

# Energy Internet and Power Grid Transformation



## Overview

IRENA identifies five key areas in which digital technologies can transform power systems: monitoring through smart sensors and metres; AI-enhanced forecasting for demand and renewable generation; operational optimization to reduce losses and congestion; end-use automation for demand. IRENA identifies five key areas in which digital technologies can transform power systems: monitoring through smart sensors and metres; AI-enhanced forecasting for demand and renewable generation; operational optimization to reduce losses and congestion; end-use automation for demand. Energy Internet is a concept proposed to harness, control, and manage energy resources effectively, with the help of information and communication technology. It improves a reliability of the system, and provides an increased utilization of energy resources by integrating the smart grid with the. From digital twins to AI-enabled Energy Management Systems, utilities can predict issues, optimize resources, and manage assets remotely to cut downtime and improve reliability. Partnerships are key to modernization. Working with established technology leaders allows energy providers to accelerate. Building the Energy Internet involves transforming traditional, one-way power grids into decentralized, intelligent, and two-way, digital networks. It integrates distributed renewable sources, storage, EVs, and smart buildings, allowing them to exchange data and power in real-time to enhance. The global Smart Grid market was valued at USD 73. 77 billion in 2024 and is projected to grow from USD 85. 7% during the forecast period from 2025 to 2034. The market is witnessing significant growth due to the increasing. The agency's Digitalisation and AI for Power System Transformation report, which it developed together with the G7 Presidency, says that the COP28 goal of tripling renewable energy capacity by 2030 can be "catalyzed by digitalization". With many...

## Article Content

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