Institute for Energy Economics and Financial Analysis

Fact Sheet

Regional Solutions to Japan's Renewable Energy Barriers: Lessons from Akita and Fukushima

There is a widening gap between Japan's 2030 target of 36%-38% renewable electricity generation and the current deployment path. This slowdown jeopardizes Japan's broader carbon neutrality commitment by 2050. The primary constraints to renewable energy deployment stem from structural and institutional barriers rather than technical or resource limitations.

Regional Innovation

Several prefectures, such as Fukushima, Saga, Akita, and Hokkaido, have demonstrated effective renewable deployment strategies through:

Local renewable energy targets with community support

Land use planning and zoning coordination

Regional financial mechanisms and investment partnerships

Power purchase agreement (PPA) frameworks for corporate buyers

Scaling these approaches nationally requires regulatory and grid access reform, enhanced utility accountability, and modernized market frameworks that prioritize renewable integration over fossil fuel dependence.

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Key barriers in Japan's renewable energy development

https://ieefa.org/resources/key-barriers-japans-renewable-energy-development

Two Successful Models

Akita's Developer-Driven Cost-Sharing Model

Challenge

- Akita has strong offshore wind, onshore wind, and solar energy potential, but experiences a "no-exit power" bottleneck, where electricity generation exceeds local demand
- In some months, Akita's output surpassed 150% of its consumption, with insufficient capacity to export surplus to other regions

Solution

- The Tohoku Electric Power Network began developing the Dewa Line, a new 500-kilovolt (kV) transmission line between Akita and Yamagata, allowing up to 3.9 gigawatts (GW) of new renewable capacity to be connected to the grid
- The project adopted an innovative bidding process in which renewable energy developers commit to sharing construction costs
- This cost-sharing and connection-priority model differs from conventional grid expansion practices, where utilities bear the full cost and approve connections sequentially
- Grid expansion could be scaled flexibly based on developer interest and financial commitment, making it a leading example of proactive, market-aligned transmission planning

Fukushima's Integrated Public-Private Transmission Model

Opportunity

- High-voltage transmission capacity became available after nuclear plants shut down in 2011
- Between 2012 and 2023, Fukushima increased its large-scale solar capacity to over 1,300 megawatts (MW), becoming one of Japan's leading renewable energy producers

Solution

- The Fukushima New Energy Society Vision was launched to support this growth, aiming to power the region through renewables entirely
- The Fukushima Power Transmission Company, an independent, non-utility, public-private joint venture, was established to build a shared transmission network dedicated to renewables
- 86 kilometers of new lines were constructed to connect multiple solar and wind projects, enabling efficient delivery of clean electricity to demand centers
- Funding comprised national and local subsidies, regional bank loans, and developer contributions
- Regionally anchored funding supported local economic revitalization