Current Status of PV Facilities and Vision for the Future

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Key Points of Today's Presentation

The number of PV facility installations in Japan ***are on the rise***

↓

Accidents caused by ***natural disasters*** are on the rise

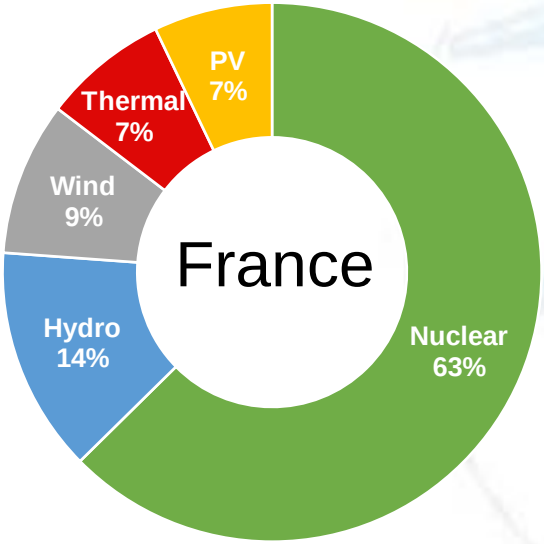
↓

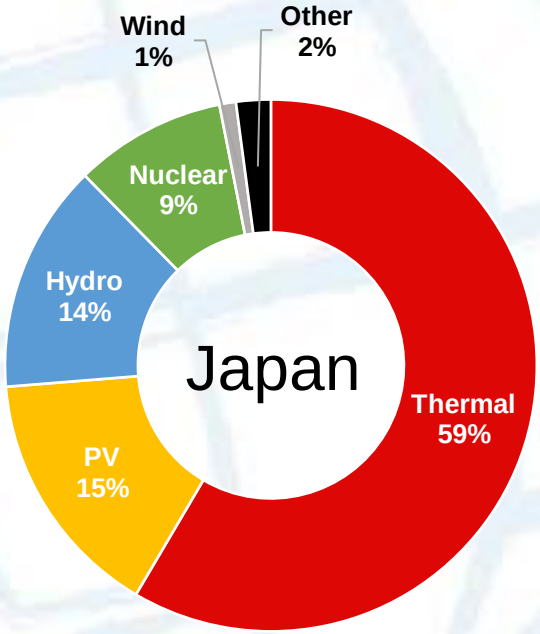
Conclusion

It is critical that ***we perform proper inspections efficiently***

I. Current Status of PV Facilities

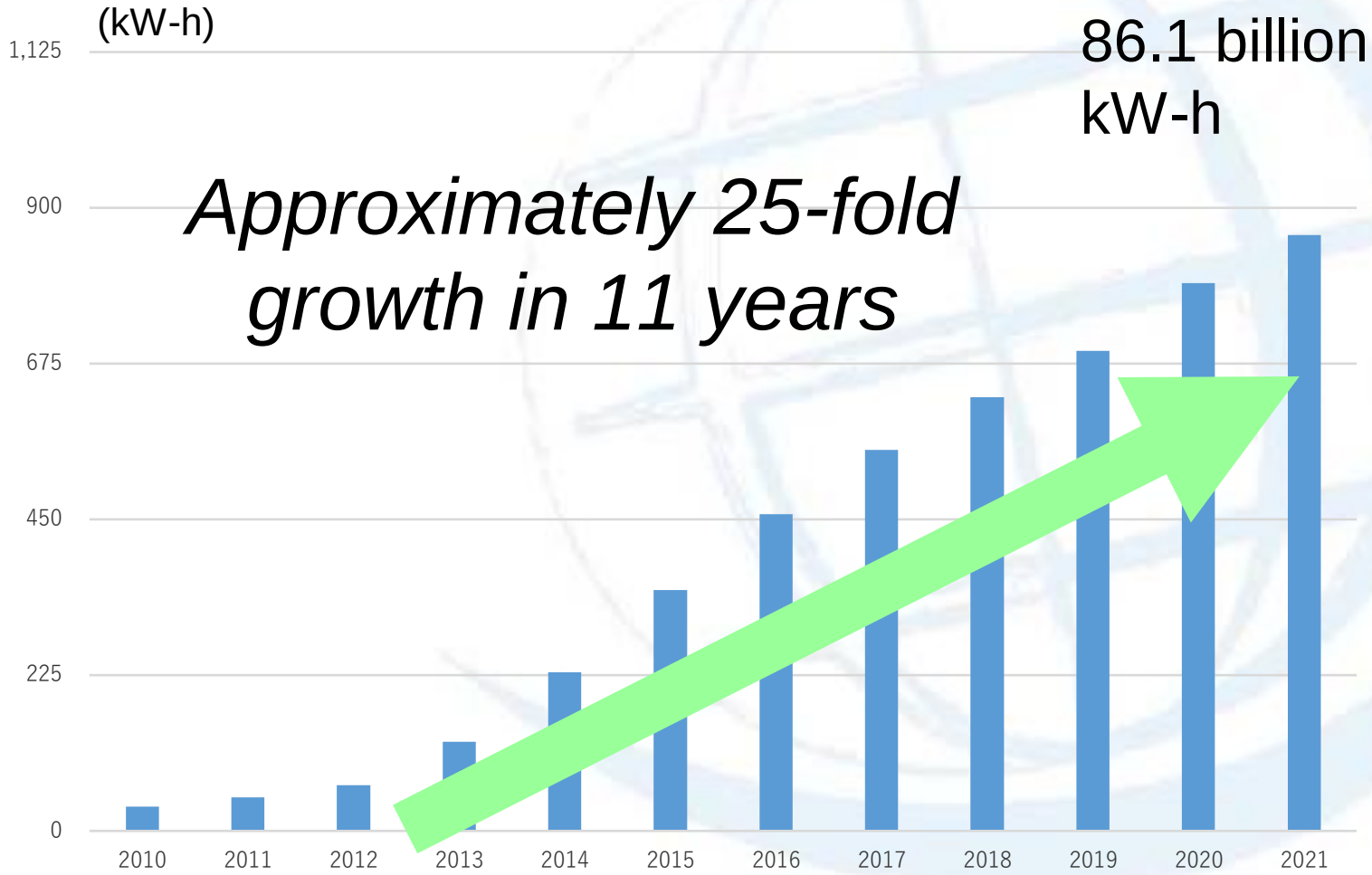
Differences in the amounts of power generation in France and Japan





