Electric Power Industry in Japan 2026

August 2026

Japan Electric Power Information Center, Inc.

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Country Profile

Country Profile

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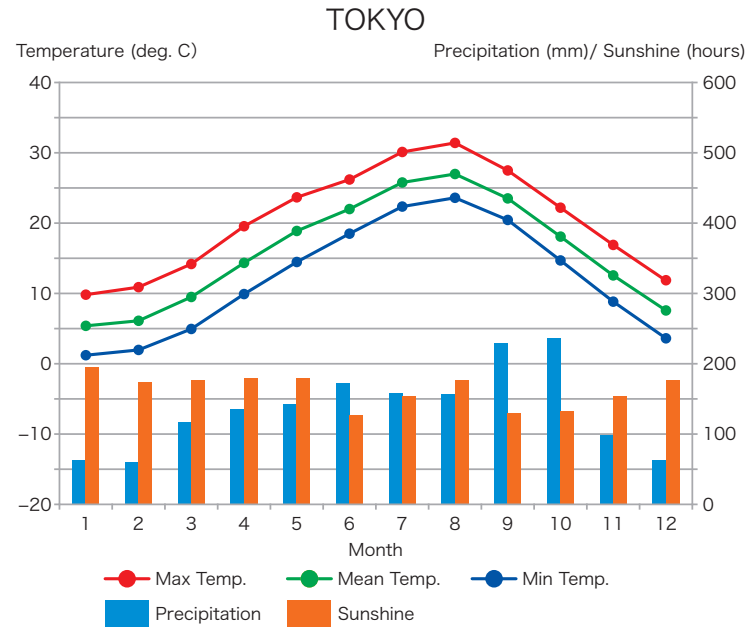
- Japan is prolonged from north to south that makes its climate specific depending on region.
- Population is concentrated in Kanto and Kansai areas.
- Peak electricity demand occurs during winter in Hokkaido due to heating demand, while in the Honshu, Shikoku, and Kyushu areas, it occurs during summer due to cooling demand.
- Snow fall in winter and typhoon from August to October adversely affect the power grid.

Source: Geospatial Information Authority of Japan
website: https://www.gsi.go.jp/common/000102099.pdf



Source: Japan Meteorological Agency
website: https://www.data.jma.go.jp/cpd/longfcst/en/tourist_japan.html

Energy Policy

Primary Energy Self-Sufficiency

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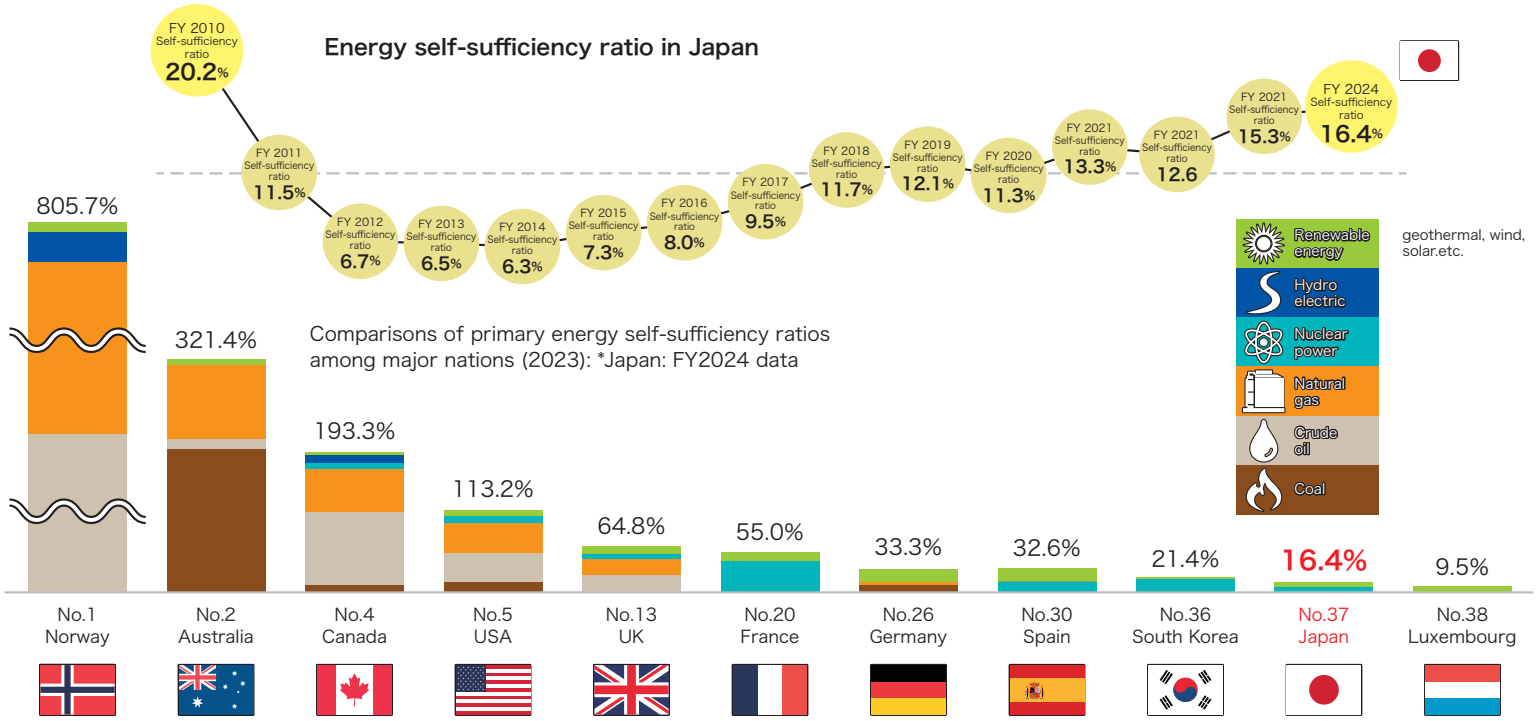
- **In FY2024, Japan's energy self-sufficiency ratio was 16.4%, lower than those of other OECD countries.**
- **Once imported, uranium can support stable electricity generation for extended periods. As a quasi-domestic energy source that can be reprocessed and recycled, nuclear energy plays an important role in Japan's energy security.**



Source: Estimates for 2023 from IEA “World Energy Balances 2025”, except for data on Japan, which are preliminary values of FY 2024, derived from “Comprehensive Energy Statistics of Japan”, published by the Agency for Natural Resources and Energy

Primary Energy Mix and Fuel Import Partners

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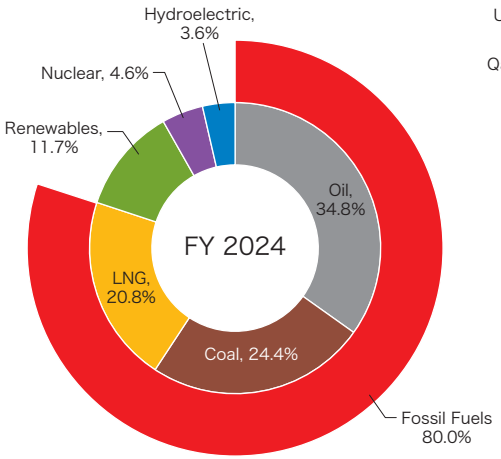
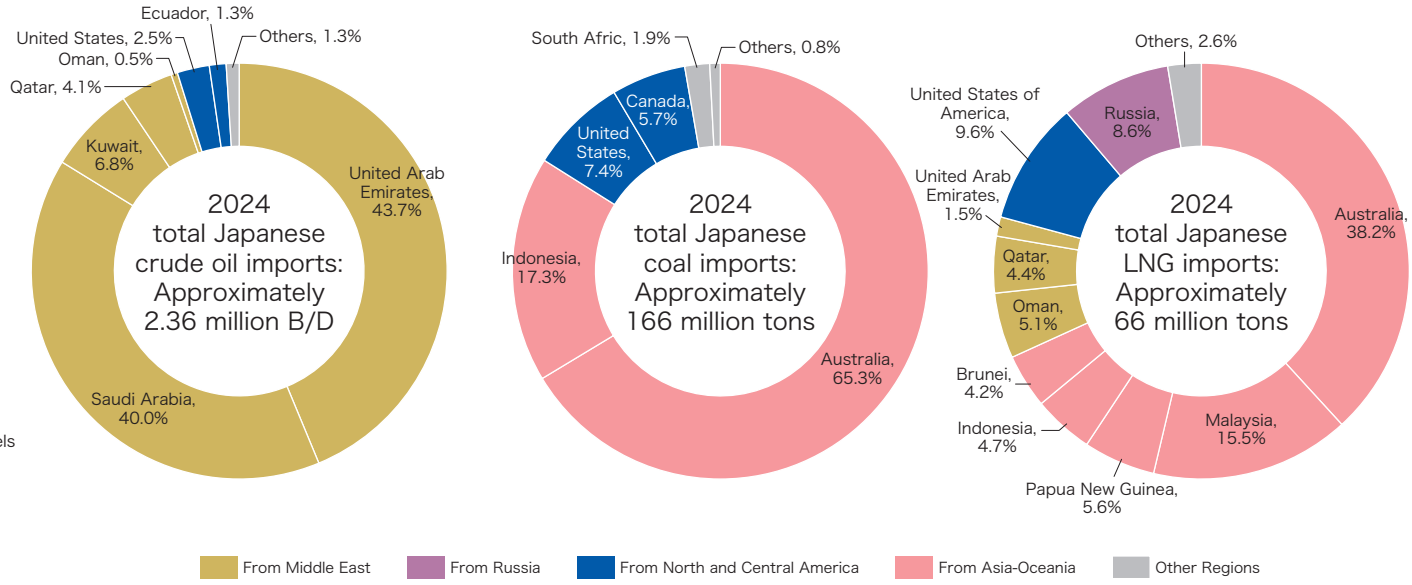
- Fossil fuels account for 80% of Japan's primary energy supply.
- Due to its limited domestic resources, Japan imports nearly all of its fossil fuels.
- Efforts have been made to diversify LNG supply sources and contract structures.
- LNG imports from Canada commenced in 2025.

Primary Energy Mix



Sources of Japanese fossil fuel imports (2024)



Source: Agency for Natural Resources and Energy, Comprehensive Energy Statistics of Japan

Source: Ministry of Finance, Trade Statistics of Japan

Geopolitical Risks of Fossil Fuel Transport

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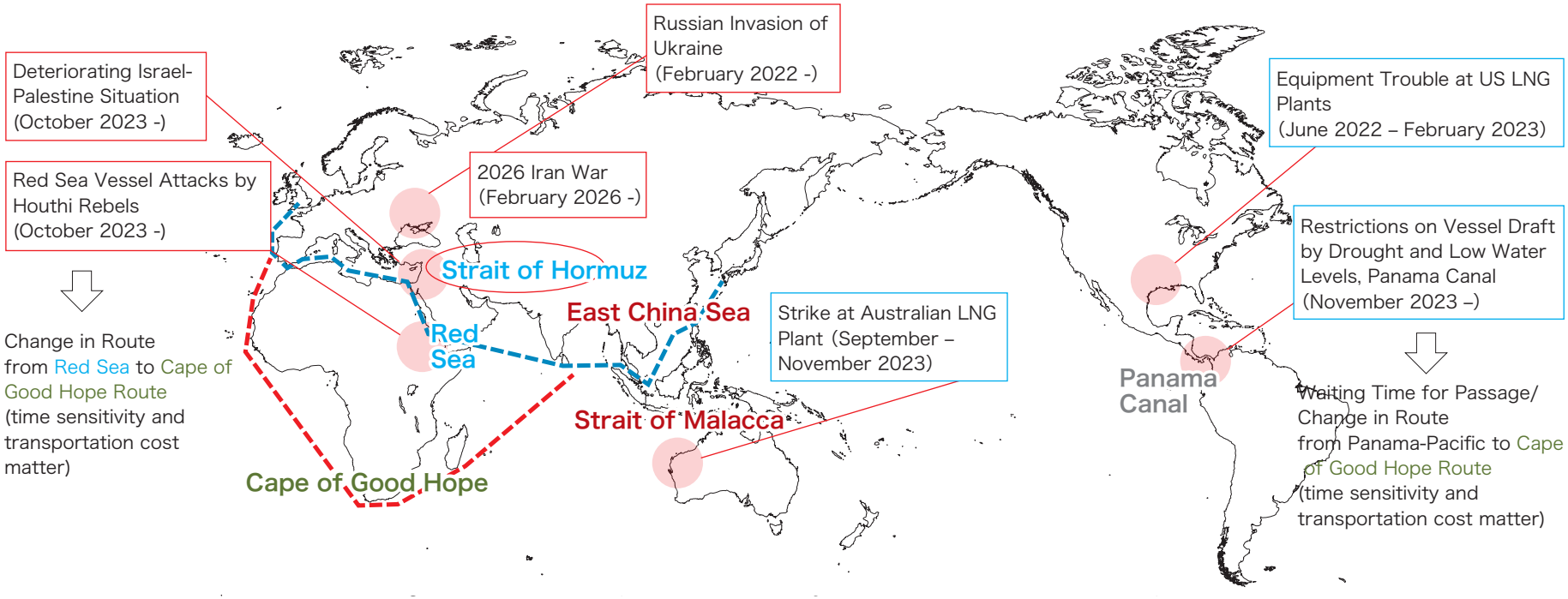
- **Maritime routes from the Middle East include chokepoints such as the Strait of Hormuz, Strait of Malacca, and the East China Sea, posing significant geopolitical risks.**
- **In the current Iran war, the Strait of Hormuz has effectively become unnavigable, severely disrupting energy supply chains and tightening oil and electricity supplies across countries.**



Source: Japan's Energy, Agency for Natural Resources and Energy

Basic Principles of Energy Policy: S+3E

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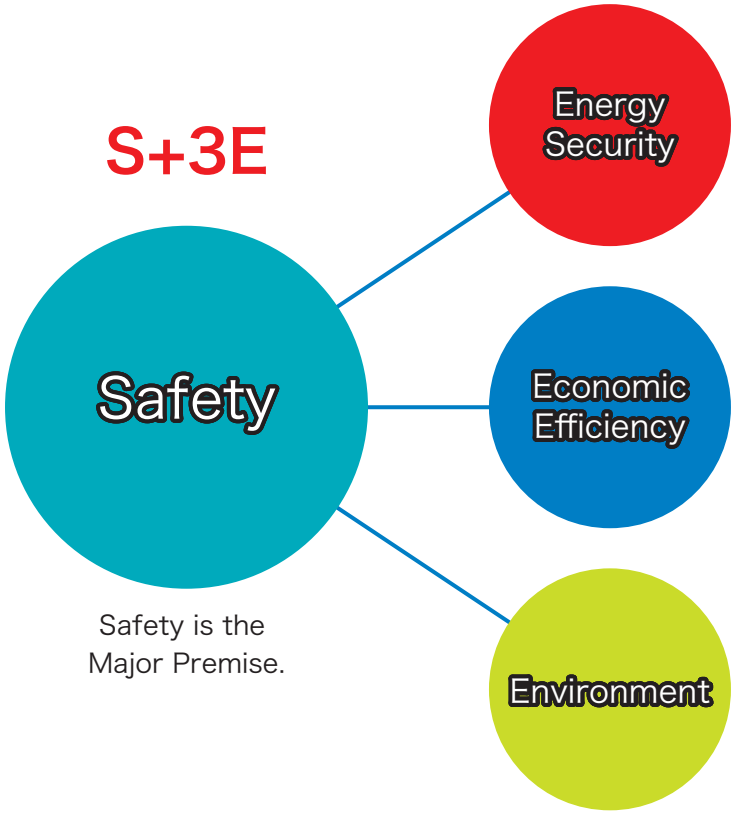
- As Japan is a country with limited natural resources, it is essential to create a multi-layered energy supply structure which balances the aspects of S+3E; safety, stability of supply, economic efficiency, and environmental sustainability.
- Rather than relying on a specific energy source, Japan seeks to pursue a well-balanced energy mix from the perspective of S+3E.



Energy Security (Self-sufficiency rate)

30–40% energy self-sufficiency by FY2040 (16.4% in FY2025)

Economic Efficiency (Electricity cost)

Price comparable to international standards

Environment (Greenhouse gas emissions)

Aiming for ambitious emission reduction targets aligned with the global 1.5°C goal: ▲60% by FY2035 and ▲73% by FY2040(compared to FY2013 levels)

The 7th Strategic Energy Plan

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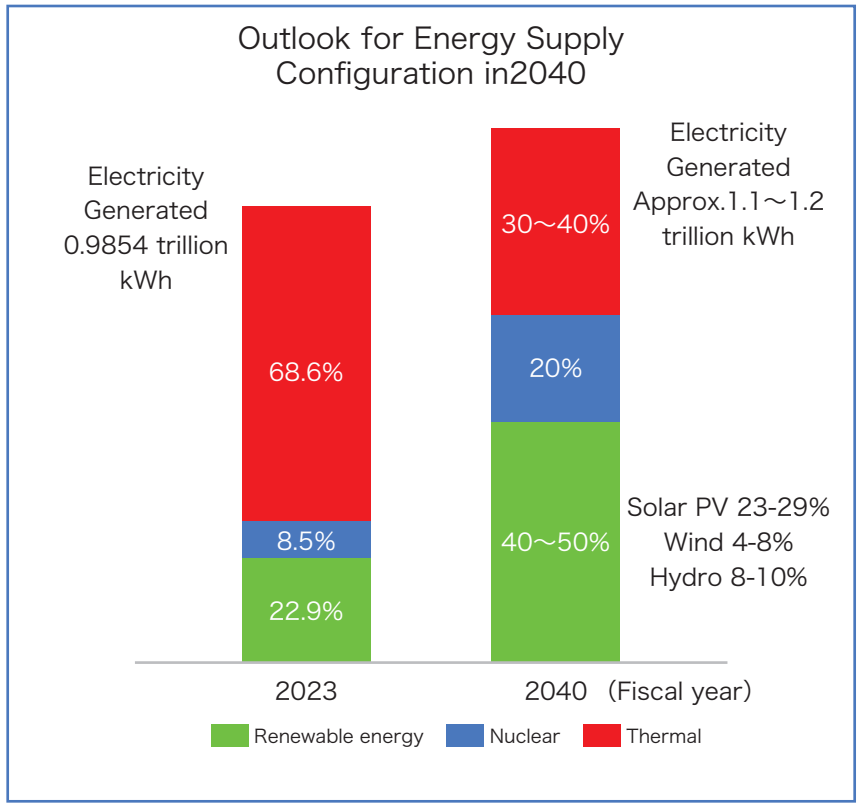
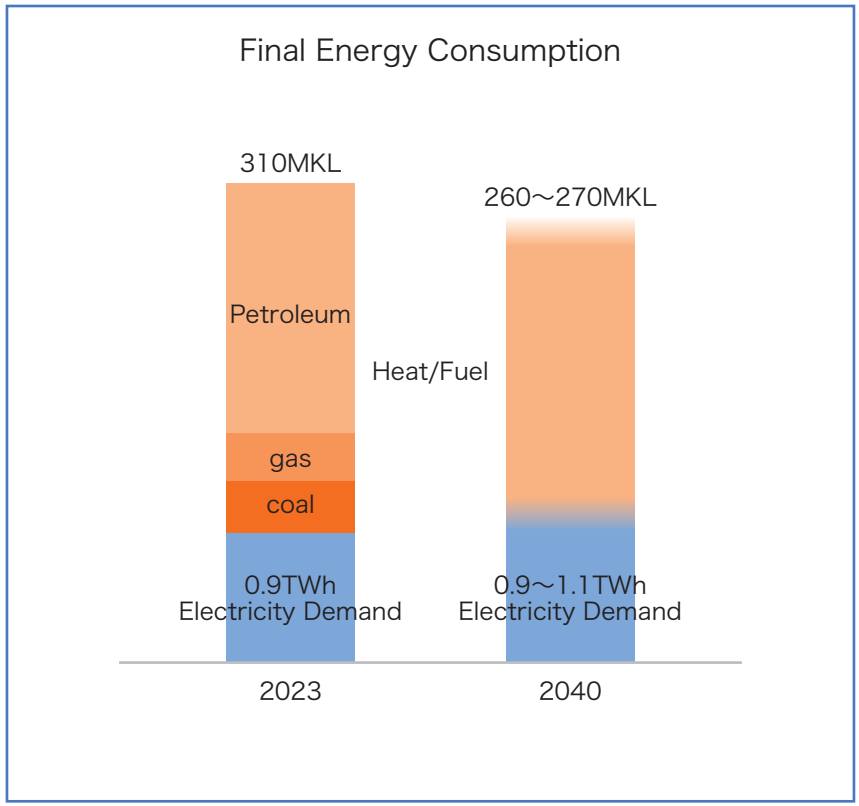
■ The basic direction of the national energy policy

