for grids	Existing	Public and private finance	UNEZA, GGI	2025-2026	Multi-stakeholders	Members and ecosystem partners of UNEZA, GGI

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Output	Action Scope	Action	Type of action	Implementation Lever	Responsible	Time horizon	Stakeholder engagement[1]	Committed Stakeholders
Unlock stranded GWs	Global grids & storage	Delivery Mechanism to conduct consultations among power utilities, policy makers and regulators to unlock stranded GWs of RE generation in 'queue' for grid connection	New action	Policy & regulations Public/private	UNEZA	2025-2028	Countries Multi-stakeholders	UNEZA, RETA, IRENA
Investment Facility	Global grids & storage	Delivery Mechanism to conduct consultations on Investment Trust Fund for grids or similar facility	New action	Public and private finance	UNEZA	2026-2028	Multi-stakeholders	UNEZA, MDBs, IFIs, private investors
[GEAPP] At least 4 countries initiate the collaboration process to co-develop pooled procurement scheme for RE & BESS	Global Grids & Storage	Engaging with highest-potential and highest-interest countries in the Caribbean and Central America	Existing	Deman Partnerships and Collaboration Policy & Regulatory	Caribbean RE & Storage Regional Procurement Aggregation Project	2026	Countries	RELP, GEAPP, CCREEE
[GEAPP] At least 300MW RE+ BESS contracted in first of a kind regional aggregated procurement scheme	Global Grids & Storage	Launching first aggregated RE+ BESS procurement project aggregating at least 4 Caribbean countries	New	Deman Public/Private Finance Partnerships and Collaboration Policy & Regulatory	Caribbean RE & Storage Regional Procurement Aggregation Project	2030	Multi-stakeholder	RELP, GEAPP, CCREEE, CDB, IDB
[GEAPP]	Global Grids & Storage	Developing regional	New	Public/Private	RELP		Multi-stakeholder,	RELP, CDB,

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Output	Action Scope	Action	Type of action	Implementation Lever	Responsible	Time horizon	Stakeholder engagement[1]	Committed Stakeholders
[USD 300 M] guarantee fund launched for RE & BESS procurement in Caribbean countries.		guarantee fund for RE+BESS in the Caribbean		Finance Partnerships and Collaboration			with focus on MFIs and private financers	IDB
Portfolio of projects aimed at the integration of flexibility technologies into LAC´s power grid infrastructure.	RELAC Member Countries	Develop business models or finance and funding strategies aiming to enhance the flexibility of power grids in 5 RELAC countries.	New action	Public and private finance	RELAC's Technical Secretariat	2028	Multistakeholder	RELAC's Technical Secretariat + member countries + Partner Agencies
[MI GPFM] GPFM Funding Calls	CETP Funding covering new IPs brought forward	Based on the success of the joint GPFM-CETPartnership call module 2023 and 2024, to launch in June 2025 a new call module aiming to increase opportunities for international cooperation and boost the GPFM Flagship Project 2 implementation.	Existing	Public/Private	GPFM co-leads	November	Multi- Stakrholder	GPFM and Clean Energy Transition Partnership (national and regional Research, Development, and Innovation programme owners and managers from over 30 countries)
Technical / financial foundations and regulatory frameworks for new technologies and solutions enhancing grid flexibility and other RELAC-related topics.	RELAC Member Countries	Develop feasibility studies and assessments evaluating the integration of technologies to provide flexibility to the power grids in at least 5 RELAC countries.	New action	Technology shifts	RELAC's Technical Secretariat	2028	Multistakeholder	RELAC's Technical Secretariat + member countries + Partner Agencies