Source: Prepared based on IEA monthly electricity statistics data. Categories of power generation that make up smaller than whole number percentages are not included to improve visibility.

Growing PV-generated power in Japan



86.1 billion kW-h

Approximately 25-fold growth in 11 years

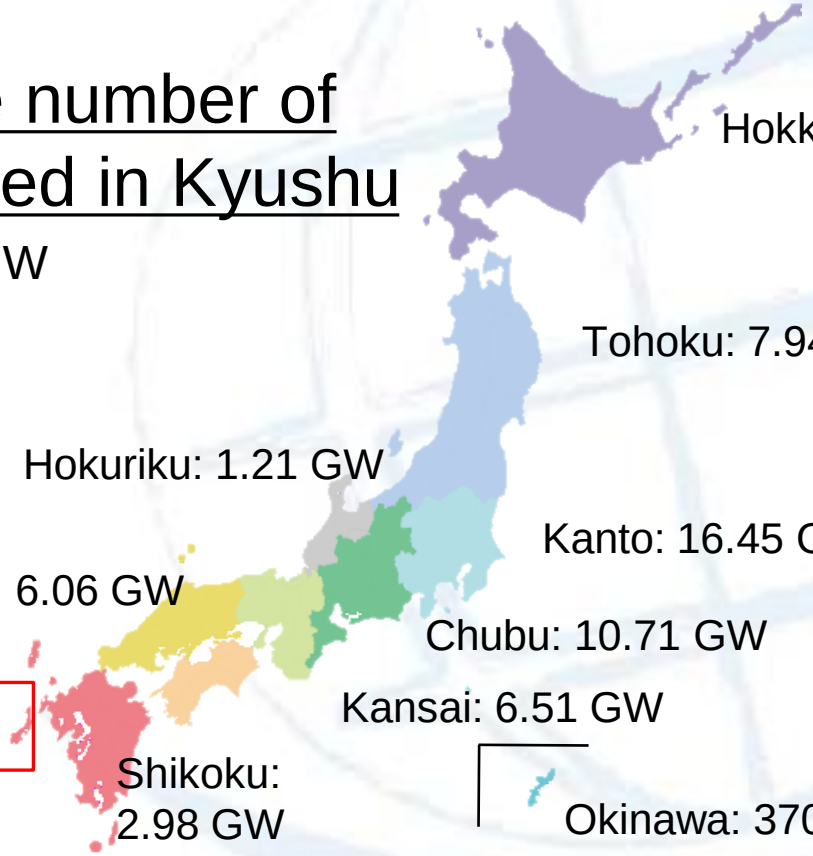
3.5 billion kW-h

Source: Prepared by Agency for Natural Resources and Energy based on Comprehensive Energy Statistics data

PV power plant installed capacities by region (March 31, 2023)

There are a large number of power plants installed in Kyushu

National total: 65.13 GW



Source: Prepared based on the Agency for Natural Resources and Energy's "Feed-in Tariff Scheme Information Disclosure Website" (for newly certified projects).