■ Changes since the 6th Revision

- Increased economic security demands
- Expected increase in electricity demand due to the progress of DX, GX
- Expanding diverse and realistic approaches while maintaining ambitious goals toward realizing carbon neutrality



Source:METI



Source:METI

The 7th Strategic Energy Plan

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■ Policy Direction toward 2040

- 73% reduction in GHG emission compared to FY2013
- Maximize the use of decarbonized energy sources that contribute to energy security
- Balanced power generation mix

Source:METI

Renewable 	・Promote the maximum introduction as a major power source ・Adoption of perovskite solar cells (target: 20GW by 2040) ・Form offshore wind power projects, including floating, with a total capacity of 30 ~ 45GW by 2040
Nuclear 	・Continuously utilize the necessary amount of generation capacity ・Deploy next-generation advanced reactors, including replacement at other sites owned by operators with decommissioned plants
Thermal 	・Play key roles in supplying power, regulating output, and providing inertial and synchronous power ・Ensure generation capacity necessary for a stable electricity supply ・Reduce electricity output from inefficient coal-fired power plants ・Promote the development and replacement of LNG-fired power plants

The 7th Strategic Energy Plan

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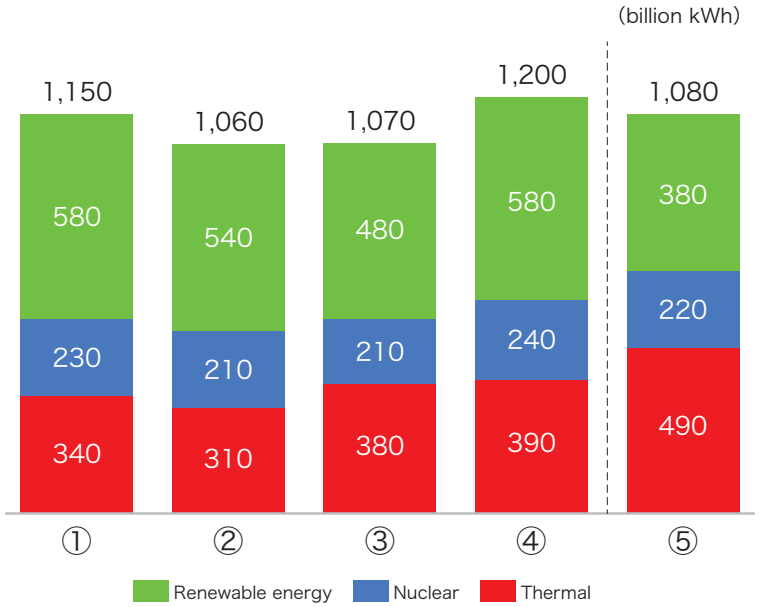
■ The energy supply and demand outlook for 2040 is based on multiple scenarios.

- There are various uncertainties.
- The outlook is affected by trends in innovative technology.

Power generation by scenario in 2040



① Expansion of renewable energy
Renewables grow via new technologies and lower costs.

② Utilization of hydrogen and new fuels
Hydrogen, ammonia, and synthetic methane use expands.

③ Utilization of CCS
CCS adoption grows with better cost and capacity.

④ Innovative technology
Various technologies advance balanced decarbonization.

⑤Limited Progress
Existing technologies expand amid slow innovation.

Source:METI

- In addition to the scenario achieving a 73% reduction by fiscal year 2040, a reference scenario ⑤ that falls short of this target (achieving a 61% reduction) is also presented.
  In this case Natural gas primary energy supply is about 74 million ton.

The 7th Strategic Energy Plan

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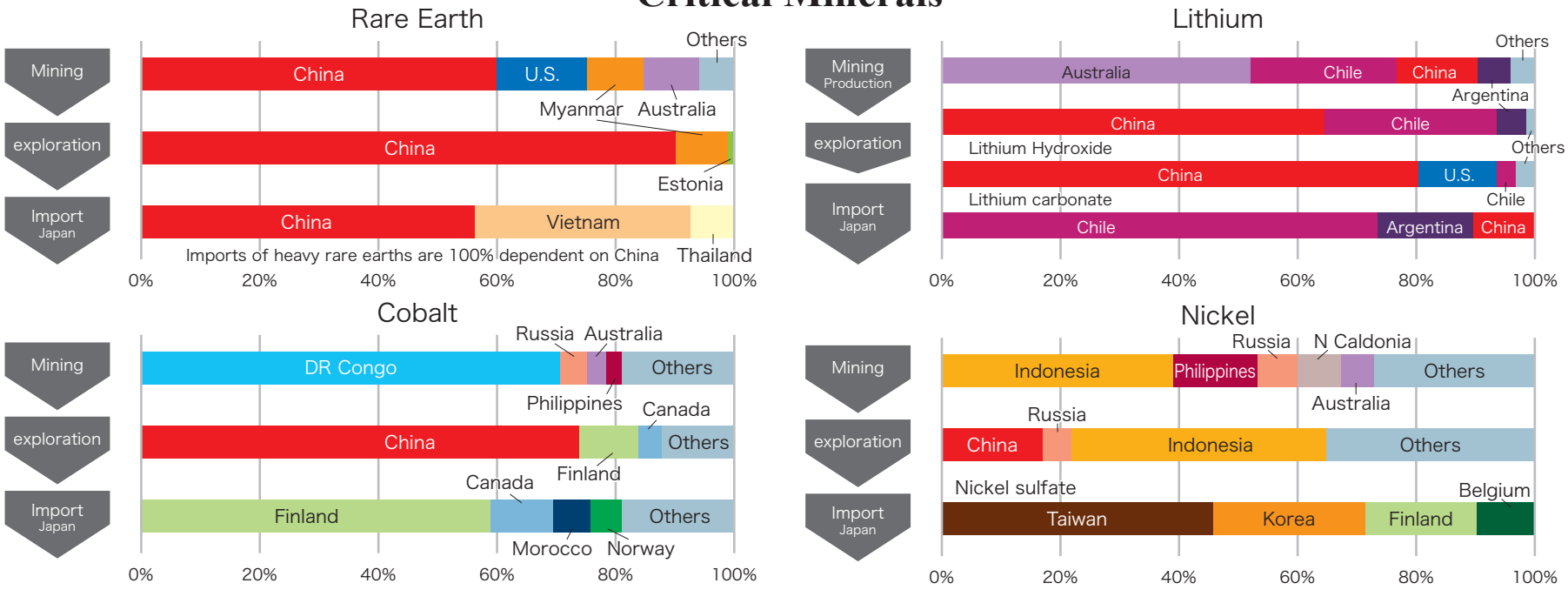
- **Some critical minerals are dependent on specific countries, it is important to take measures to ensure a stable supply, including diversification of supply sources.**
- **Economic Security Promotion Act of 2022 identified the critical products with strategic importance. Policy for Securing Stable Supply of Critical Minerals of 2023 set the procurement targets required for domestic production in 2030.**

Critical Minerals



※ rare earth: for EV motor and Wind power, Lithium/ Co/Ni: for EV and Battery

Source:METI

GX 2040 Promotion Strategy - Key Laws & Policies

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Policy/Legislation		Key Content
GX Promotion Act (Enacted 2023)		Issuance of GX Bonds (20 trillion yen); Introduction of carbon pricing (ETS, fossil fuel surcharge); Establishment of GX Acceleration Agency; Total GX investment target of 150 trillion yen over 10 years (public and private)
GX Act Amendments (Amended 2023)		Legalization of ETS (mandatory from FY2026); Fossil fuel surcharge from FY2028; Strengthened financial support for GX investment
GX Decarbonization Power Supply Act (Enacted 2023)	Electricity Business Act (Amended)	Sets nominal reactor life at 40 years; up to 20-year extension possible with METI approval based on GX contributions and safety upgrades. Unforeseen non-operational periods not counted toward limit.
	Atomic Energy Basic Act (Amended)	Clarifies fundamental nuclear policy: safety-first, energy security and GX role, and institutional responsibility.
	Reactor Regulation Act (Amended)	Requires technical assessments every 10 years after 30 years of operation; long-term management plans must be approved by NRA.
	Spent Nuclear Fuel Reprocessing Implementation Act (Amended)	Expands Nuclear Reprocessing Organization's role to oversee national decommissioning, conduct joint R&D, and levy decommissioning contributions from operators.
Hydrogen Society Promotion Act (Enacted 2024)		Defines basic policies and business approval scheme; Subsidizes price differences between hydrogen and existing fuels; Allows regulatory exemptions; Sets operational criteria for hydrogen suppliers.
CCS Business Act (Enacted 2024)		Licensing systems for storage and trial drilling; Legal frameworks for storage/drilling rights; Regulations for CCS and CO_2 pipelines.

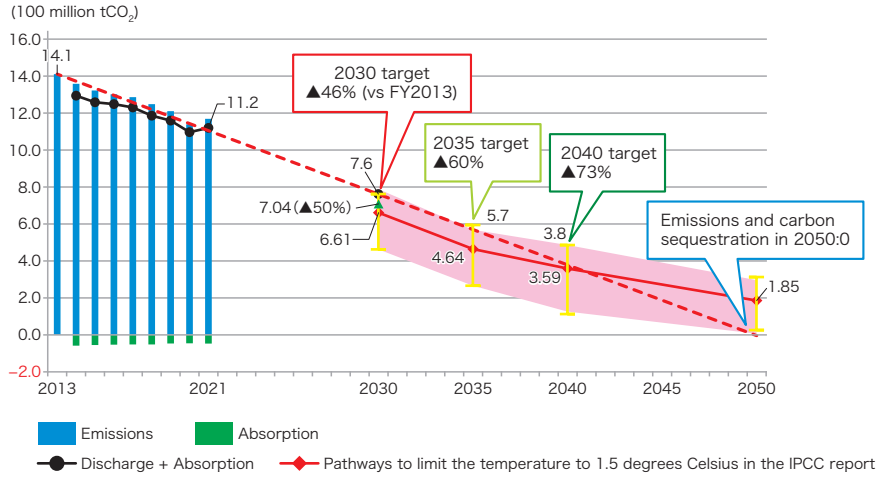
Source:METI

GX 2040 Vision

■ Revision of the Strategy for Promoting Transition to a Decarbonized Growth-Oriented Economic Structure

- Expand inter-regional lines, install storage facilities, and use smart grids to balance supply and demand.
- Promote wind, geothermal, and storage through FIP (market + premium); reform capacity market to support hydrogen and CCUS-equipped thermal.
- Strengthen LNG contracts (Middle East, U.S., Australia)

Japan's Progress Toward Net Zero by 2050



GX 2040 Vision – Key Steps

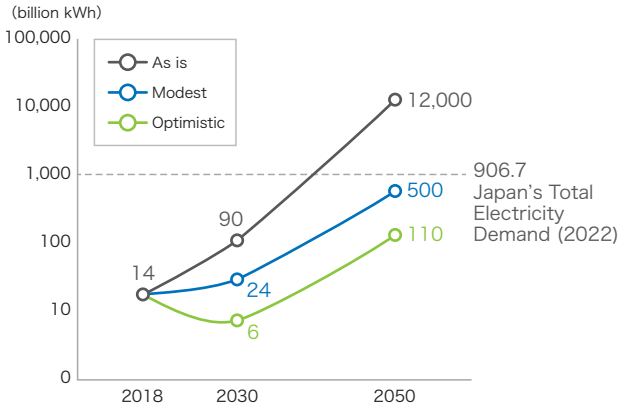
Year	Key Steps
2026	Launch ETS; mandatory for emitters >100,000 t-CO_2
2028	Introduce carbon levy on coal, LNG, and oil
2030	Renewables 36–38%; GHG -46% vs. 2013
2033	Auction starts for power sector
2040	Renewables 40–50%
2050	Carbon neutral; zero-emission power mix

Source:METI

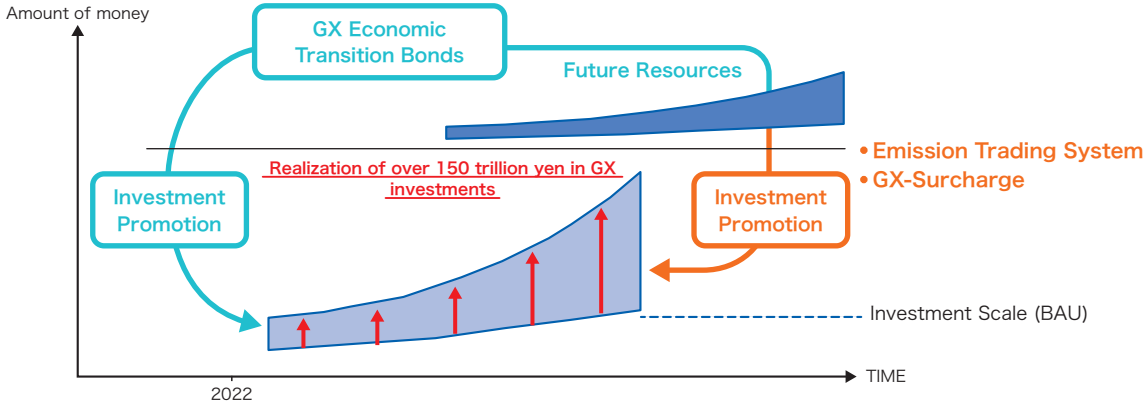
■ Future Energy Strategy, Pro-Growth Carbon Pricing Framework

- AI/Data Center Electricity Demand:DC/AI power demand projected to increase towards 2050, Promote regional DC siting and decarbonized power supply integration
- Green Industrial Policy: Support hydrogen-based steel and low-carbon materials, Leverage corporate and public procurement
- GX bonds finance upfront decarbonization investments to support industrial transition.
- The GX-ETS was launched in FY2023 on a voluntary basis, with approximately 700 companies participating, covering over 50% of national emissions.
- From FY2026, participation is mandatory for entities emitting over 100,000 tCO_2, with approximately 300-400 companies, covering around 60% of emissions.
- GX bonds are expected to be repaid through revenues from the fossil fuel surcharge introduced in FY2028 and allowance auction revenues generated by auctions for power generators under the GX-ETS, which are scheduled to commence in FY2033.

Increase in electricity demand driven by data centers



Pro-Growth Carbon Pricing Concept



Source:METI

The Takaichi Administration's Energy Policy

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■ Stricter RE Governance with Continued Decarbonization

- Energy security and improving Japan's energy self-sufficiency are the administration's top priorities.
- The Takaichi administration is expected to tighten oversight of renewable energy deployment while maintaining Japan's broader decarbonization goals.
- The administration's policy approach combines short-term solar governance with a long-term support for nuclear power and emerging technologies.

Topic	Policy direction	Key challenge
Renewable energy	Review subsidies and strengthen regulations on mega-solar and other renewable installations	Environmental damage, landscape concerns, disaster risks, China dependency, and future panel disposal must be addressed to sustain public support
Nuclear power	Promote nuclear utilization and support next-generation advanced reactors	Restarting and replacing plants remain uncertain due to safety requirements and public concern
Emerging technologies	Accelerate commercialization of perovskite solar cells and fusion energy	Fusion still faces major technical and cost uncertainties; timing of deployment is unclear
Climate policy framework	Continuously pursuing Green Transformation, carbon neutrality by 2050, and the FY2030 emissions reduction target	Policy consistency is important, but implementation must avoid public opposition and industrial disruption
Broader environmental policy	Strengthen climate adaptation and national resilience	Disaster prevention, measures against extreme heat, and adaptation in agriculture/forestry/fisheries will become increasingly important

Source:METI

Data Center Demand Growth and Key Challenges

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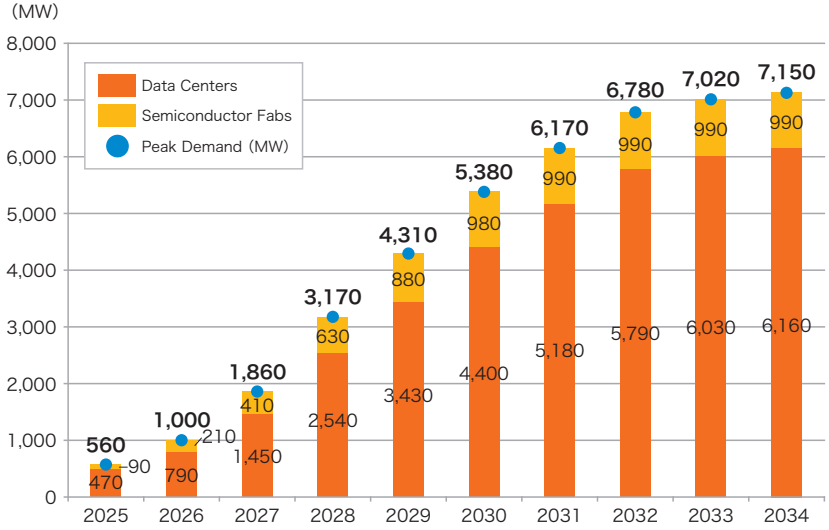
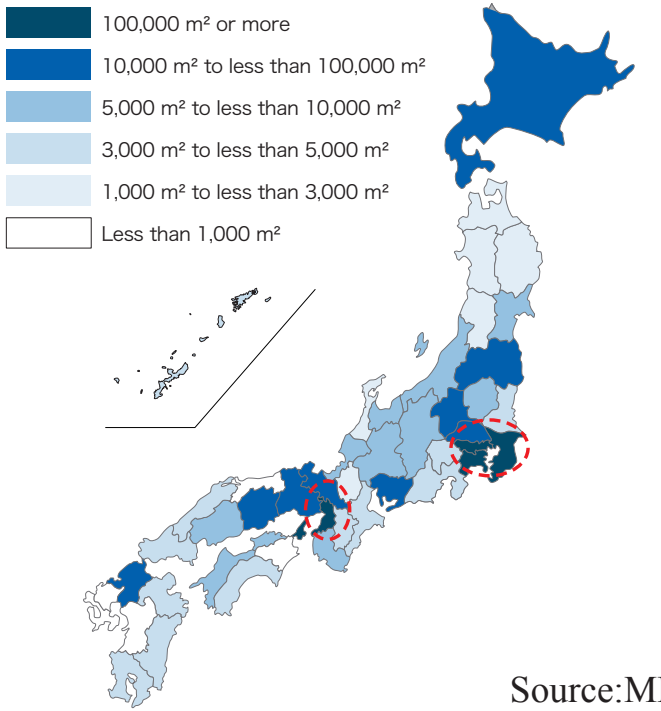
- **Data center demand in Japan is expected to rise sharply, driven by AI, digitalization, and new large-scale facilities.**
- **The main challenge is securing power supply to meet growing demand, including from industrial sectors such as semiconductors and, potentially, iron and steel as the sector shifts toward electric arc furnaces. Other challenges that need to be addressed include grid constraints, interconnection rules, and siting, including the geographic dispersion of data centers.**

Projected Peak Demand from New DCs and Semiconductor Fabs



Source:OCCTO

Data Center Distribution by Server Room Floor Area



Source:METI

Structure of the Electric Power Industry

Development of Electric Power Industry

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YR	Events	YR	Events
1886	Tokyo Electric Light Co. opened for business	1995	Deregulation in generation sector (IPPs have entered the market)
~1930s	Approx. 800 private/local utilities operated	2000	Deregulation in retail sector (only for high-voltage customers)
1939	Japan Electric Generation and Transmission Co. (state-owned) established	2003	JEPX is established
1945	**End of World War II**	**2011**	**Great East Japan Earthquake**
1951	Industry restructured into 9 privately-owned electric power companies (EPCOs)	2015	OCCTO established
1952 1957	Wholesale Electric Utilities (J-Power, JAPC) opened for business	2016	Full retail competition
1972	Okinawa EPCO opened for business (become 10 EPCOs)	2020	Legal separation of T&D from EPCOs