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Output	Action Scope	Action	Type of action	Implementation Lever	Responsible	Time horizon	Stakeholder engagement[1]	Committed Stakeholders
Technical / financial foundations and regulatory frameworks for new technologies and solutions enhancing grid flexibility and other RELAC-related topics.	RELAC Member Countries	Support policies and regulatory frameworks aiming to enhance the flexibility of power grids in at least 5 RELAC countries.	New action	Policy and regulatory frameworks	RELAC's Technical Secretariat	2028	Multistakeholder	RELAC's Technical Secretariat + member countries + Partner Agencies
[IRENA] **Expand the Global Pipeline of Bankable Grid and Storage Infrastructure Projects.**	Global grids & storage	Provide project bankability and de-risking advisory services for supportive infrastructure (including transmission and storage) through ETAF and CIP, and host regional investment forums to connect vetted projects with financiers.	Existing	Public and private finance; Partnerships and collaboration	IRENA	2026-2027	Project developers, commercial banks, MDBs, IFIs, institutional investors, and national development banks.	CIP & ETAF Partners
Planning								
[CEM] Facilitate Power System Planning and action implementation	Global	Support the development of a series of case studies / action plans that highlight country leadership in implementing measures to achieve existing and new decarbonization goals. The case studies follow a three-phase	Existing	Knowledge & Capacity building	CEM Secretariat and other CEM workstreams	ongoing		Several CEM Members have already implemented a case study / Action plan. Ongoing engagement with EMDEs, particularly in Southeast Asia

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		framework— planning, building, and operating—to ensure comparability across countries. It provides Countries with a practical tool for sharing lessons learned.						
[IRENA] **Enhance Long-Term National Energy and Infrastructure Planning.**	Global grids & storage	As Secretariat of the Global Coalition for Energy Planning (GCEP), facilitate knowledge exchange and capacity building to help countries integrate grid modernization and interconnection into long-term plans.	Existing	Risk-informed decision-making; Policy and regulatory frameworks	IRENA	2026-2027	National planning agencies, ministries of energy, research institutions, and civil society.	GCEP Members
[IRENA] **Develop Roadmaps for Grid-Integrated Transport Electrification.**	Global grids & storage	Publish targeted analyses and policy guidance on preparing distribution grids for the large-scale integration of EV charging infrastructure, focusing on demand-side management and smart charging solutions.	Existing	Technology shifts; Policy and regulatory frameworks; Demand	IRENA	2026-2027	Municipal governments, ministries of transport and energy, urban planners, utilities, automotive and e-mobility industries.	IRENA Members
[IRENA] **Develop Data-Driven Regional Roadmaps for Integrated Energy Infrastructure.**	Global grids & storage	Develop and publish a new series of Regional Energy Transition Outlooks (RETOs) for key geographies (e.g.,	Existing	Risk-informed decision-making; Policy and regulatory frameworks; Partnerships and	IRENA	2026-2027	Regional bodies (e.g., OLADE, AU), national ministries of energy and planning, regional development	European Commission, Government of Belgium

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		South America, Africa, Central Asia) to provide analytical blueprints for expanding cross-border infrastructure and furthering market integration.		collaboration			banks.	
[IRENA] **Align Regional Infrastructure Investment with Global Climate Goals.**	Global grids & storage	Utilize the findings from RETOs in high-level dialogues and investment forums to guide public and private capital towards priority cross-border transmission and energy storage projects identified in the reports.	Existing	Public and private finance; Risk-informed decision-making	IRENA	2026-2027	Multilateral Development Banks, international finance institutions, private investors, and national planning agencies.	IRENA Members
[IRENA] **Promote Deployment of Digital Twins for Advanced Asset Management.**	Global grids & storage	Promote the application of Digital Twins for predictive maintenance and operational optimization of critical grid assets, providing a roadmap for utilities to reduce costs and extend asset life.	New action	Technology shifts; Public and private finance	IRENA	2026-2027	TSOs/DSOs, technology providers, research institutions, and asset-intensive industries.	G7 Members
[IRENA] **Strengthen National Capacity to Plan for a Diverse Flexibility Portfolio.**	Global grids & storage	Scale up technical assistance and regional capacity-building programs using the IRENA FlexTool to enable member states to conduct tailored national assessments of	Existing	Knowledge and capacity building; Risk-informed decision-making	IRENA	2026-2027	National energy planning agencies, system operators (TSOs/DSOs), and regulatory authorities.	IRENA Members