Types of PV Generation Facilities

Large-scale ground mounted

Rooftop mounted

Floating

II. Natural Disaster Threats

Damage to PV facilities caused by natural disaster

Typhoon damage

Damage to PV facilities caused by natural disaster

Are there any potential airborne debris nearby?

Are the panels securely fixed in place?

Damage to PV facilities caused by natural disaster

Landslide damage due to heavy rain

III. Kyushu Electrical Safety Inspection Association's Efforts to Improve Inspection Efficiency

Example of efficiency improvement 1: Better insulation resistance measuring efficiency — Before

Measurements were taken while checking information displayed on a screen.

Example of efficiency improvement 1: Improvements made to insulation resistance measuring efficiency — After

Streamlined report generation

Data saved on smartphone

Example of efficiency improvement 2: Better load rejection testing efficiency

Better workability thanks to reduced weight

VT fabricated for testing

Example of efficiency improvement 3: Better dielectric strength testing efficiency

After testing the PV facility on site, charges are discharged to ensure safety.

- Unable to determine if discharge was complete
- Residual charge is indicated by sound and light

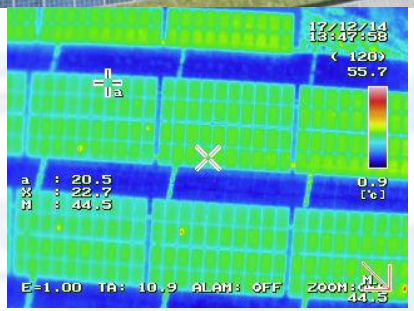
Example of efficiency improvement 4: Better precision inspection efficiency