Electricity Sector Reform

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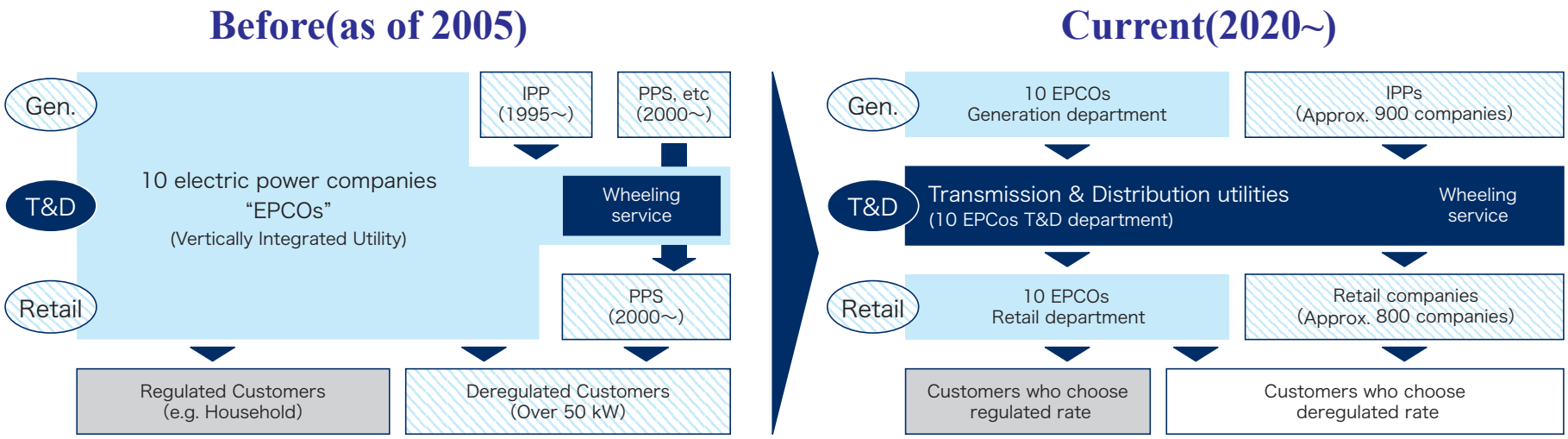
- **Reform started in 1995**
- **1995** : Generation Deregulation (IPP entered the market)
- **2000** : Retail deregulation for large-scale customers(over 2,000kW)
- **2005** : Retail deregulation for medium-scale customers(over 50kW)
- **2016** : Full retail deregulation
- **2020** : Legal unbundling of transmission and distribution sector

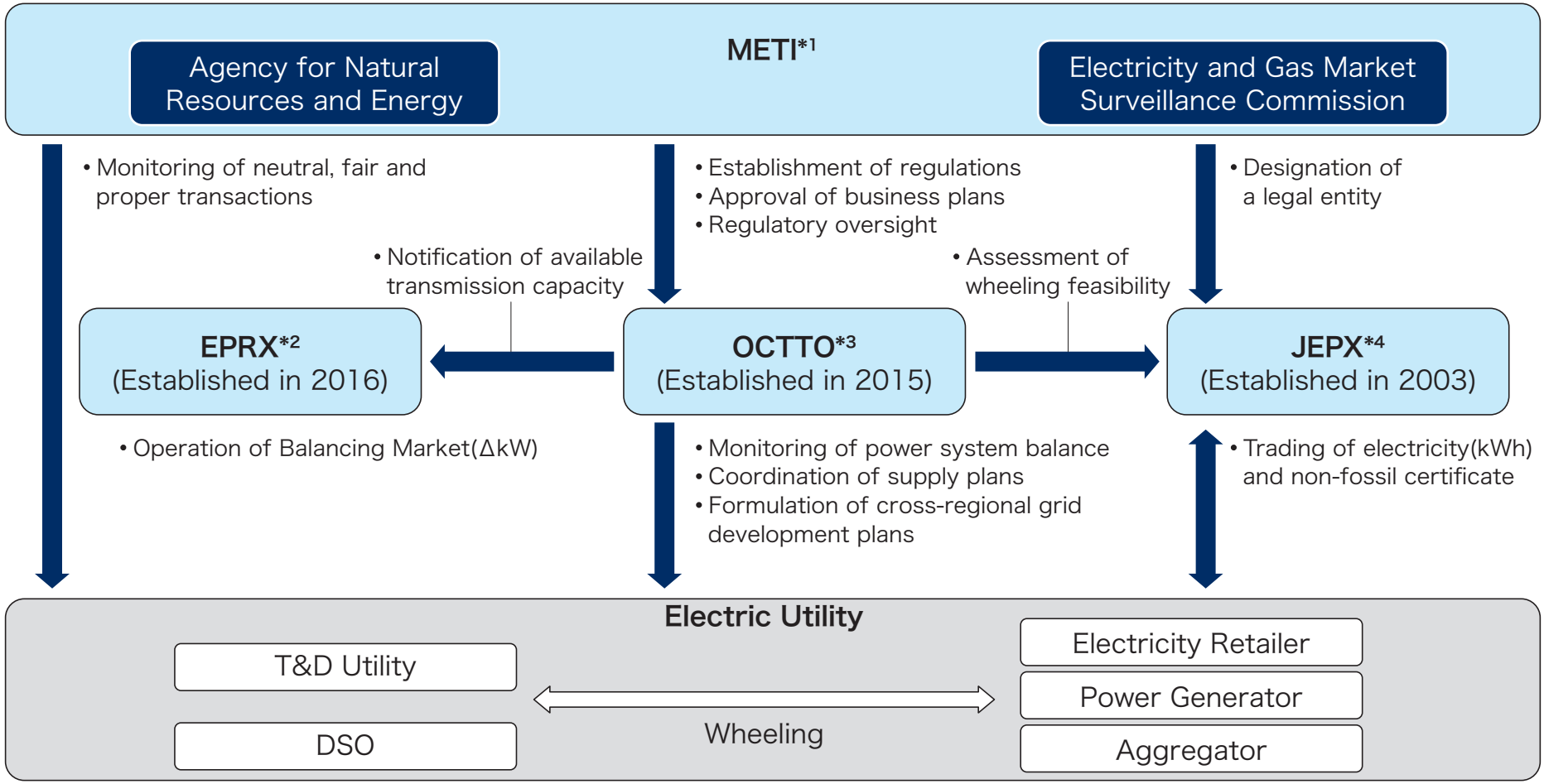
Electricity system before and after Reform



Source: METI, Detailed System Design for Full Retail Deregulation, 2013

Structure and Governance of Power Supply

JEPIC



*1 Ministry of Economy, Trade and Industry
*2 Electric Power Resource Exchange
*3 Organization for Cross-regional Coordination of Transmission Operators
*4 Japan Electric Power Exchange

Source: OCCTO, Corporate Brochure, 2023

Electricity Market

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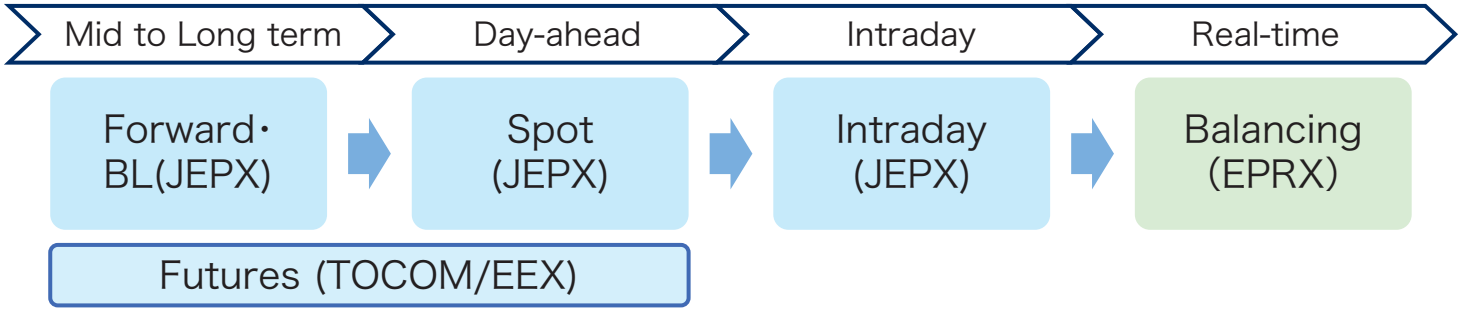
■ The Japan Electric Power Exchange (JEPX) began operating the Energy Market in 2005 as a source of supply for LSEs.

Commodity	Market Name	Type	Main Player	Market Operator	Timing	Unit	Pricing
Energy (kWh)	Intraday	Physical	Generators ↔ Retailers (LSEs)	JEPX	Intraday	30-min blocks	Continuous trading
	Day-ahead (Spot)	Physical			Day-ahead	30-min blocks	Blind Single-Price
	Forward (Bilateral) /BL	Physical			Weeks to years ahead (~3Y ahead)	Weekly / Monthly / Yearly (24h or Daytime)	Continuous trading
	Futures	Derivative		TOCOM EEX	-	Daily / Weekly / Monthly / Quarterly / Yearly	Continuous trading
Ancillary (Δ kW)	Balancing	Physical	Generators / TSO / Aggregators ↔ TSO	EPRX	Day-ahead	30-min blocks	Single-Price



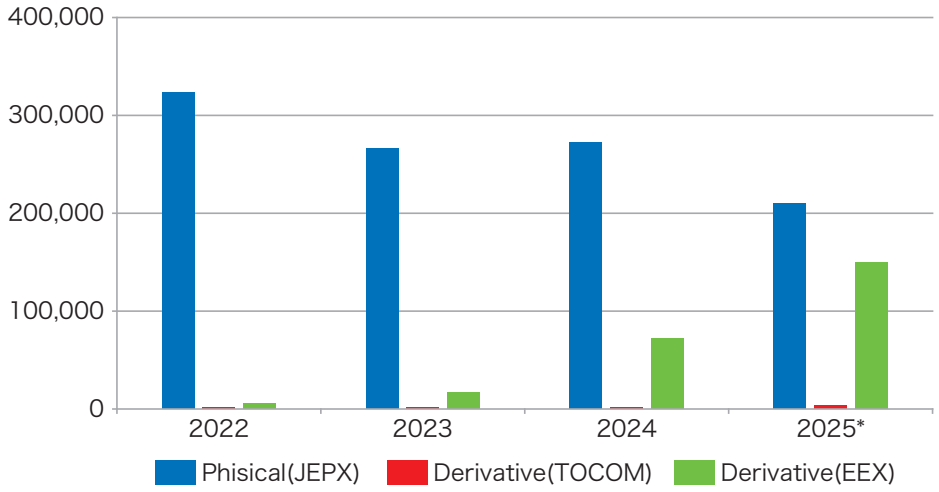
Source: METI, The Study on the Simultaneous Market, 2024

Electricity Market

JEPIC

- **Japan's main power trading markets are physical trading on JEPX and derivative trading on TOCOM and EEX.**
- **In the EU and U.S., derivative trading volumes average around 6x total power generation, and around 12x in Germany. Based on European market trends, JEPX's intraday market is also expected to grow significantly.**

Total volume of trades (GWh)



*The period is from April to March of the following year.
For 2025, the period of JEPX is from April to December.

Trading Type	Main Market(s)	Current Total Volume of trades	Future Outlook
Physical	JEPX	Approx. **40%** of total power generation	Increase to around **60–70%**
Derivative	TOCOM, EEX	Approx. **15%** of total power generation	Reach at least **2x**

Source: JEPX(2026), TOCOM(2026), EEX(2026)

Electricity Market

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- **The Capacity market was launched in 2020, with delivery starting in FY2024, and its Long-Term Decarbonization Auction(LTDA) was launched in 2023.**
- **LTDA has been carried out for power plants with decarbonization roadmap and securing to recover fixed cost through capacity payment for 20 years.**

Commodity	Market Name	Type	Main Player	Market Operator	Timing	Unit	Pricing
Capacity (kW)	Capacity (Main AUCt.) LTDA	-	Generators / Aggregators ↔ OCCTO(LSEs pay capacity charges.)	OCCTO	4 years ahead Years ahead	1kW~ Min. 1MW Power supply (unit, model)	Single-Price (Multi-price exceptions) Multi-Price 20 years contract
Non-fossil Certificate ($t\text{-}CO_2$)	Non-fossil Value Trading	**Physical**	Generators ↔ Retailers(LSEs)・End Users	JEPX	-	1kW~	Multi-Price (FIT) Single-Price (Non-FIT)

Auction Round	Major Companies	Main Technologies	Trend
1st LTDA (FY2023)	ORIX, JERA, Tokyo Gas, etc.	LNG, nuclear, BESS, pumped hydro	Stable low-carbon capacity
2nd LTDA (FY2024)	JAPC, TEPCO, Battery storage LLCs, etc.	BESS, nuclear, LNG	Shift toward flexibility resources

Source: OCCTO(2026)

New Entries in the Retail Market

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■ New Retail Electricity Suppliers

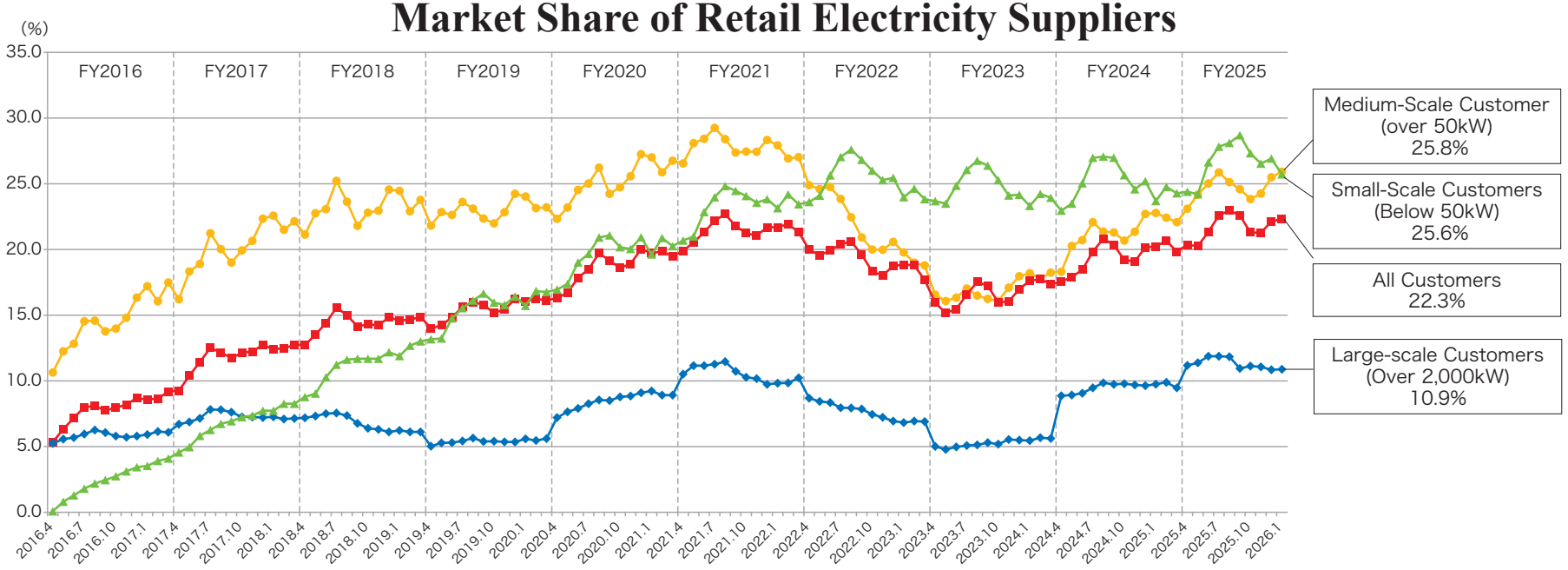
- Number: Approx. 800(including suppliers which have no trading record)
- Share: 22.3%.

■ Until 2021: The share had increased as the reform develops.

■ 2021-2022: 195 companies(approx.28%) discontinued business due to the rise in fuel costs and the whole sale price.

■ Since 2023: The share has been on the rise.

Market Share of Retail Electricity Suppliers



Source: EGC, Prepared based on “electricity trading reports”, 2016-2026

Supply and Demand

Electricity Generation

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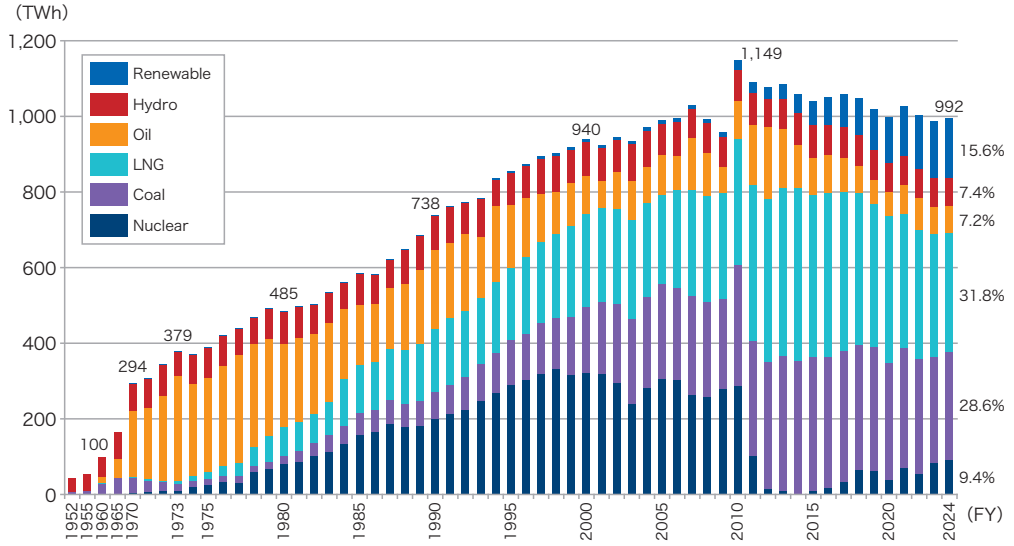
- Japan's total electricity generation: 992TWh (2024)
- Renewables: 23% (Non-hydro: 15.6%, Hydro: 7.4%), Coal: 28.6%, Natural Gas: 31.8%,Oil: 7.2%, Nuclear: 9.4%
- Following the Mar. 2011 nuclear accident, the progressive shutdown of Nuclear power plants caused dependence on Coal and LNG power plants and increased their share up to around 80% for some time.
- In the past few years, nuclear power plants are gradually restarting, and its share is slowly recovering.
- Electricity generation has been declining moderately in recent years, due to slow economic growth, improved energy conservation and demographic decline.

Electricity Generation by Source



Source: ANRE, METI, "Energy Trends 2025"

Reserve Margin

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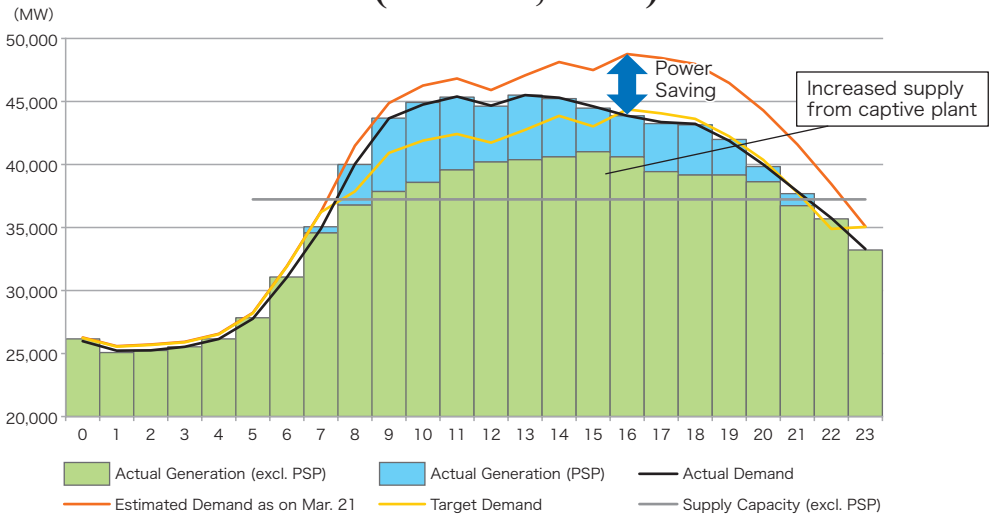
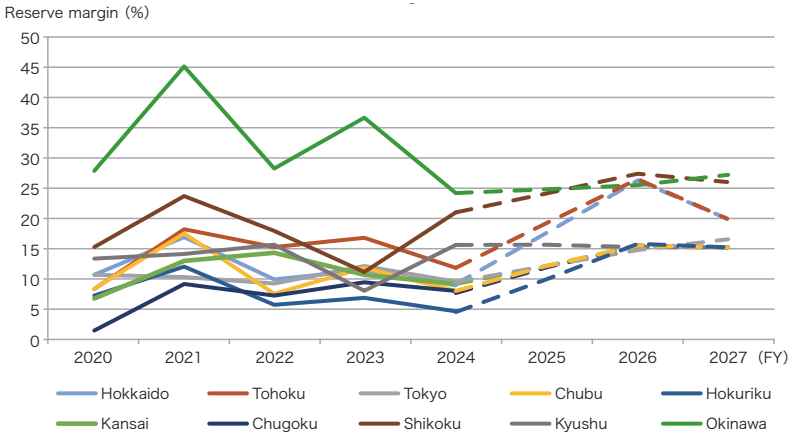
- Reserve margin (RM) between electricity supply and demand has been consequently tight after the Earthquake in 2011.
- An electric supply warning was issued on Mar. 22, 2022, despite the non-high demand period, with many reasons overlapping such as the increase in demand caused by abnormal cold weather, the shutdown of thermal power plants due to the earthquake, planned maintenance of plants, the decrease in solar power due to bad weather, etc. tightening the RM as a result.
- RM is anticipated to be improved due to new plants operation.