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		flexibility needs and identify cost-optimal portfolios of solutions (storage, DSM, interconnectors, etc.).						
[IRENA] **Develop Roadmaps for Long-Duration Energy Storage (LDES) Deployment.**	Global grids & storage	Evaluate a global techno-economic assessment of LDES technologies (e.g., pumped hydro, clean hydrogen, thermal storage) to address weekly and seasonal flexibility needs, providing policy recommendations to support early-stage projects.	New action	Technology shifts; Policy and regulatory frameworks; Public and private finance	IRENA	2026-2027	Technology developers, geological survey agencies, national labs, investors, and industrial energy users.	IRENA Members
[IRENA] **Enhance Flexibility through Optimized Cross-Border Interconnections.**	Global grids & storage	Utilize IRENA's regional flexibility needs analyses to provide targeted advice to power pools on harmonizing market rules and operational protocols to maximize the value of cross-border electricity trade in smoothing VRE variability.	Existing	Partnerships and collaboration; Policy and regulatory frameworks	IRENA	2026-2027	Regional power pools, transmission system operators, and regional economic communities.	IRENA Members
[IRENA] **Accelerate Grid Build-Out through Innovative Planning and Permitting.**	Global grids & storage	Promote the adoption of 'anticipatory investment' frameworks and 'overriding public	New action	Policy and regulatory frameworks; Public and private finance	IRENA	2026-2027	National regulators, ministries of energy, Transmission System Operators (TSOs).	European Commission, SGCC-CEPRI, ENTSO-E

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		interest' clauses in national regulations to streamline permitting and proactively build transmission capacity ahead of generation queues.						
[IRENA] **Maximize Capacity of Existing Grid Infrastructure through Non-Wire Alternatives (NWAs).**	Global grids & storage	Develop and disseminate incentive mechanisms and adaptive regulatory frameworks that prioritize the deployment of Grid-Enhancing Technologies (GETs) such as dynamic line rating, power flow controllers, and grid-booster batteries to unlock untapped grid capacity.	Existing	Technology shifts; Policy and regulatory frameworks; Public and private finance	IRENA	2026-2027	Distribution and Transmission System Operators (DSOs/TSOs), regulators, technology providers.	European Commission (DG Ener)
[IRENA] **Integrate Hyperscale Data Centers as Grid-Supportive Flexible Assets.**	Global grids & storage	Establish regulatory frameworks and market products that enable and incentivize data centers to provide demand response and flexibility services, including through interruptible load contracts and 24/7 carbon-free energy matching.	New action	Demand; Policy and regulatory frameworks; Partnerships and collaboration	IRENA	2026-2027	Data center operators, grid operators, regulators, and large electricity consumers.	IRENA Members

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[IRENA] **Develop Targeted Grid Modernization Roadmaps for Emerging Economies (EMDEs).**	Global grids & storage	In partnership with regional utilities associations, facilitate the development of grid modernization toolkits for EMDEs, addressing specific challenges of underinvestment, skills shortages, and the integration of distributed renewables.	New action	Knowledge and capacity building; Inclusive decision-making; Public and private finance	IRENA	2026-2027	African Power Utilities Association (APUA), utilities in Africa and India, Development Finance Institutions.	EPRI, UNEZA
[IRENA] **Develop Investment-Grade National Power Masterplans.**	National Planning	Deliver direct technical support to member states to validate, review, and enhance national power sector masterplans (e.g., LCPDPs), transforming climate ambitions into robust, investment-grade documents that accelerate project financing.	Existing	Policy and regulatory frameworks; Public and private finance	IRENA	2026-2027	National planning agencies, ministries of finance, MDBs, and private sector investors.	IRENA Members
[IRENA] **Deliver Actionable Blueprints for Grid Modernization and Flexibility.**	Regional & National Grids	Deliver quantitative Flexibility Gap Analyses for member countries to provide a precise blueprint for grid modernization, defining the optimal portfolio of VRE and its enabling technologies (storage, hydro, interconnectors).	New action	Technology shifts; Risk-informed decision-making; Public and private finance	IRENA	2026-2027	Transmission System Operators (TSOs), regulators, investors, and technology providers.	IST Group Partners