Perform large area inspections efficiently from the air

Before

Inspection performed using thermal imaging camera

After

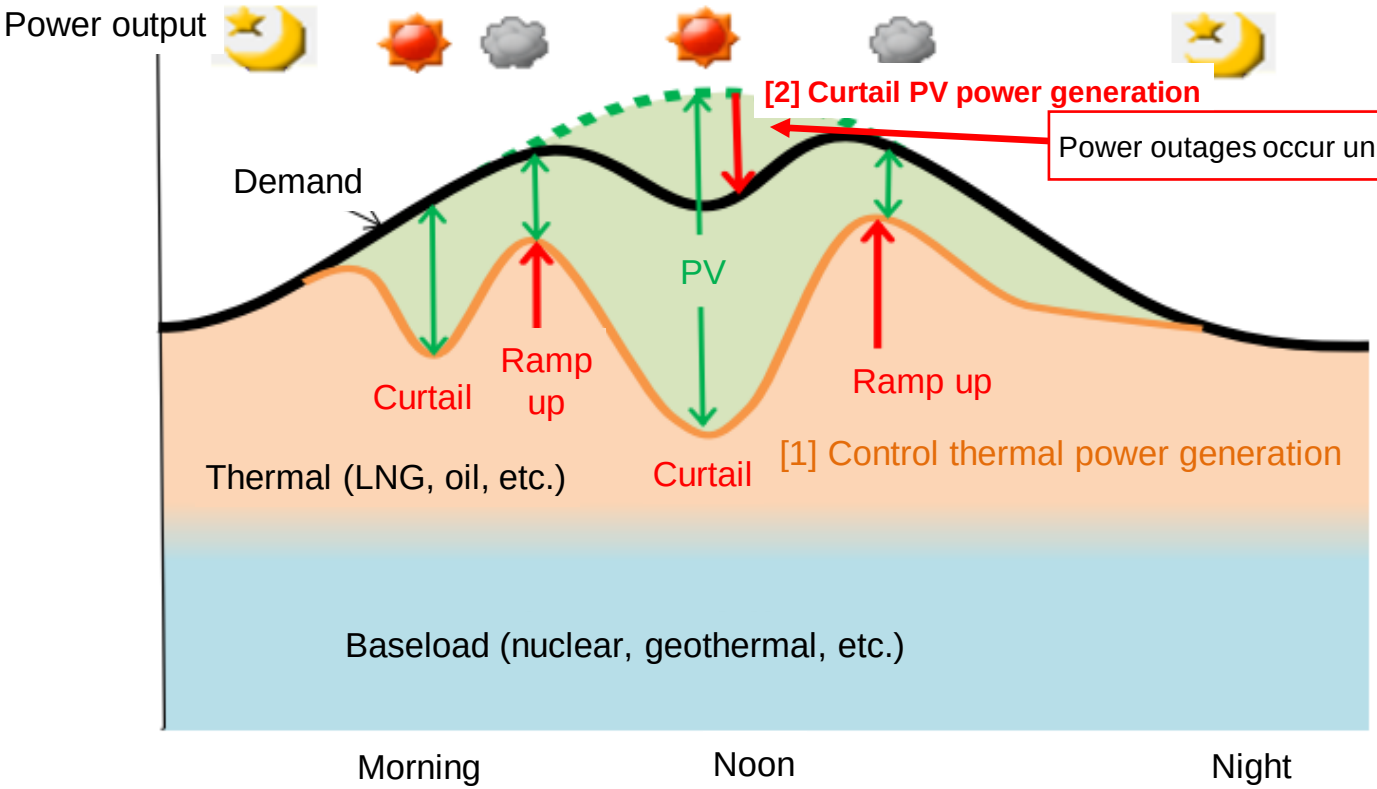


Filmed by drone

Example of efficiency improvement 5: Better efficiency in responding to output control

At times of low demand, PV power plants need to be shut down.

[Illustration of supply-demand on minimum demand days (sunny days in May, etc.)]



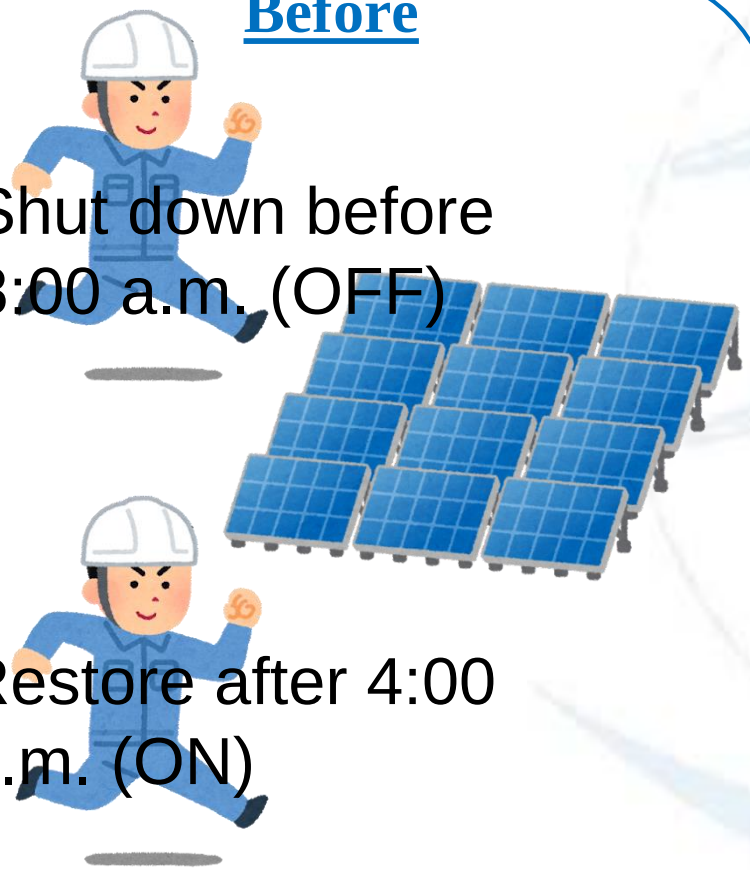
Capacity factor (year)
PV: around 13%
Wind: around 20%
Nuclear: around 70-80%
Geothermal: around 80%

Source: Agency for Natural Resources and Energy, "Revising the Operation of the Feed-in Tariff Scheme, etc."

Example of efficiency improvement 5: Better efficiency in responding to output control

Manual work reduced with the introduction of remote system

Before



Shut down before 8:00 a.m. (OFF)

Restore after 4:00 p.m. (ON)

After

ON ⇔ OFF

Make timer settings on remote system

Example of efficiency improvement 6: Better efficiency in recovering from grid-side accidents

Less time spent traveling to and from sites

Even grid-side accidents had to be restored at the site

Can be restored on remote system

Once a year, association-wide presentations for work-improvements proposals

Operational Improvement Proposal Presentation Meeting

IV. Vision for the Future

Vision for the future

Shift nighttime work to daytime

Utilize AI and IoT

Constant monitoring system

Improvements to testing and measuring equipment

We will continue to make improvements and enhancements to ensure that field work is performed properly and efficiently.

THANK YOU

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