Power Saving Correspond to Warning in Tokyo Area (Mar. 22, 2022)



Source: ANRE, Mar. 25, 2022

Reserve Margin (Summer)



Source: Data from OCCTO, "Annual Report," each year

Curtailment of Solar Power

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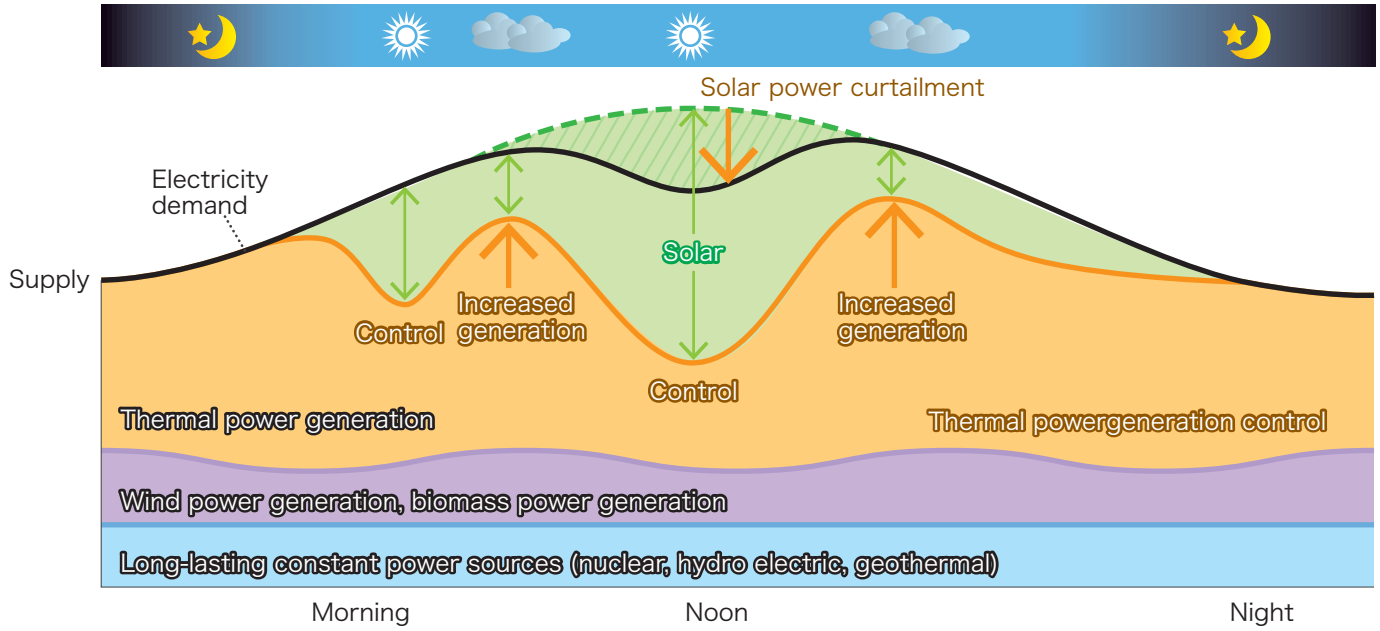
- Increase of solar power generation changes electricity supply mix.
- To compensate for the output of variable renewable energy generation, other controllable power sources such as thermal, hydro, and pumped storage plants are used.
- In case of little demand, solar power generation is curtailed due to excess of compensation limit.

Supply/Demand Situation on the Lowest Demand Day (such as a sunny day in May)



Source: METI (Feb. 2026), “Japan’s Energy”

Electric Power Facilities

Installed Generating Capacity

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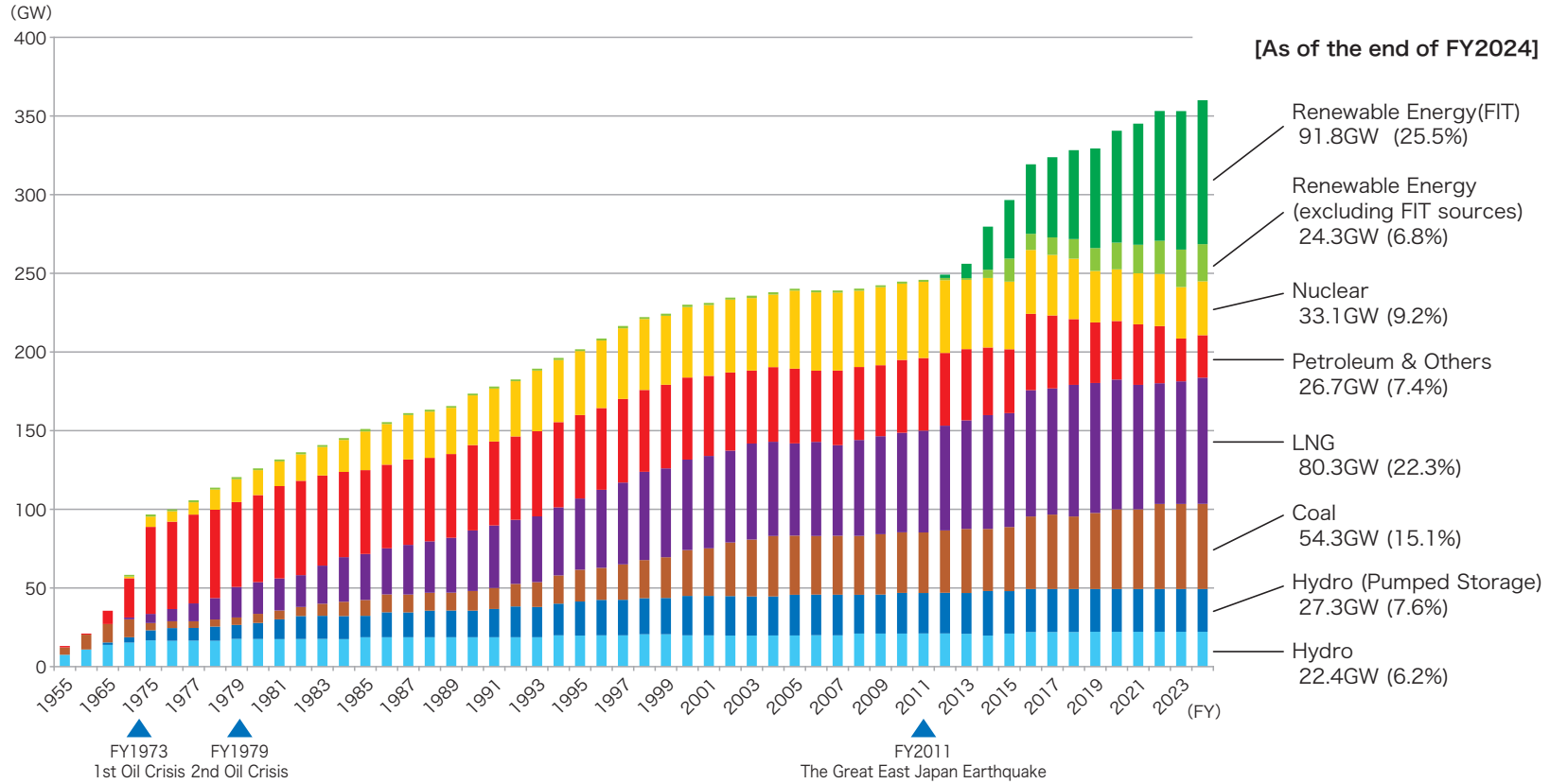
- Since the oil crises in 1970s, appropriation of fuel mix has been promoted including the diversification of supply sources and routes.
- FIT scheme started in 2012 to promote deployment of renewable energy power sources.



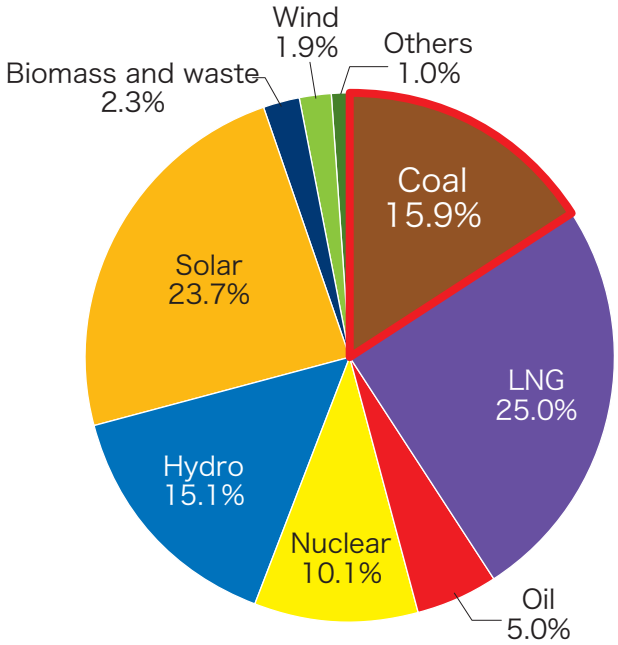
Source: The Federation of Electric Power Companies of Japan and
Agency for Natural Resources and Energy (ANRE), Ministry of Economy, Trade and Industry (METI)

Coal Power

JEPIC

- Along with the increase of renewable energy generation, the utilization of thermal power generation, especially, coal-fired power generation has been declining.
- While the Japanese government intends to utilize coal-fired power generation to a certain extent to ensure a stable power supply and economic advantages, inefficient plants are scheduled for a phase-out by 2030 as part of its climate change mitigation measures.
- In FY2023, a new benchmark standard targeting coal-fired power generation was introduced under the Energy Conservation Act. (An operator of coal-fired power generation should meet the standard of "43% or above" as the weighted average of thermal efficiency of its owned plants by 2030.)

Power Generation Capacity by Source (FY2025)

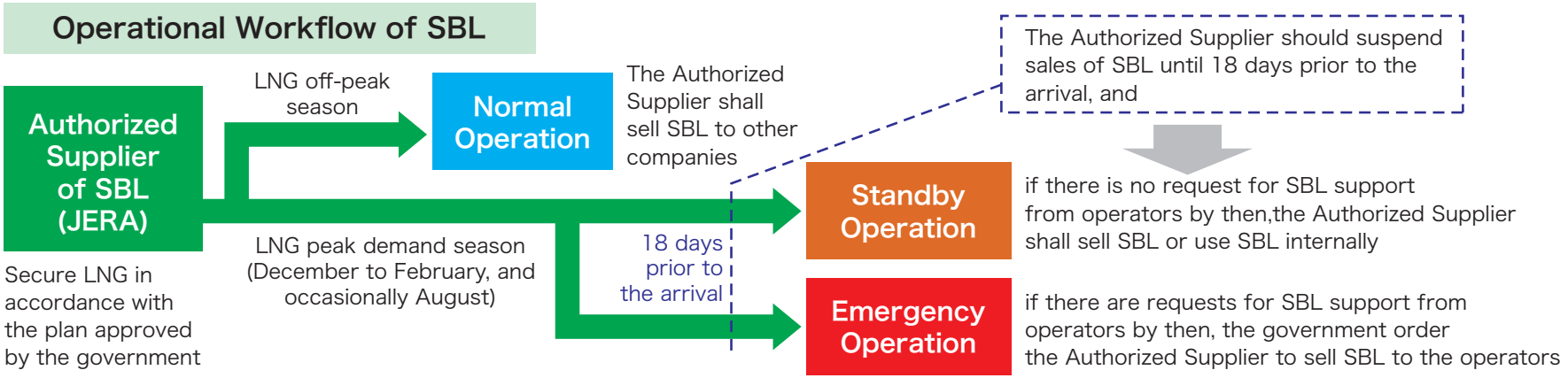


Source: OCCTO

Energy Security and LNG Resilience

JEPIC

- In order to introduce the large-scale renewable energy, thermal power generation is necessary to provide balancing capacity.
- The 7th Strategic Energy Plan identifies securing LNG-fired power generation, decarbonizing thermal power generation through the use of hydrogen, ammonia, and CCUS. Electric power companies have been conducting demonstration experiments utilizing NH_3 or H_2 co-firing for decarbonization.
- Based on lessons learned from the month-long power shortage and price hike in January 2021, "Strategic Buffer LNG (SBL) Mechanism" was introduced in 2023. SBL mitigates shortages by securing private importers for potential resale losses or losses by emergency delivery to domestic users.



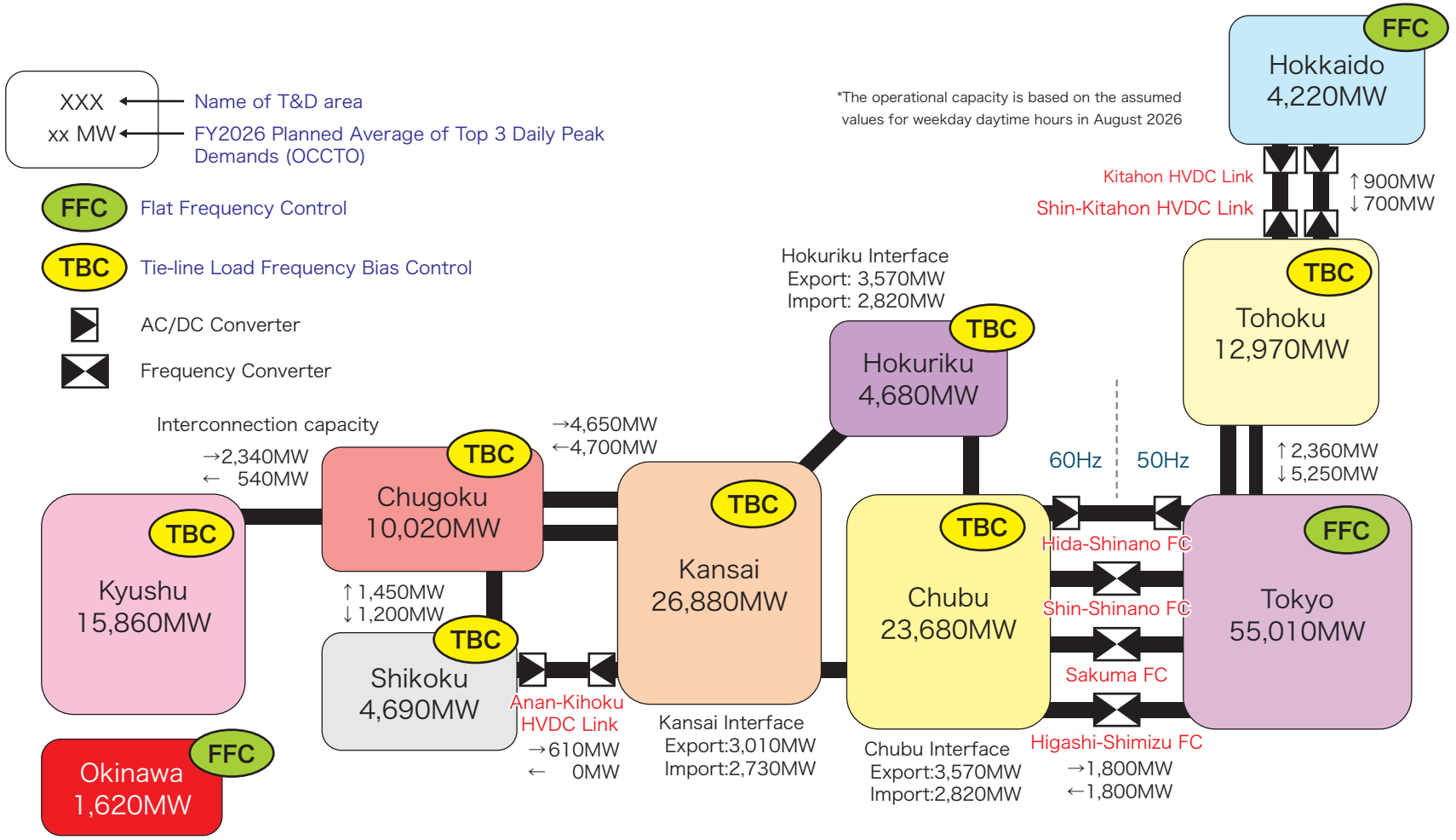
Source: METI

Transmission & Distribution

National Grid Connections

JEPIC

- Excluding Okinawa, the grids of the nine regions are interconnected by tie lines.
- The 50 Hz and 60 Hz systems are connected through frequency converters (FCs).
- Basically, Each area should keep the balance between supply and demand.

