Global Energy Interconnection Perspectives



Overview

Geopolitical uncertainty, shifting policies, and increasing demand for power are reshaping the energy landscape.

Key Takeaways

Global Energy Interconnection (GEI) envisions a clean, low-carbon, globally interconnected electric energy system that integrates renewable energy, advanced transmission, and smart grid technologies to support sustainable development worldwide.

Concept and Objectives

Global Energy Interconnection (GEI) is a strategic framework promoted by the Global Energy Interconnection Development and Cooperation Organization (GEIDCO) to establish a clean energy-dominant, electric-centric, and globally interconnected energy system. Its primary objectives include: Meeting global power demand with low-carbon and renewable energy sources. Supporting the United Nations' Sustainable Energy for All initiative and climate change mitigation.

Promoting sustainable economic and social development through energy accessibility and affordability. Facilitating international cooperation in energy planning, technology, and governance. Technological FoundationsGEI relies on advanced technologies to enable large-scale energy integration: Ultra-High Voltage (UHV) transmission: Enables long-distance, high-capacity electricity transfer with minimal losses.

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Smart grids: Enhance system flexibility, reliability, and integration of variable renewable energy sources. Energy storage systems: Support grid stability and balance intermittent renewable generation. Renewable energy generation: Includes onshore/offshore wind, solar PV, wave, tidal, and ocean thermal energy, which are essential for decarbonization.

Strategic and Policy PerspectivesGEI emphasizes a globally coordinated approach to energy transition: Global governance: Establishes standards, policies, and collaborative frameworks for cross-border energy trade and climate action. Sustainable development: Aligns energy infrastructure with low-carbon growth and equitable access. Scenario planning: Integrates insights from global energy outlooks to anticipate demand growth, technological adoption, and climate impacts.

Implications for Energy TransitionGEI perspectives highlight several key implications: Accelerated renewable adoption: By connecting regions with abundant renewable resources to high-demand areas, GEI can optimize energy utilization and reduce emissions. Resilience and reliability: Interconnected grids enhance energy security and mitigate regional supply disruptions. Economic and social benefits: Large-scale clean energy deployment can drive industrial growth, job creation, and sustainable urbanization.

Global collaboration: GEI fosters international partnerships, knowledge sharing, and joint innovation in energy technologies.

Research and Knowledge Dissemination

The Global Energy Interconnection Journal publishes research on GEI strategies, technical standards, and practical applications, covering topics such as: Energy interconnection and smart grid development. Advanced transmission and storage technologies. Global energy policy, market operations, and climate governance.

Sustainable energy planning and low-carbon transition strategies.

Conclusion

Global Energy Interconnection represents a transformative vision for the global energy system, combining technological innovation, policy coordination, and sustainable development goals. By leveraging renewable energy, UHV transmission, and smart grids, GEI aims to enable a low-carbon, reliable, and equitable energy future, while addressing climate change and supporting global energy security.

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Article Content

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Geopolitical uncertainty, shifting policies, and increasing demand for power are reshaping the energy landscape. In this year''s report, we present our updated view on what''s to come in the

Evaluating the economic and social benefits of global energy ...

This study uses the Global Trade Analysis Project (GTAP) model to explore the economic and social impacts of the GEI initiative. Specifically, it incorporates two key factors—average

Global Energy Interconnection Journal Press

Global Energy Interconnection established by Global Energy Interconnection Development and Cooperation Organization (GEIDCO), is professional and prospective scientific journal in energy and

Global energy interconnection

Thus this White Paper aims to highlight the concept of GEI and begin laying the foundations for identifying and addressing the standardization needs for large-scale, transcontinental and global

ADSW REPORT: PERSPECTIVES ON GLOBAL

This report explores the pivotal role that energy interconnectors play in accelerating the transformation of global energy systems, a key focus at Abu Dhabi Sustainability Week (ADSW) 2025.

Global Energy Interconnection

GEI is a clean energy-dominant, electric-centric modern energy system that is globally interconnected, jointly constructed and mutually beneficial to all. It is an important platform for large-scale

World Energy Outlook 2025 – Analysis

Updated annually to reflect the latest energy data, technology and market trends, and government policies, it explores a range of possible energy futures and their implications for energy security,

Global energy interconnection

Recommendations for regulators Develop tools and methodologies to assess costs and benefits of energy interconnections

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United Nations Division for Sustainable Development-Publications ...

It examines the technical, economic, legal, political, social and environmental issues associated with electricity interconnections.

Global battery energy storage system (BESS) trends

Battery energy storage systems (BESS) now sit at the heart of the global shift toward flexible, renewable-dominated grids. Understanding the regional trends

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Conclusion: The New Infrastructure Reality The AI data center power crunch represents a fundamental inflection point for global energy markets and technology competition. Electricity

A comprehensive review on the benefits and challenges of global

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The Global Energy Interconnection (GEI) is a clean energy-dominant, electricity-centered, interconnected and shared modern energy system. It is an important platform for large-scale

(PDF) A comprehensive review on the benefits and

In electricity generation, the potential gains from regional interconnection are associated with complementarities in the demand for

Data Center Power & Energy News 2026: Weekly

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Research and Outlook on Global Energy Interconnection

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Research by Global Energy Interconnection Development and Cooperation Organization (GEIDCO) shows that the development of the climate crisis mainly presents four phases. The first is the risk ...

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