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[IRENA] **Establish the Technical Basis for Regional Power Market Integration.**	Regional Grids & Markets	Provide the definitive technical basis for the development of cross-border interconnectors by delivering rigorous analysis that enhances regional energy security and optimizes the use of diverse renewable resources across larger, more stable power markets.	Existing	Partnerships and collaboration; Policy and regulatory frameworks	IRENA	2026-2027	Regional Power Pools, national governments, and regional development banks.	GCEP, APRA, APRECA
[IRENA] **Harmonize Global Energy Planning Methodologies for Investors.**	Global Finance & Policy	As the technical secretariat for the Global Coalition for Energy Planning (GCEP), develop and harmonize technical energy planning standards to create a common, credible language for international investors and de-risk investment through collective action.	Existing	Standards and taxonomies; Partnerships and collaboration	IRENA	2026-2027	GCEP members, international investors, MDBs, and national energy planners.	GCEP Partners
[Green Grids Initiative] Africa Ten-Year Infrastructure Investment Plan (TYIIP) support	Regional	Support AfDB and AUDA-NEPAD in implementing the African TYIIP through pre-feasibility and prioritisation studies for key grid projects	Technical assistance and policy support	Policy & regulatory; Risk-informed decision-making	GGI Africa Working Group	Q2 2025 – Q1 2026	AfDB; AUDA-NEPAD; African governments	AfDB; AUDA; CCG; SEFA

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[GRA/GWEC] Regional outcomes	Regional	Achieve concrete progress in two countries per region on supportive grid enhancement or interconnection initiatives	Policy advocacy and coordination	Policy and regulatory; Public/private finance	GRA and GWEC	Aug 2028	Regional organisations; MDBs; national authorities	Regional organisations; MDBs; national authorities
Supply Chains								
Boost and diversify Solar PV supply chains manufacturing	Global	Solar PV Manufacturing Cost Model, supporting policymakers, investors, and industry in assessing policy impacts, identifying competitive advantages, and guiding strategic investments in resilient solar PV supply chains.	Existing	Supply	CEM Solar Supply Chain Initiative	ongoing	Policymakers, Investors, Industry	Australia, ISA, IRENA
Harmonization of International standards	Global grids & storage	Publish report Standards and certification for the energy Identify and pursue high level alignment on critical energy transition grid	New action	Standards	UNEZA	2025-2028	Countries Multi-stakeholders	UNEZA, GCPA and IEC

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		equipment(s) to be adopted under international standards						
Analyze the Geopolitical Landscape of Grid-Related Supply Chains.	Global grids & storage	Through the Collaborative Framework on the Geopolitics of the Energy Transformation, analyze supply chain resilience for strategic infrastructure and foster dialogue on regional coordination and harmonized market design.	Existing	Supply; Risk-informed decision-making; Partnerships and collaboration	IRENA	2026-2027	Policymakers, ministries of trade and industry, manufacturers, and international trade organizations.	Collaborative Framework Co-facilitators and Members
Deliver Foresight on Systemic Risks to Grid Supply Chains.	Global Grids & Geopolitics	Through the Geopolitics Collaborative Framework, deliver essential analysis on the security of supply chains and trade risks for critical grid technologies, providing policymakers with the intelligence to build resilient energy systems.	Existing	Supply; Risk-informed decision-making	IRENA	2026-2027	Policymakers, ministries of trade and industry, manufacturers, and international trade organizations.	Collaborative Framework Partners