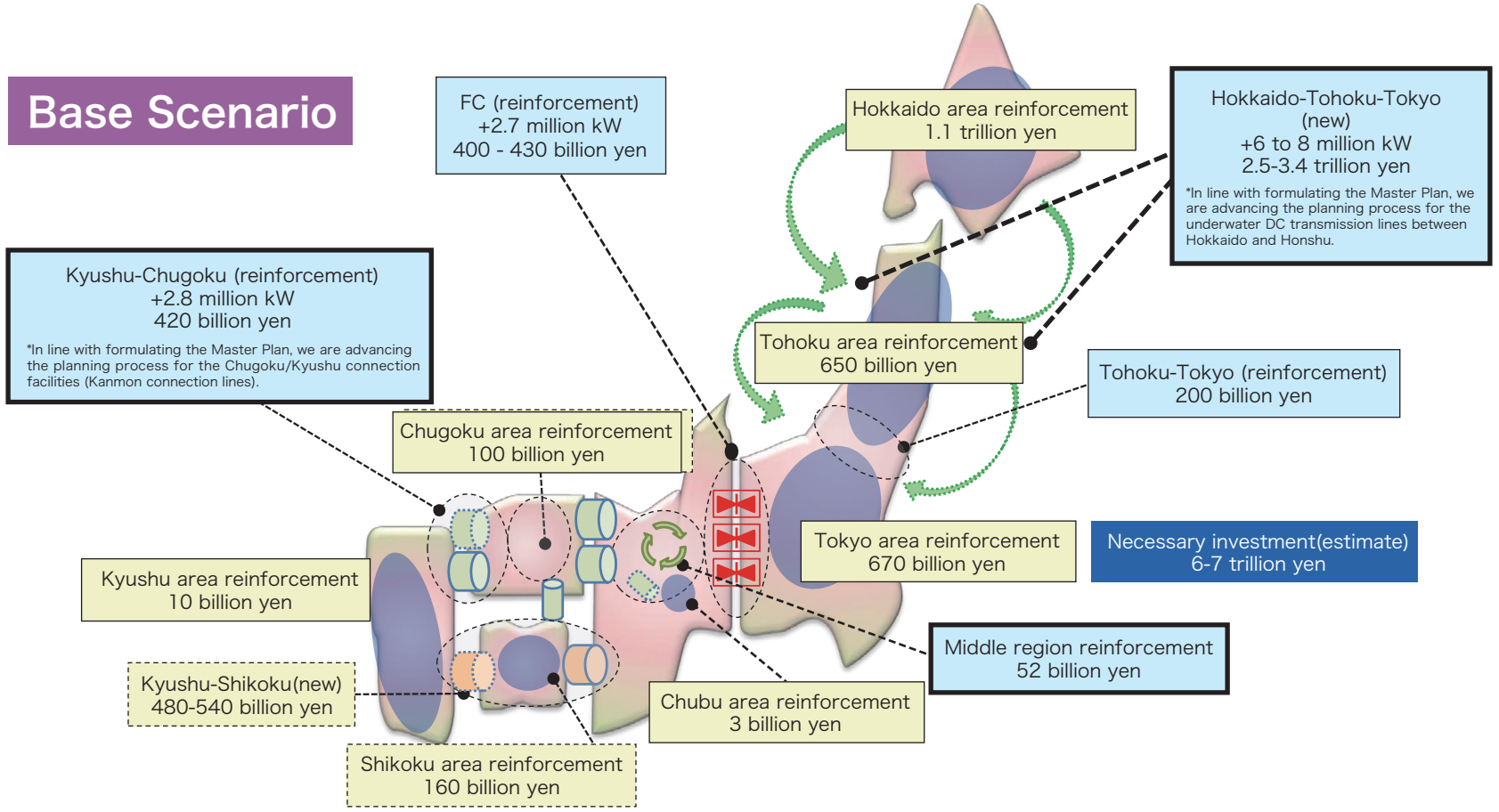


Source: OCCTO, Annual and Long-Term Operational Transfer Capacity of Interconnection Lines (FY2026–FY2035)

Reinforcement Plan of Transmission Networks

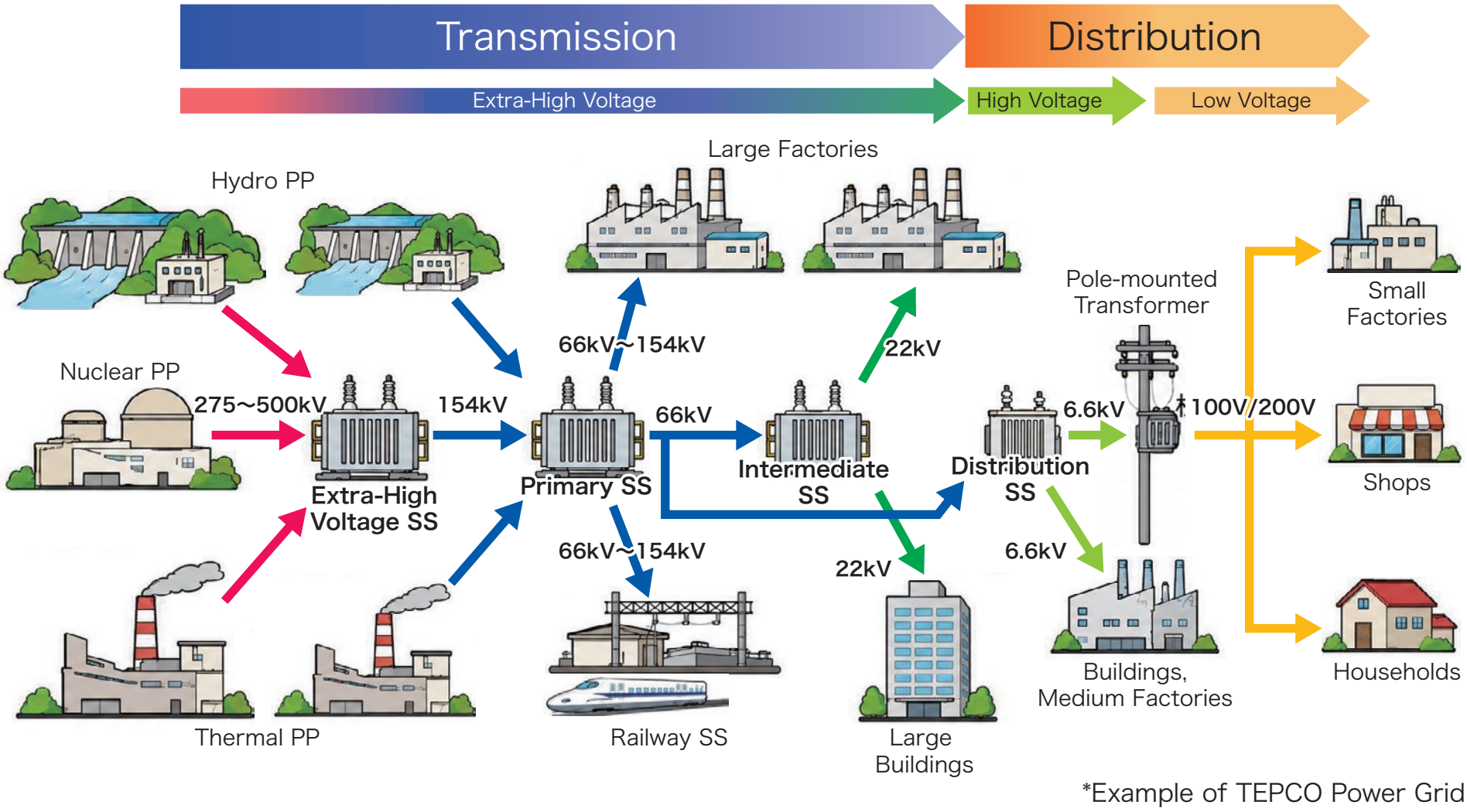
JEPIC

■ **The master plan for the cross-regional interconnection system was formulated by OCCTO in March 2023 in order to realize the shift to renewable energy as the main power source and the network system resilience.**



Source: OCCTO, Japan's Enegy 2025 EDITION, p9

Structure of the Power System

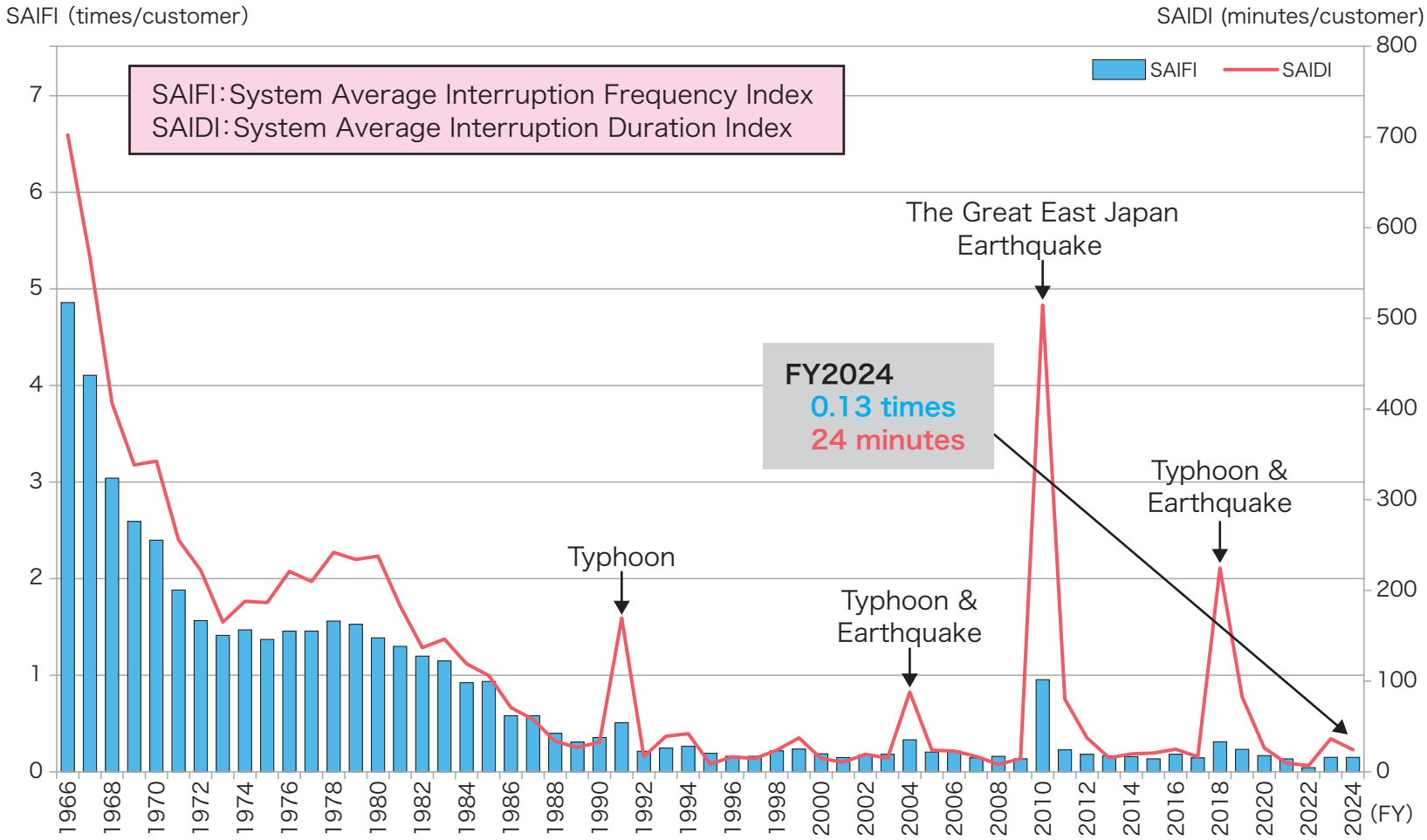


Source: The Federation of Electric Power Companies of Japan, INFOBASE 2025, p11

Trend of SAIFI and SAIDI

JEPIC

- Most blackouts are caused by natural disasters, usually not by facility failures.
- Power outages are minimized through live-line construction methods and distribution system automation.



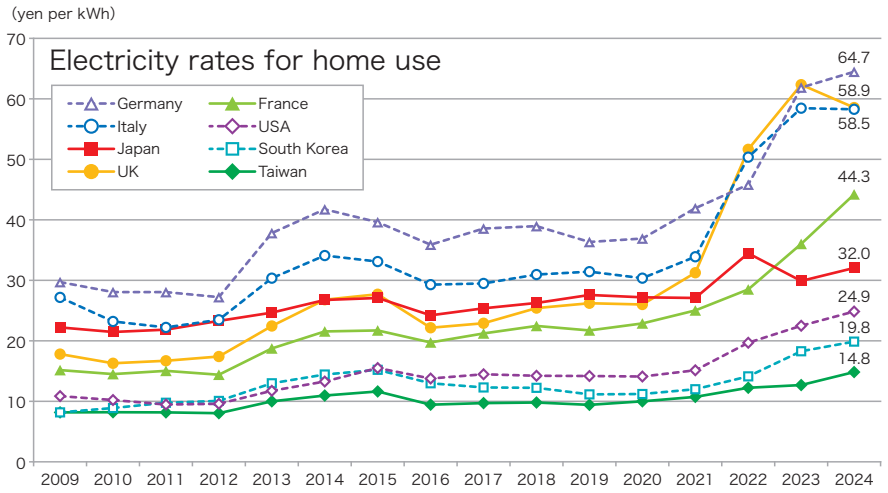
Source: The Federation of Electric Power Companies of Japan, INFOBASE 2025, p26

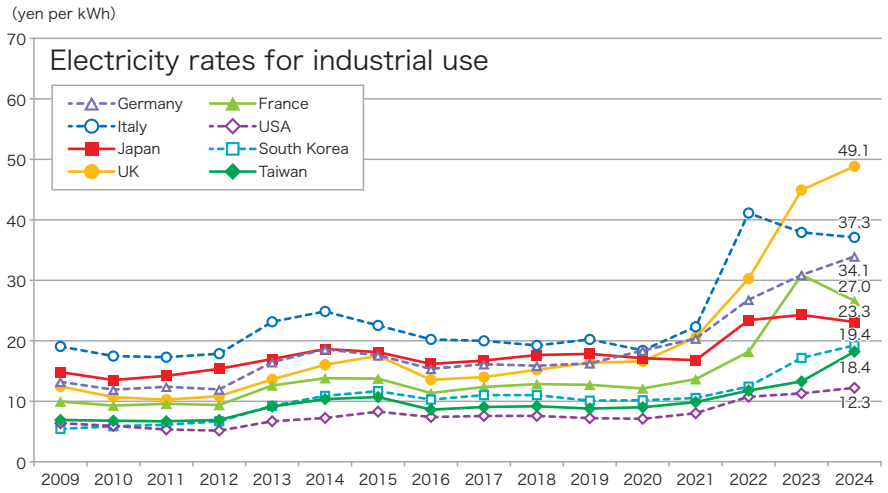
Electricity Rates

International Comparison of Electricity Prices

JEPIC

- **Compared to other major countries, Japan's electricity price (industrial use) is in the middle range, and the impact of the renewable energy surcharge and fluctuations in fuel prices are reflected in the price.**
- **In Europe, electricity prices have risen significantly due to renewable energy surcharges, increases in network costs, and the impact of fuel price hikes caused by the situation in Russia and Ukraine. In Japan, on the other hand, the renewable energy surcharge, the high level of dependence on fossil fuels, and the weakening of the yen have had an impact on electricity prices.**



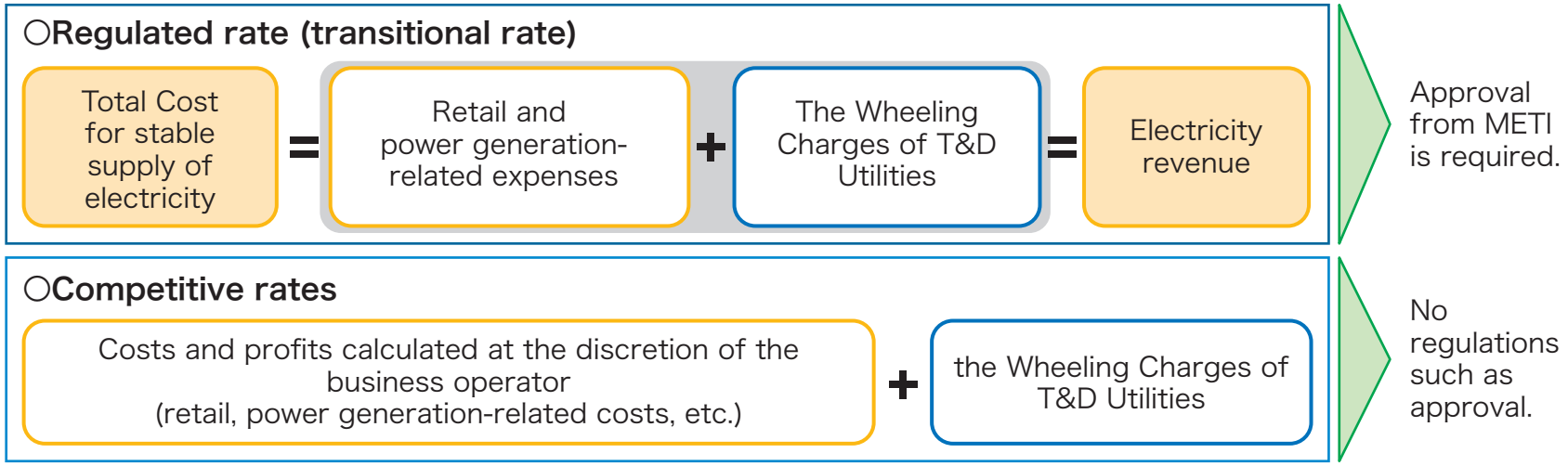


Source: METI 2026 JAPAN'S ENERGY

Regulated and Liberalized Rates

JEPIC

- **Before the full deregulation of the retail electricity market in 2016, the traditional utilities sold electricity at regulated rates approved by METI, but after the deregulation, new power companies were able to enter the retail electricity market, and competitive rates were introduced. Phase out of the regulation began in 2000 for extra-high voltage (20kV) users and in 2004 for high voltage (6kV) users.**
- **In order to prevent unregulated monopolies by major electric power companies, regulated rates (transitional rates) remain in place for low-voltage consumers.**
- **The decision to abolish the transitional rates will be made after considering a range of factors, including the level of awareness of electricity deregulation, trends in switching between retail electricity providers, and the existence of competitors with a certain market share.**



Source: METI HP

Nuclear Power

Role of Nuclear Power in 7th Strategic Energy Plan

JEPIC

■ In the 7th Strategic Energy Plan, Japan will maximize the use of decarbonized power sources such as renewable energy and nuclear power.

■ Key points in the plan:

- Replacement of decommissioned nuclear power plants[*1],

  *1 It is possible to replace next-generation advanced reactors on any sites of nuclear power plants owned by operators that have decided to decommission nuclear reactors.

- Up to 60-year operation[*2&3],

  *2 Recovery of inoperable years after 2011 due to legistrative changes, administrative orders, court order for provisional suspension.
  *3 New rule for safety review for extension in every 10 years after 30 years of initial operating license.

- New electricity demand of data centers and semiconductor factories,
- Expediting plant restarts (Recently restarted: one BWR),
- Promoting R&D of next-generation advanced reactors,

  Source: METI, 7th Strategic Energy Plan 2025; Tepco HD. 2026

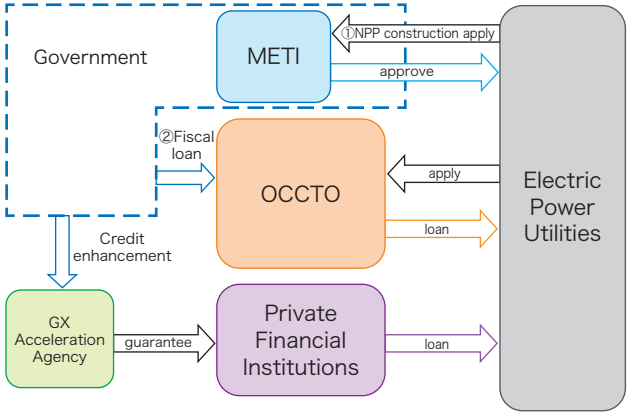
- New Public financing scheme for large-scale decarbonized power investments[*4].

  Government loans will be provided through OCCTO(Organization for Cross-regional Coordination of Transmission Operators).

  *4 Amendments to the Electricity Business Act were approved and enacted on 17 July 2026.

  Source: METI Press Release (21 July 2026) ; GX Acceleration Agency Annual Report 2025

Kashiwazaki-kariwa Unit 6 (ABWR)



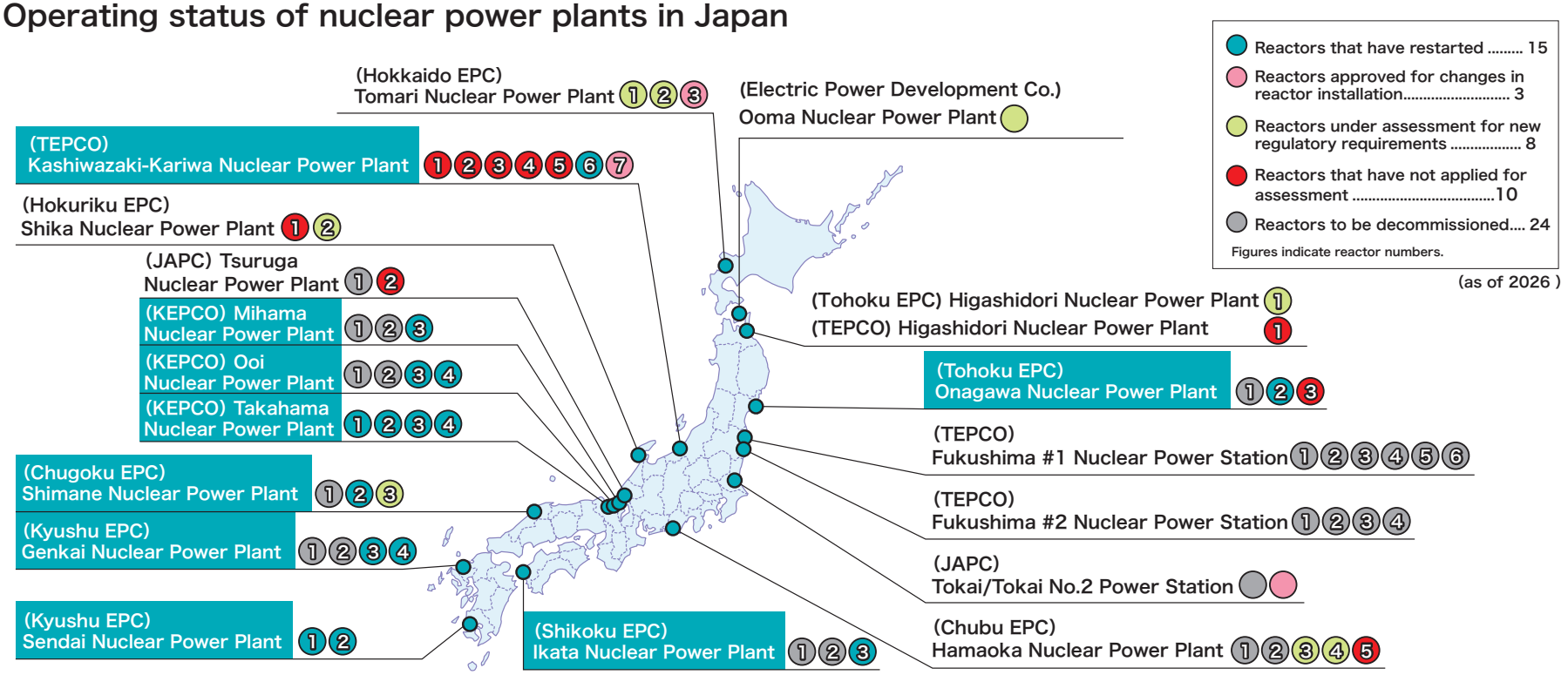
New Public financing scheme (planned)

Recent Restarts and Nuclear Power Plant Status

JEPIC

■ As of April 2026, 15 nuclear power plants, including a recently restarted Kashiwazaki-Kariwa No. 6, are in operation nationwide.

