

Global Energy Interconnection Brings



AI Overview

The Global Energy Interconnection (GEI) is a visionary initiative to create a worldwide, ultra-high voltage (UHV) electricity network that integrates renewable energy, enhances energy security, and supports sustainable development.

Concept and Objectives The GEI concept emerged as a response to the growing global energy demand and the environmental challenges associated with fossil fuel consumption. It aims to replace fossil fuels with renewable energy in electricity generation and consumption, thereby increasing electrification, improving energy efficiency, and reducing carbon emissions. GEI integrates clean energy deployment, smart grid technologies, and UHV transmission systems to enable large-scale, cross-border energy flow and optimize global energy utilization.

Technological Foundations GEI relies on ultra-high voltage (UHV) transmission, including both AC and DC systems, which allow electricity to be transmitted over long distances with minimal losses. High-voltage direct current (HVDC) links connect separate AC systems, converting electricity between AC and DC as needed. The system also incorporates smart grid technologies, enabling automated, intelligent, and networked energy management, as well as interoperability across countries, technical domains, and equipment life cycles.

Development and Implementation The development of GEI has been driven by international collaboration, led by organizations such as the Global Energy Interconnection Development and Cooperation Organization (GEIDCO) and supported by the International Energy Agency (IEA). Initial efforts focused on standardization, technical feasibility, and market readiness, with pilot projects and regional interconnections serving as testbeds for large-scale deployment. By 2030, GEI aims to significantly increase the share of clean energy in global electricity generation, with projections indicating that renewable energy could exceed 70% of total energy consumption.

Global Impact and Sustainable Development GEI is designed to promo...

Article Content

Recruitment of Early Career Editorial Board Members for Global Energy ...

We plan to recruit 40 to 50 Early Career Editorial Board Members for Global Energy Interconnection. Target research areas cover energy and power technological innovation,

Global Energy Interconnection: A building block towards planetary ...

Renewable energy, often in combination with new business models and IT solutions, allows less developed countries to leapfrog pollution- Georg Kell et al. Global Energy

2025 Global Energy Interconnection Conference

As the flagship conference of GEIDCO, the Global Energy Interconnection Conference is a high-end international event, already held for six consecutive years, with a total participation of more than

The Future of Power: Cross-Border Grid Interconnection

In the face of increasing energy security concerns and rising energy demands, how the world can increase energy availability is becoming a forefront

Global energy interconnection

Renewable energies are constrained by geographic location, weather conditions, and time Requires transmission of power over long distances Investment in new energy infrastructure and technology,

On the Techno-economic Benefits of a Global Energy Interconnection

The discussion about the benefits of a global energy interconnection is gaining momentum in recent years. The techno-economic benefits of this integration are broadly discussed for the major

Global power grid interconnection for sustainable

Transcontinental grid interconnection and clean energy development for sustainability are the prime objectives to address through global energy

Global Energy Interconnection Action Plan to Promote 2030 Agenda

Global Energy Interconnection Action Plan to Promote 2030 Agenda for Sustainable Development Global Energy Interconnection Development and Cooperation Organization November 1, 2017 New

AI Data Center Power: Grid Limits Reshape Energy in

AI data center power demand is breaking the grid in 2026. See how grid constraints fuel trillions in on-site energy investments. Discover the new power plays now!

Global energy interconnection

Global energy interconnection (GEI) represents the ultimate evolution of the trend towards greater interconnection of power systems. It embodies high-level integration of the flow of energy, flow of

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

GEI helps to reduce carbon emissions globally. GEI enhances resilience against energy policy uncertainty and climate risks. The Global Energy Interconnection (GEI) development will bring

Global Energy Interconnection: an effective solution to climate ...

GEI was founded to seek a solution to global energy and environment challenges, focusing on energy security and environmental issues related to fossil energy utilization. The

A comprehensive review on the benefits and challenges of global

Globally interconnected power grids are proposed as a future concept to facilitate decarbonisation of the electricity system by enabling the harnessing and sharing of vast amounts of

Benefit analysis of regional energy interconnection using ...

The construction of the global energy internet is a significant way to develop clean energy and the key to achieving the goal of carbon neutrality. This study aims to the feasibility of

International Power Interconnections Progress and Help Countries in

Various progresses in advancing new power interconnection projects are taking place around the world. Five of these recent projects have been selected and are briefly presented as

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

The Global Energy Interconnection (GEI) development will bring various economic and social benefits to multiple regions. To effectively promote its implementation, examining how these

A comprehensive review on the benefits and challenges of global

Within the literature a variety of terminology is applied such as Global Energy Interconnection (GEI), Global Energy Internet, Global Transnational Grid (GTG), global

Global Energy Trends: Clean Energy Growth and Rising Demand

We explore the data to see where the clean energy transition stands today, from rising investment and job growth to grid needs and critical mineral demand.

Banking on Climate Chaos

Global Impact Stories from the Frontlines Climate change hits the frontlines first and worst. People living on the frontlines of climate chaos and the fossil fuel industry

Global Energy Interconnection Advancing Inclusive

The energy system is in urgent need of an inclusive, just and resilient transformation. Global Energy Interconnection (GEI) represents an interconnected, intelligent and efficient multi-energy coordination

Research and Outlook on Global Energy Interconnection

The Global Energy Interconnection (GEI) is a clean energy-dominant, electricity-centered, interconnected and shared modern energy system.

Benefit analysis of regional energy interconnection using ...

Building a global energy interconnection is a newly clean and green way to meet the global electricity demand, a global solution to solve the severe challenges of energy development,

Global energy interconnection

IEC's purpose in issuing this White Paper is to highlight the concept of GEI and begin laying the foundations for identifying and addressing the standardization needs of large-scale, transcontinental

PJM plan could accelerate data center power deals,

A plan from PJM Interconnection, the largest power grid operator in the U.S., to manage burgeoning power demand from data centers could

Research and Outlook on Global Energy Interconnection

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 ...

Global Energy Interconnection: an innovative solution for

Against the background of energy consumption transformation and climate governance, Global Energy Interconnection (GEI), which features an innovative combination of advanced

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