Operating status of nuclear power plants in Japan



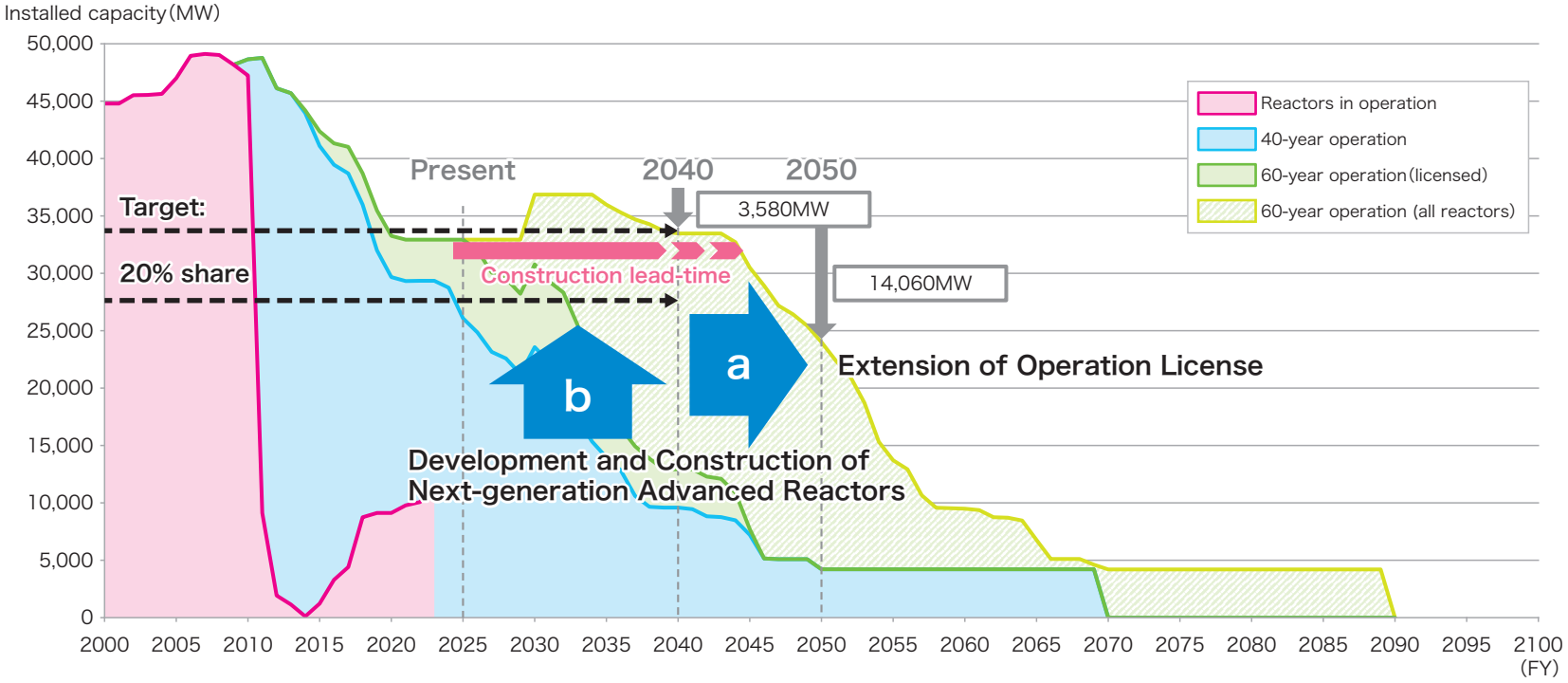
Source: METI, JAPAN'S ENERGY 2025
Note: Reflects the status as of 2026

Nuclear Capacity toward 2050 and beyond

JEPIC

■ **The 7th Strategic Energy Plan aims to achieve a 20% share of nuclear power generation in the power mix by 2040.**

a. Extension of operation license,
b. Development and construction of next-generation advanced reactors.

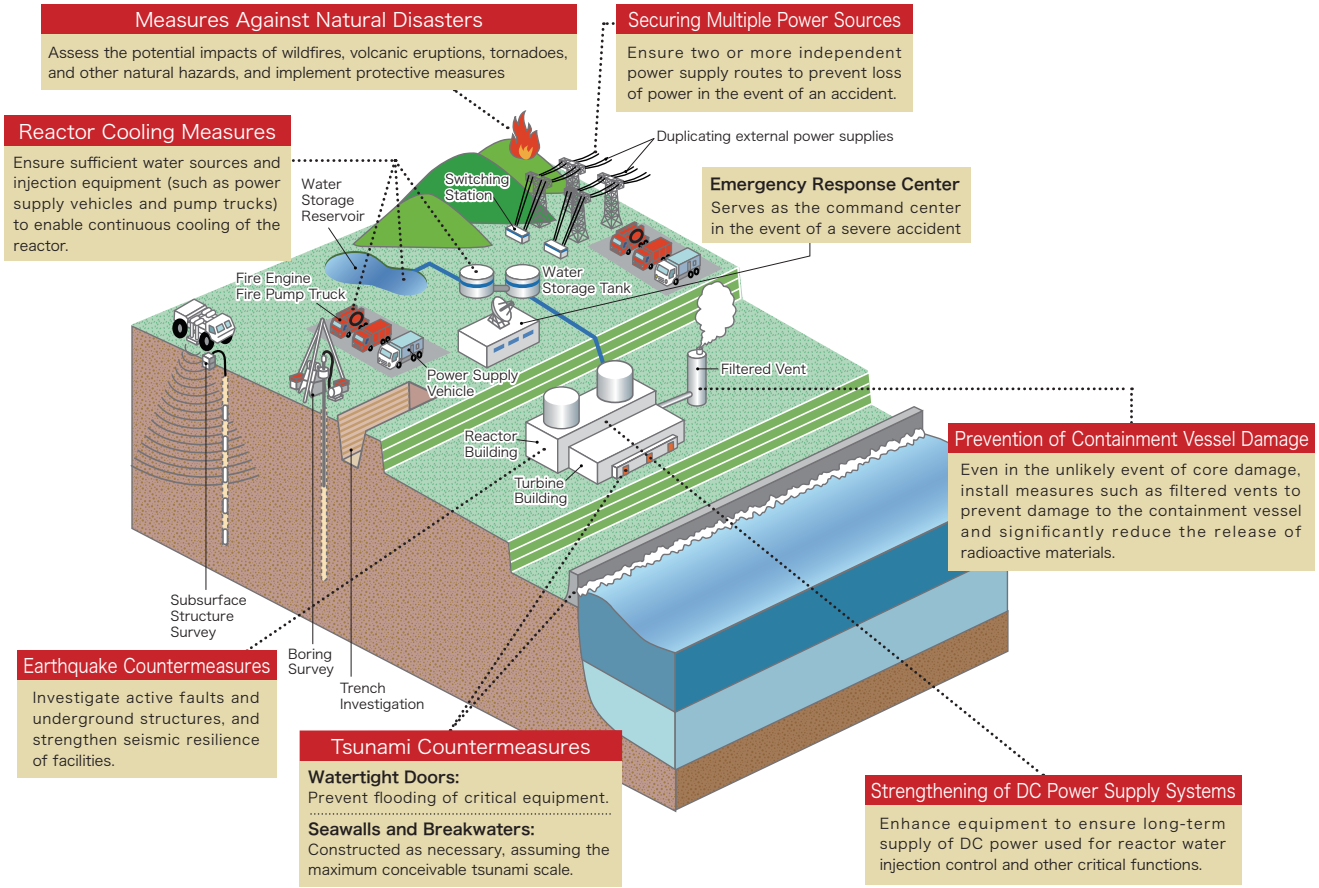


Source: METI, Efforts towards Practical Application of Next-Generation Advanced Reactors in Japan 2024

Safety Measures by New Regulatory Requirements

JEPIC

■ The Great East Japan Earthquake in 2011 caused the nuclear accident at Fukushima Daiichi, releasing radioactive materials.



■ In response, electric power companies have implemented extensive safety measures to protect against natural disasters (e.g. volcano, tornado), airplane crashes, earthquakes, and tsunamis.

■ The Nuclear Regulation Authority has decided to ease a rule by extending the emergency response center deadline to five years after operation starts.

Source: FEPC, ELECTRICITY REVIEW JAPAN 2025

Japan's Nuclear Fuel Cycle

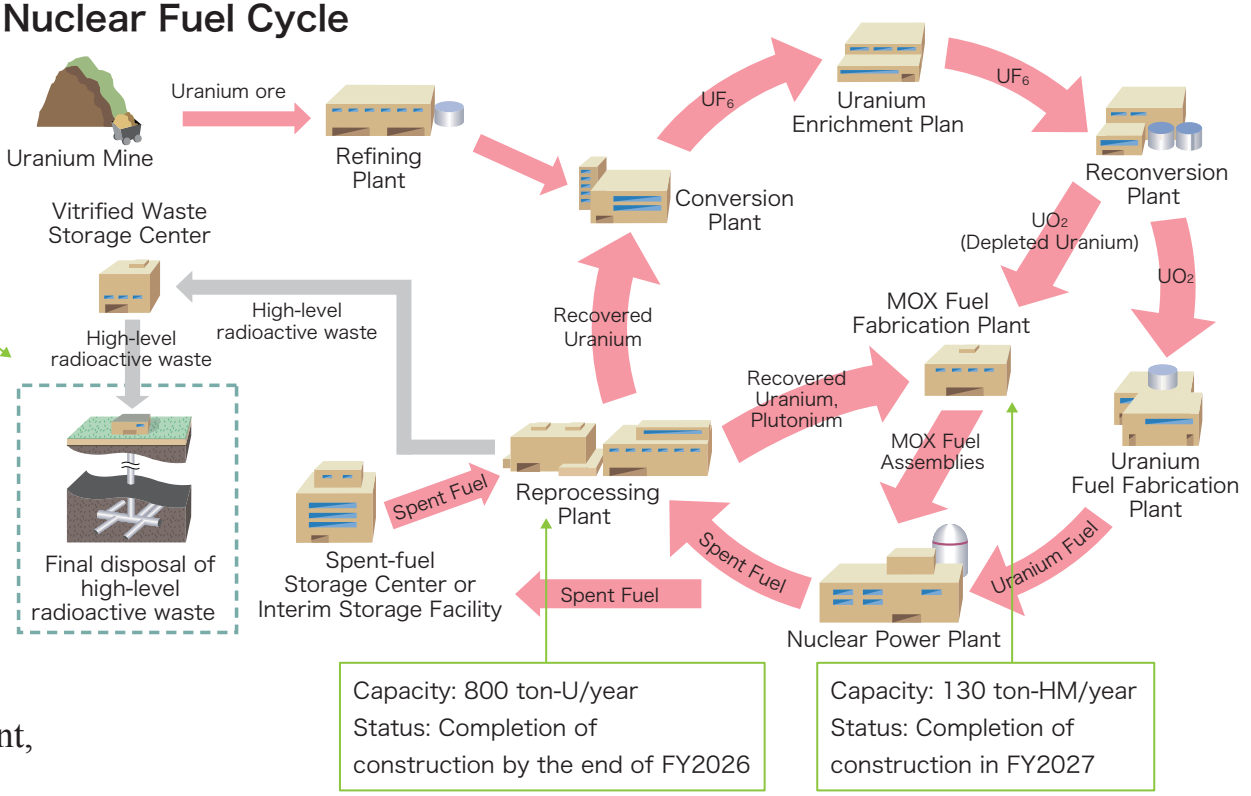
JEPIC

- **Japan Nuclear Fuel Limited (JNFL) is preparing for completion of construction of a reprocessing plant at Rokkashomura site during the fiscal year 2026.**
- **In addition, the construction of MOX fuel fabrication plant of JNFL is scheduled to be completed during the fiscal year 2027.**

Literature survey in progress toward the selection of a final disposal site for high- level radioactive waste:

- at Suttsu Town and Kamoenai Village, both in Hokkaido,
- at Genkai Town in Kyushu,
- at Minamitorishima Island in Tokyo (METI requested the new site).

Source: Tokyo Metropolitan Government, Profile of the Minamitorishima Island



Source: FEPC, ELECTRICITY REVIEW JAPAN 2025

Next-Generation Advanced Reactors

JEPIC

■ The GX Promotion Strategy plans to develop and construct next-generation advanced reactors with new safety mechanisms.

SMR

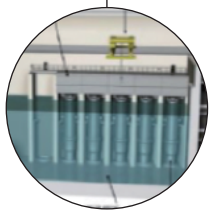
A reactor with an output of 300 MW or less

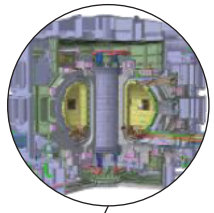
*Commercial operation in 2040s

HTGR

A reactor that generates high-temperature heat of up to 950°C

*Demonstration reactor's operation in 2040s





Advanced LWR

An LWR based on the conventional LWR (PWR and BWR) but with enhanced safety

*Commercial operation in 2040s

Fast reactor

A reactor in which high-speed neutrons sustain the nuclear fission chain reaction

*Demonstration reactor's operation in 2040s

Nuclear Fusion

A reactor in which heat is generated by nuclear fusion reactions, not nuclear fission

*Demonstration of power generation in 2030s

Source, METI, Efforts towards Practical Application of Next-Generation Advanced Reactors in Japan 2024

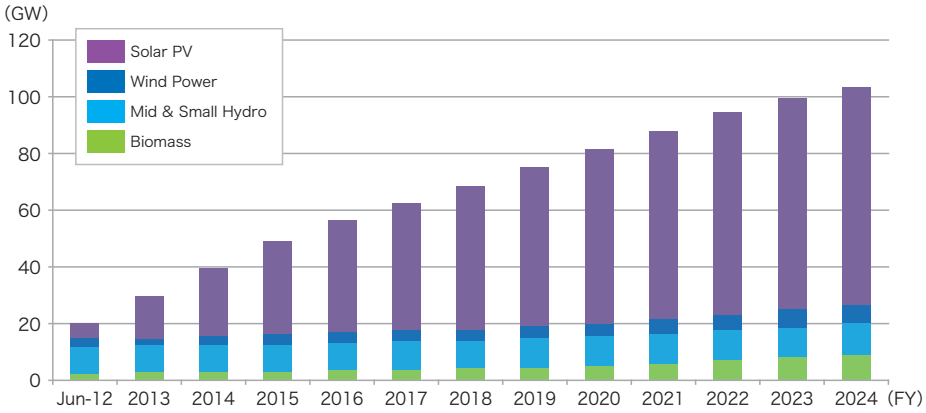
Renewable Energy

Installed Capacity of Renewable Energy

JEPIC

- Since the FIT(from July 2012) scheme was introduced, the installed capacity of Renewable Energy (RE) has increased rapidly.
- But at the same time, RE surcharge rate is also getting more expensive.
- In 2022, the electricity market price soared reflecting the fossil fuel price hike due to the Ukraine crisis. The renewable energy surcharge for 2023 was temporarily decreased since the avoidable cost was linked to the market price.
- The surcharge for ordinary households in 2026 is approximately $134/year (20,064 JPY/year ※3).
- The renewable energy surcharge exceeded 4 JPY/kWh for the first time in fiscal year 2026.

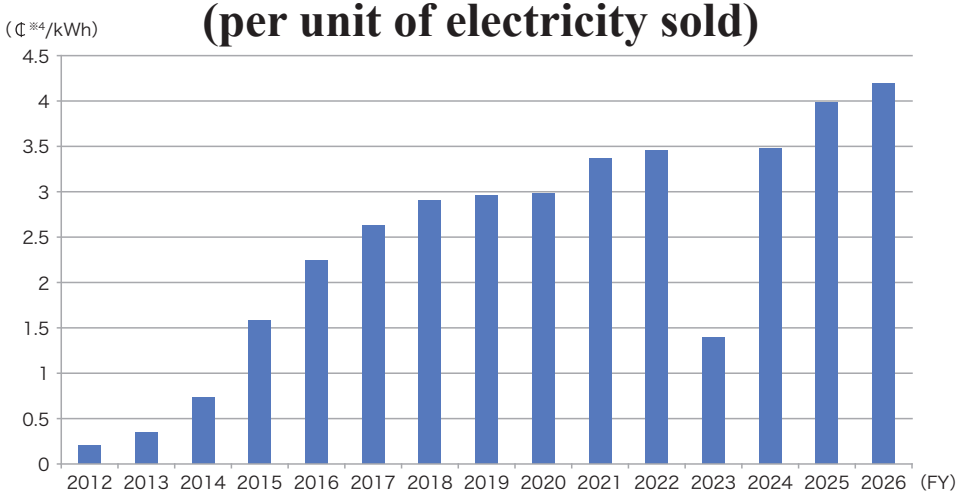
Installed Capacity of RE ※1



※1 Limited to FIT/FIP certification.

Source: METI, FIT/FIP installation capacity, 2025

Renewable Energy Surcharge ※2 (per unit of electricity sold)



※2 The Surcharge $= \frac{\text{(purchase cost – Avoidable cost) + Administrative Expenses}}{\text{Predict amount of Electricity demand}}$

※3 $1 = 150 JPY

Source: METI, Renewable Energy Surcharge, 2026

The FIT and FIP Schemes

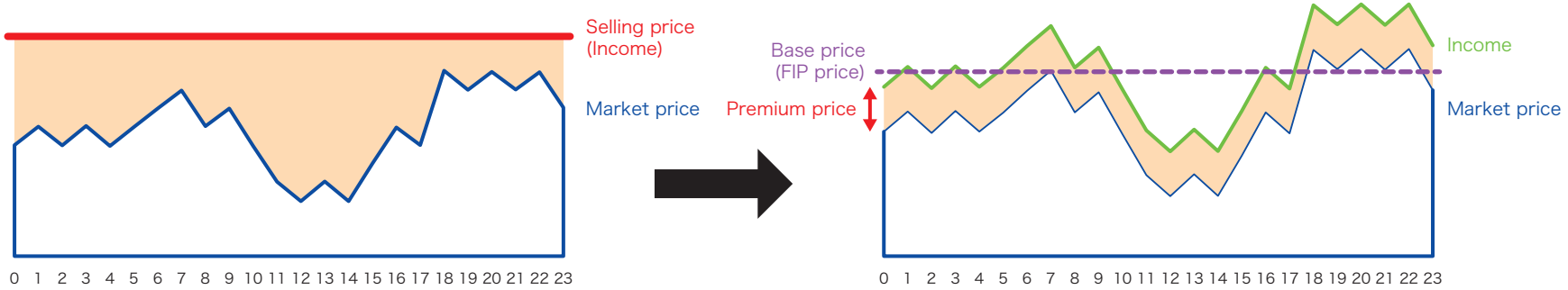
JEPIC

FIT (Feed-in Tariff): 2012~

- **Mandatory purchase by utilities:**
  Electric utilities are obligated to purchase renewable electricity at a fixed price for a specified period.
- **Stable revenue for producers:**
  Power producers receive a guaranteed income regardless of market fluctuations.
- **Lack of market incentive:**
  There is no motivation to sell more during peak demand periods since the selling price is fixed.

FIP (Feed-in Premium): 2022~

- **No mandatory purchase:**
  Power producers must find their own buyers or sell electricity on the power market.
- **Premium added to market price:**
  In addition to the market price or negotiated sale price, a fixed or market-linked premium is provided.
- **Encourages market-oriented behavior:**
  Producers are incentivized to sell more during high-price periods, promoting better supply-demand balancing.



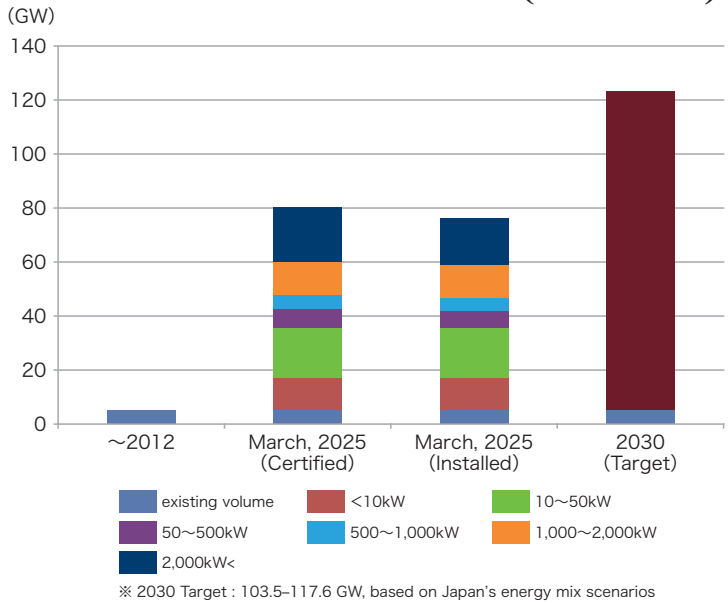
Source: METI, The FIT/FIP schemes, 2021

Solar Power

JEPIC

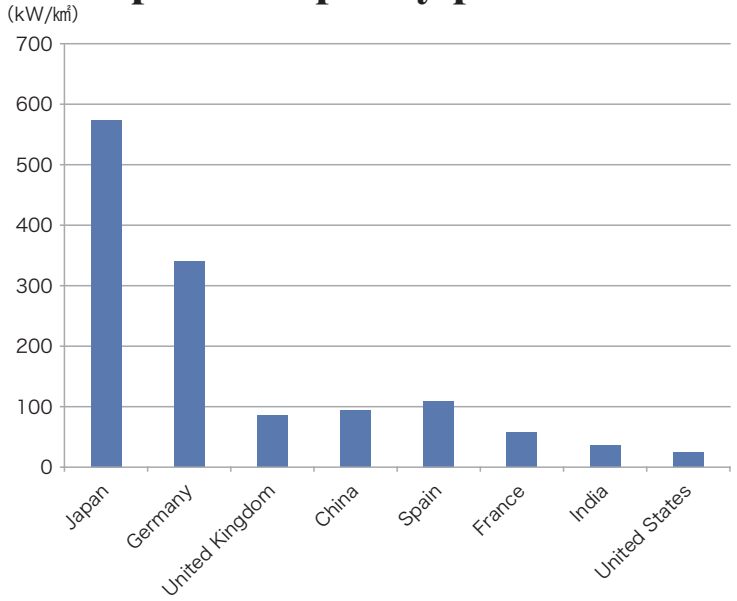
- As of March 2025, the installed solar power capacity in Japan has reached 70 GW and reached 80 GW including FIT/FIP certified.
- Japan ranks first among major countries in terms of installation per land area.
- However, the introduction of large-scale solar power is slowing down due to the decrease in number of suitable sites and the decline in FIT/FIP prices.
- The government aims to deploy 20 GW of perovskite solar by 2040 under the 7th Strategic Energy Plan.
- Developed in Japan, perovskite solar cells are lightweight, flexible and suitable for sites where conventional panels cannot be installed.
- From FY2027, new ground-mounted solar in Japan will be ineligible for FIT/FIP.

Solar Power Installation (FIT/FIP)



Source: METI, Solar Power Installation (FIT/FIP) , 2025

Solar power capacity per land area



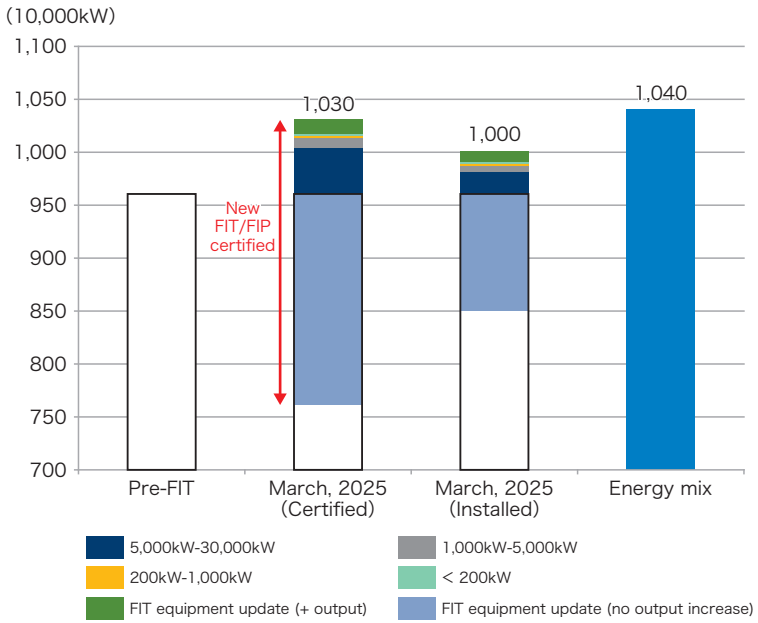
Source: METI, Solar Power Installation (FIT/FIP) , 2025

Hydropower

JEPIC

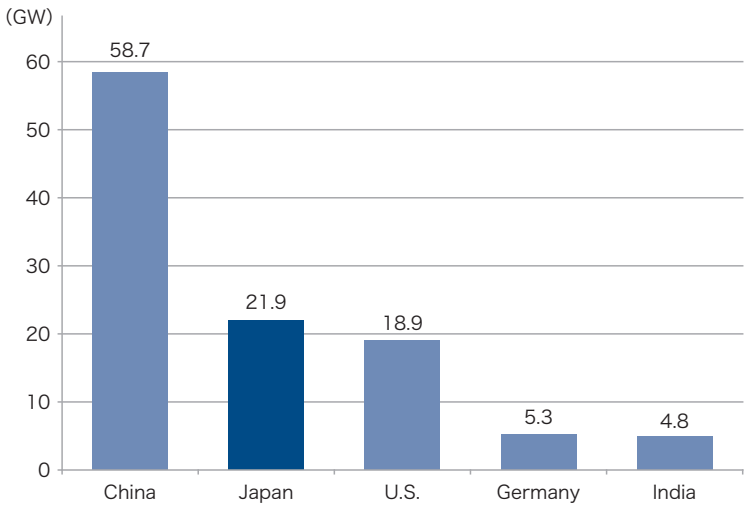
- As of March 2025, Japan's mid & small hydropower reached 10.0 GW in installed FIT/FIP-related capacity and reached 10.3 GW including certified capacity.
- Pre-FIT installed capacity was already 9.6 GW, showing hydropower as a mature renewable source in Japan.
- Japan remains one of the world's largest pumped-storage markets, supporting grid stability and renewable integration to the grid.

Hydropower Installation (FIT/FIP)



Source: METI, "Current Status of Renewable Energy in Japan and Abroad and Draft Issues for This Year's Procurement Price Calculation Committee," 2025

Pumped storage capacity (top countries, 2024)



Source: AENERT, "Key indicators of pumped hydroelectric energy storage," 2025

Fixed-bottom Offshore Wind

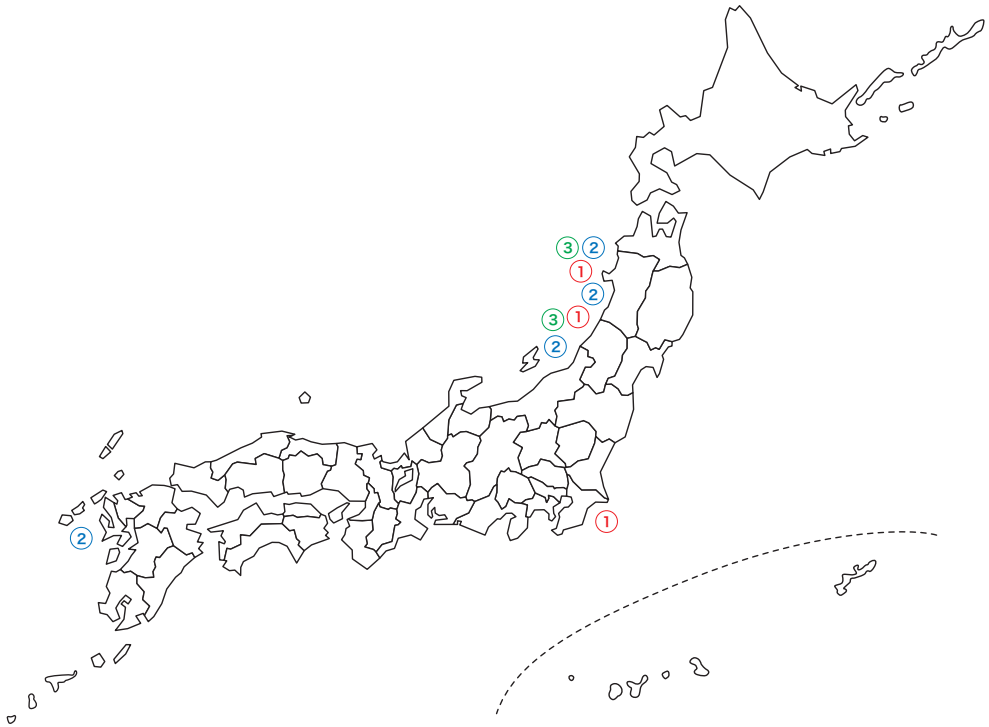
JEPIC

- Installed capacity has reached 250 MW as of 2025.
- The government targets: 10 GW (2030), 30–45 GW (2045)
- Three rounds of sea area auctions have been held in territorial waters and internal seas.
- From the second round, low-price bids without subsidies were submitted.
- Introduction of the FIP scheme and setting of minimum bid prices led to increased competition and required producers to secure revenues via PPAs and the capacity market.
- Following the controversial project withdrawals in 2025, the auction design is being revised to place greater emphasis on project completion.

Auction Results Summary

	1st round ①	2nd round ②	3rd round ③
Total Scale	1,688.4MW	1,779MW	1,065MW
Supply Price	$79.93 ～109.93 / MWh	$0.2 ～147.87 / MWh	$0.2 / MWh
FIT/FIP	FIT	FIP	FIP
COD	2028.9 ～ 2030.12	2028.6 ～ 2029.8	2030.6

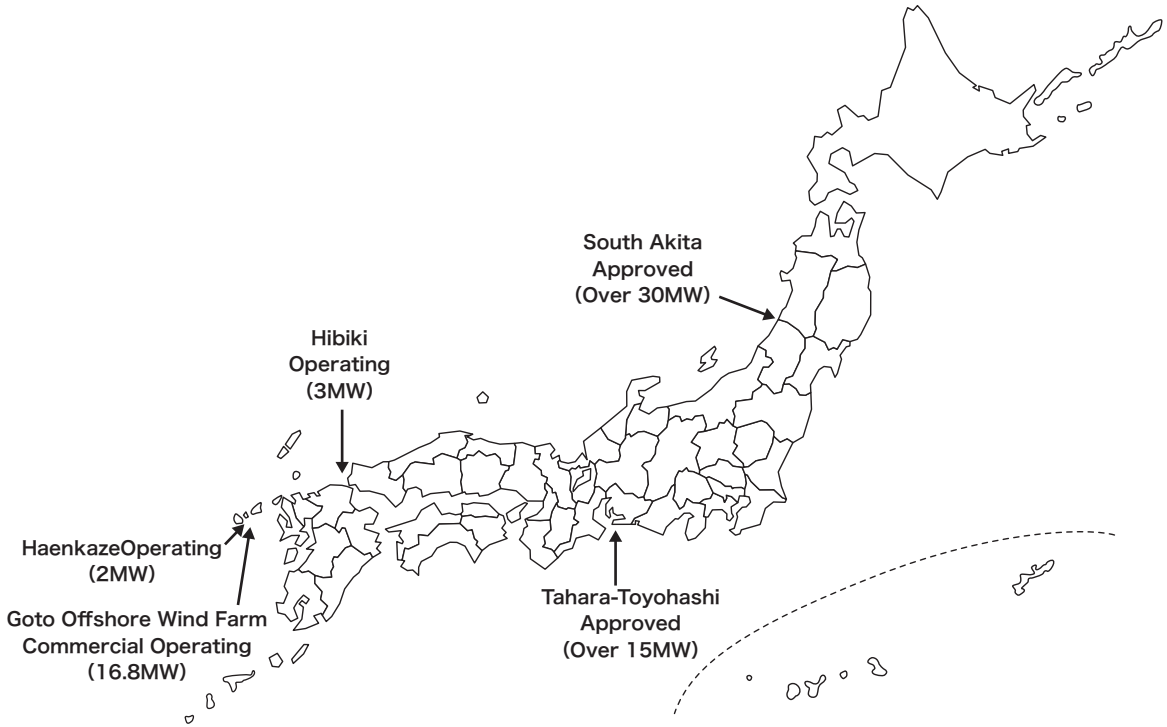
Source: METI, Press Release, 2021~2024



Floating Offshore Wind

JEPIC

- In 2021, a public-private council set out “ Roadmap for Technology Development to improve the Industrial Competitiveness of Offshore Wind Energy”.
- 2 demo turbines (total 5 MW) are currently operating
- June 2024: 2 more demo projects approved
- Jan. 2026: The first 16.8 MW commercial project started operation.
- Total capacity of approved and operating projects exceeds 65 MW.



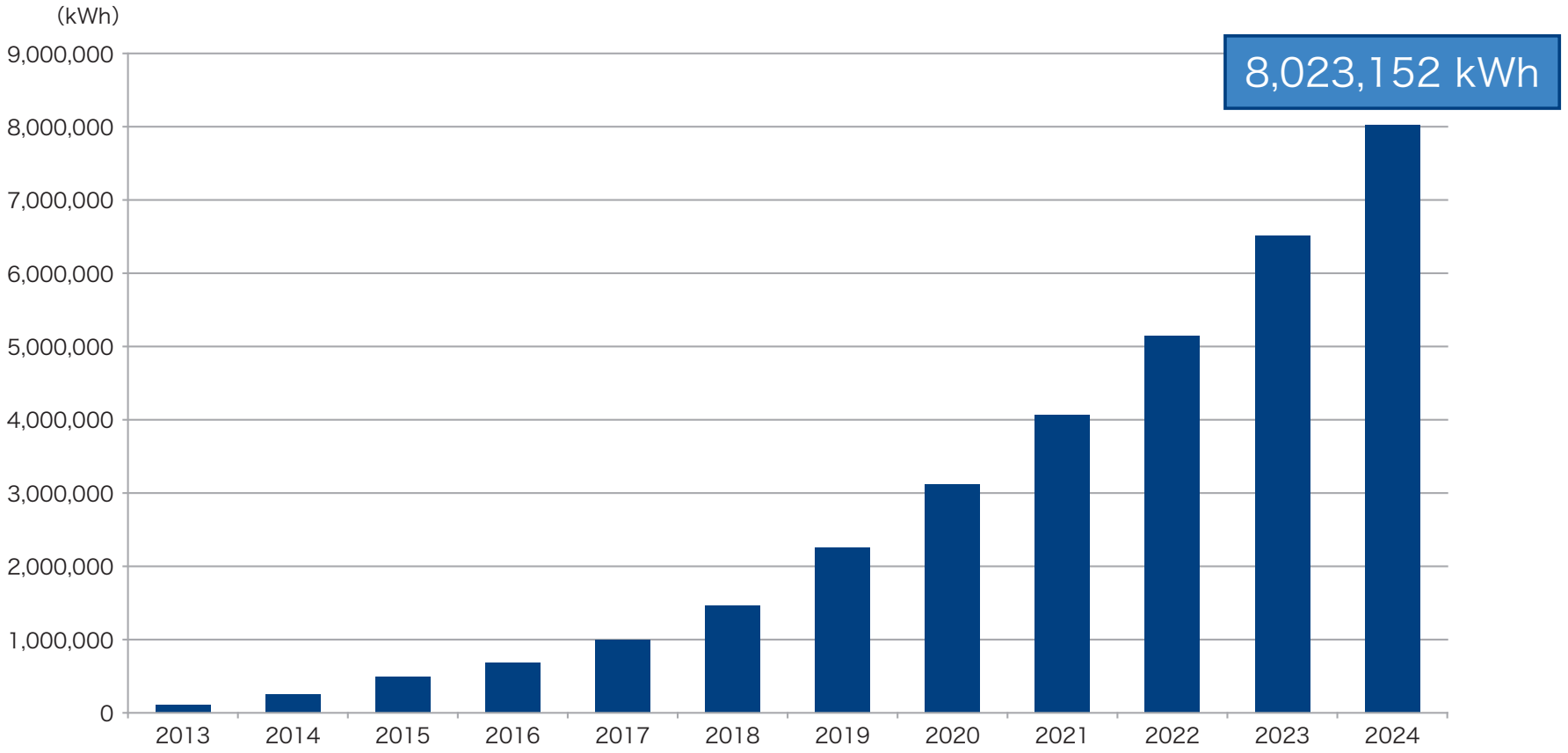
Battery Storage

Battery Storage

JEPIC

■ **As of 2026 April, shipment-based capacity of battery storage is over 8,000 MWh.**

Shipment-based capacity (MWh)



Source: JEMA, “Voluntary Statistics: Shipment Results for Stationary LIB Storage Systems”, 2025

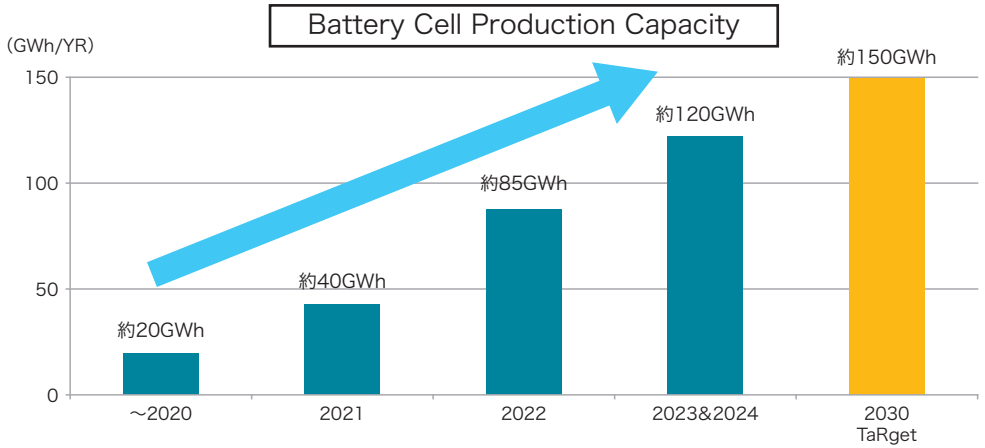
Japan's Battery Strategy

JEPIC

- **The Government launched the Battery Industry Strategy in August 2022 to secure a competitive and stable energy transition.**
- **Over 670 billion yen in subsidies have been committed to strengthen the domestic battery supply chain.**
- **Japan's annual production capacity is projected to exceed 100 GWh, steadily progressing toward the 150 GWh target for 2030.**

Storage Battery Industry Strategy

1st Target	2nd Target	3rd Target
Establishment of manufacturing base for liquid LiBs	Securing a global presence	Capturing the next-generation battery market
Target: 150 GWh domestic manufacturing capacity by 2030 at the latest	Target: Secure manufacturing capacity equivalent to a 20% global market share by 2030	Target: Full-scale commercialization of all-solid-state batteries around 2030



Source: METI, "the Council for Promoting the Battery Industry Strategy"

Hydrogen & Ammonia

Key Concept

JEPIC

■ Highlight of Basic Hydrogen Strategy (issued in 2017,updated in 2023)

- To scope of strategy includes hydrogen and its derivatives (ammonia, synthetic methane, synthetic fuels, etc.), taking into consideration of the challenges and timelines surrounding these products.

■ Defining of "Low-Carbon" Hydrogen(H_2) and Ammonia(NH_3)

- H_2 : "Well-to-gate"(WTG) emissions are 3.4kg-CO_2e/kg-H_2 or less
- NH_3 : "Well-to-gate"(WTG) emissions are 0.87kg-CO_2e/kg-NH_3 or less

■ Hydrogen Targets

Targets	Current (2021)	2030	2040	2050
Supply	2 mil. (tonnes/year)	3 mil. (tonnes/year)	12 mil. (tonnes/year)	20 mil. (tonnes/year)
Cost(1)(2)	JPY100/Nm^3 ($7.73/H2-kg)	JPY30/Nm^3 ($2.31/H2-kg)	Not specified	JPY20/Nm^3 ($1.54/H2-kg)

(1) CIF cost: Cost, insurance and freight
(2) Exchange rate: JPY144 = $1

■ Hydrogen Use in Power Sector

- Japan plans to deploy hydrogen and ammonia power generation technologies ranging from co-firing to mono-fuel combustion, targeting 1% share of the national generation mix by 2030.
- In June 2025, KEPCO achieved the first hydrogen co-fired power generation with 30% co-firing ratio (by volume) using a large commercial gas turbine with a capacity of 486.5MW.

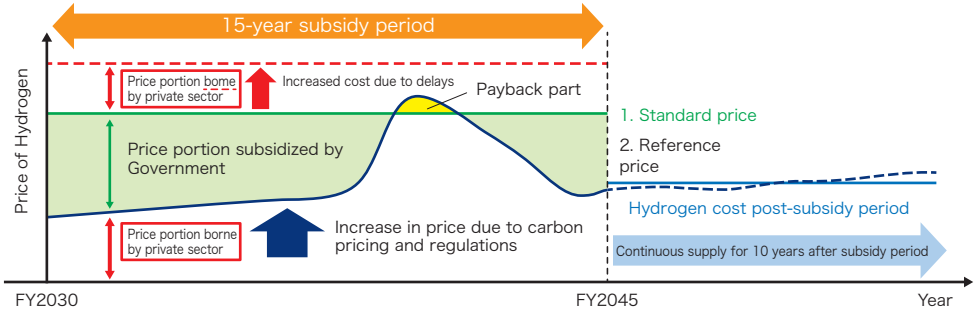
Support for Supply Chain Development

JEPIC

Hydrogen Society Promotion Act stipulates financial support measures for approved business case.

Contract for Differences Schemes (Cost Allocations)

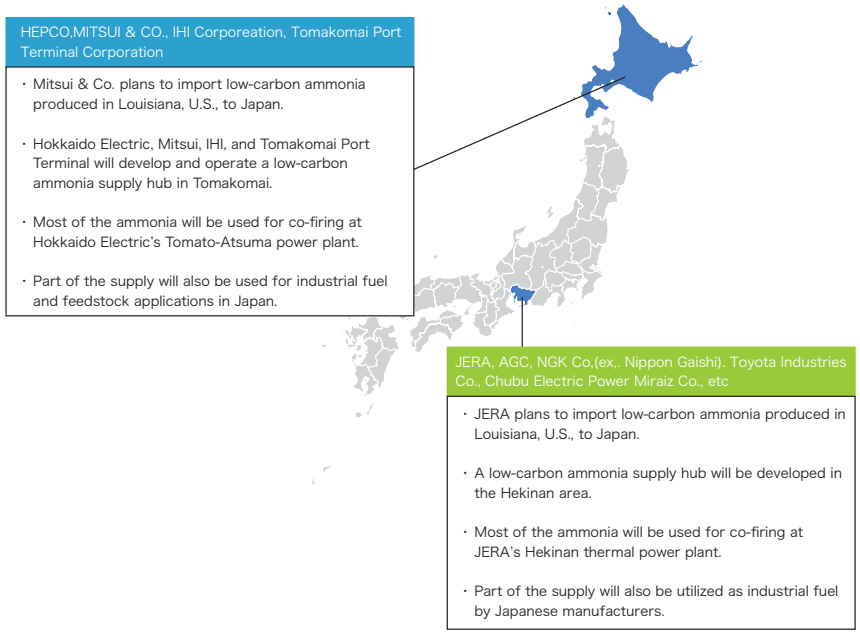
- A supply side subsidies structured on the basis of a "contract for differences", providing support **for the price gap** for a term of **up to 15 years.**
- Total budget : JPY 3 trillion (c. $20 billion) over the scheme's 15-year term.
- Suitability for energy policy (S+3E) and GX policy, as well as feasibility will be assessed.
- As of March 2026, 6 projects were selected, which include the JERA's project to supply low-carbon NH_3 from Louisiana, U.S,.



Source: Agency for National Resources and Energy, METI (2024)

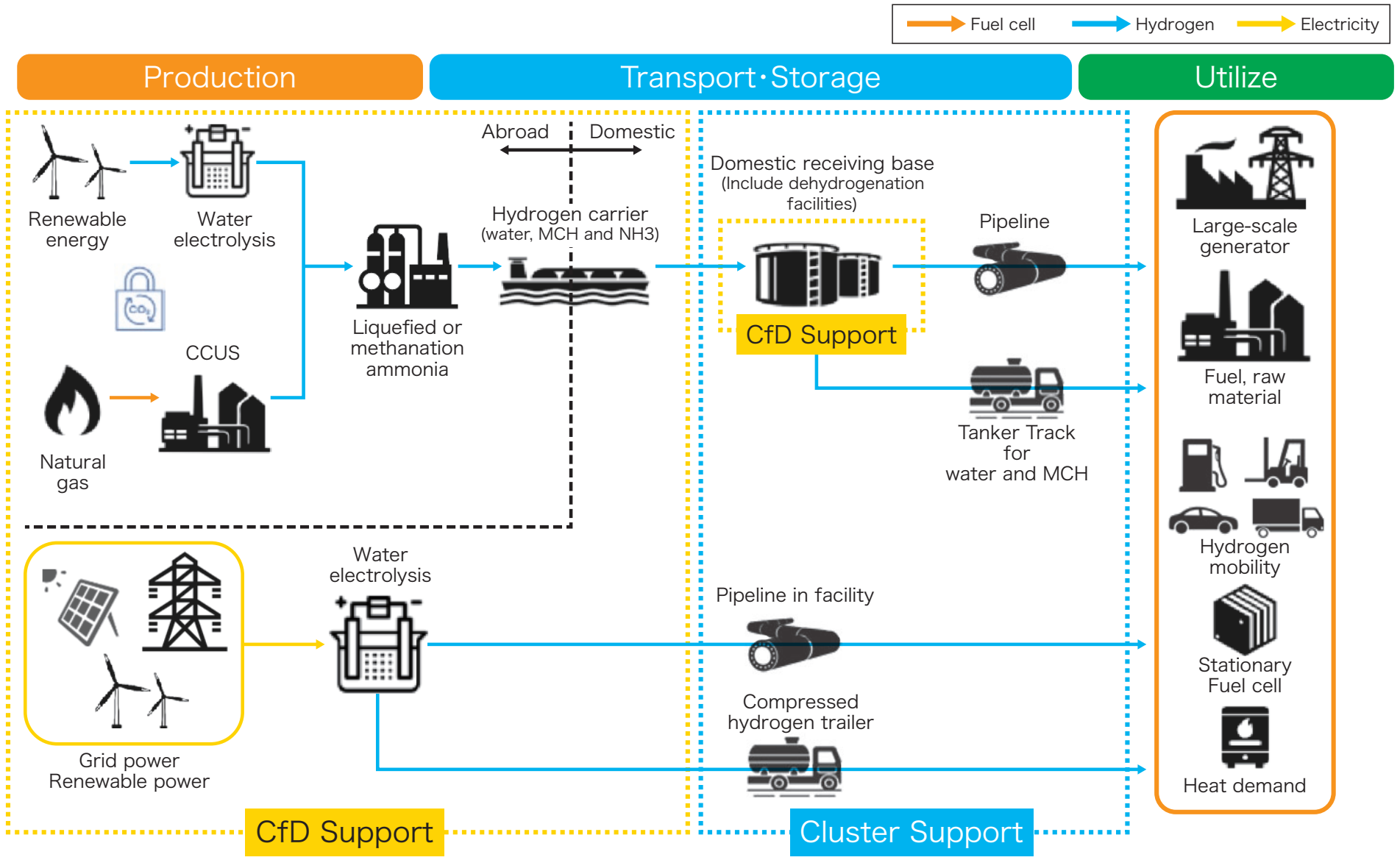
Cluster Support Schemes (Infrastructure Development)

- Over the next decade, the government will develop three large scale H_2/NH_3 clusters, mainly in metropolitan regions, and about five medium-scale clusters.
- FY2024 budget : JPY 15 billion (c. €10 million).
- In March 2026, 2 supply hub projects were selected.



Source: Agency for National Resources and Energy, METI (2026)

Scope of Supply Chain



Source: Japanese Resources and Energy Agency, METI

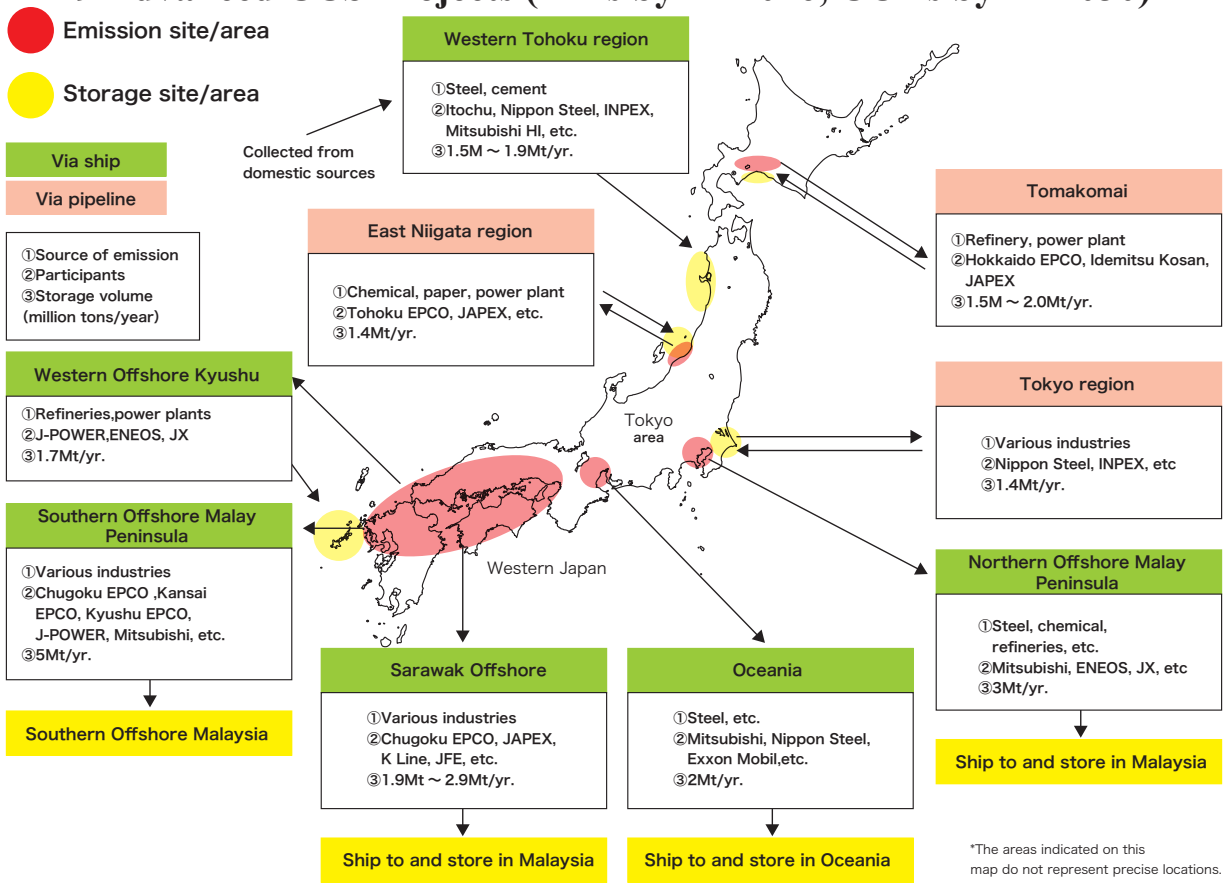
Carbon Capture & Storage

Carbon Capture & Storage (CCS)

JEPIC

- Japan's CO_2 emissions in FY 2024 totaled 971 million tons, including 393 million tons from energy sector.
- Japan has a goal to store 6-12 million tons of CO_2 per year by 2030.
- 9 CCS projects were awarded for support by government in 2024.
- The CCS Business Act (2024) introduced licensing system for storage, drilling, etc.

9 Advanced CCS Projects (FIDs by FY2026, CODs by FY2030)



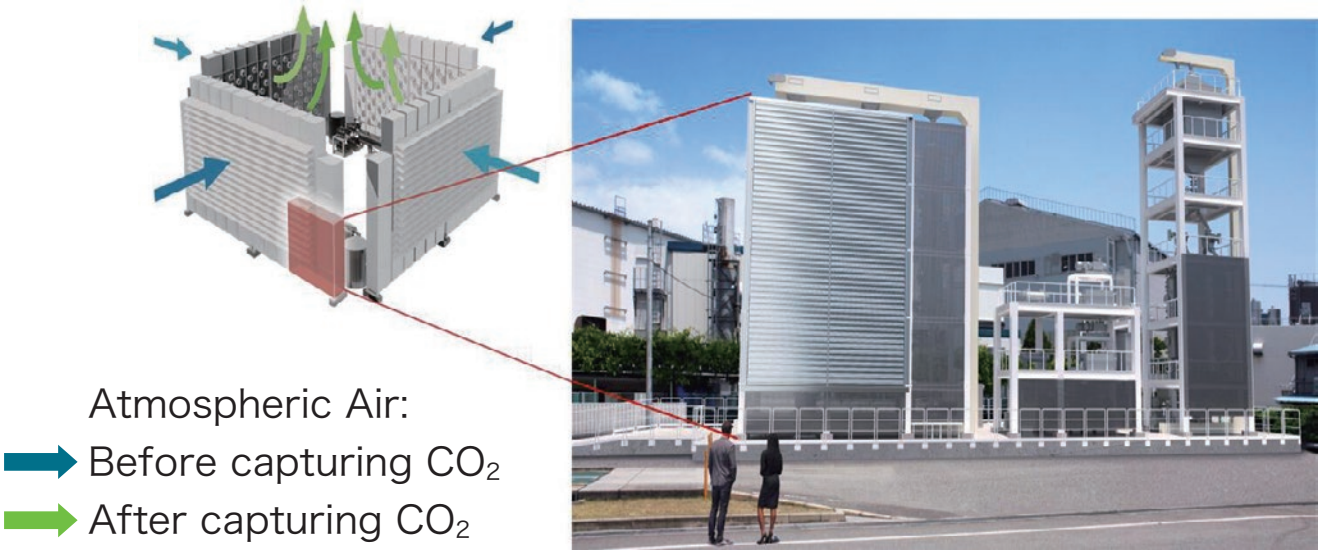
Source: METI (Ministry of Economy, Trade and Industry)

Direct Air Capture (DAC)

JEPIC

- **In November 2025, Kawasaki Heavy Industries built a DAC demonstration facility in one of its works.**
- **The company aims to capture 0.5~1.0 million tons of CO_2 annually in 2030.**

Facility	DAC
Capture source	Atmosphere
Capture capacity	100 to 200 ton-CO_2/year/module



Source: Kawasaki Heavy Industries, Ltd

Resilience

Resilience Approach (Conceptual Framework)

JEPIC

The Great East Japan Earthquake in 2011 marked a turning point in Japan's shift from conventional disaster prevention toward a broader resilience approach. Since then, Japan has strengthened this approach through lessons from major disruptions, including the Hokkaido Eastern Iburi Earthquake and blackout (2018), Typhoon Faxai (2019), and the Noto Peninsula Earthquake (2024).

■ Coordination and Role sharing

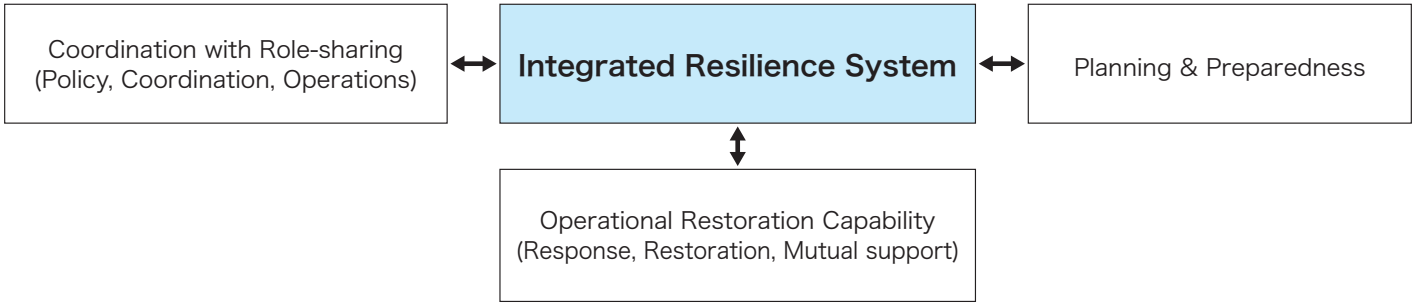
- Responsibilities are distributed across government, coordination bodies, and operators.
- Policy, coordination, and operations function together.

■ Risks Integrated into Planning and Preparedness

- Lessons from disasters and supply risks are reflected in planning and preparedness measures.
- Resilience is incorporated into system design and operation.

■ Operational Restoration Capability

- Effectiveness depends on response and restoration in real disruptions.
- Mutual support and field execution are critical.



Hokkaido Eastern Iburi Earthquake in September 2018

JEPIC

■ Losses & Damages

- Deaths (44) & injured (785), house damage (491 destroyed, 1,818 severely damaged, 47,119 partially damaged), shutdown of the Tomato-atsuma Power Plant, leading to a major blackout across Hokkaido, affecting 2.95 million households with secondary impacts on water supply, transport, and communications
- Power supply was restored to almost the entire area in about 45 hours (nearly 2 days).

■ Lessons learned and Actions identified

- Strengthening operational measures for large-scale power system failures
- Improvement of black-start operation and restoration procedures
- Preparedness for secondary disruptions to urban and economic functions caused by blackout, including other related measures

Collapsed transmission tower

Distribution line damaged by a landslide

Source: HEPCO

Blackout in Sapporo, the largest urban and economic center in Hokkaido

Source: Sapporo City

Typhoon Faxai in the Kanto region in September 2019

JEPIC

■ Losses & Damages

- Deaths (1) & injured (150), building damage (4,269 residential: destroyed or half-damaged; 1,459 non-residential), 2 transmission towers (66 kV) collapsed, 1,996 utility poles and 431 transformers were damaged or tilted, 5,529 distribution line spans were affected
- Peak outages: about 930,000 customers; restoration in Chiba took about two weeks

■ Lessons learned and Actions identified

- Review of technical standards for transmission towers and utility poles
- Collaboration among T&D operators, local governments and the Self-Defense Forces
- Real-time monitoring of damage conditions and restoration progress, and the development of information management, including other related measures

Collapsed transmission tower

Distribution line damaged by fallen trees

Distribution line damaged by flying debris

Source: TEPCO

Noto Peninsula Earthquake in January 2024

JEPIC

■ Losses & Damages

- Deaths (720) & injured (1,407), building damage (30,243 residential: destroyed or half-damaged; 41,295 non-residential), insulator damage and conductor strand breakage on some transmission lines; about 2,310 tilted poles and 760 broken poles; about 1,680 distribution line disconnection/interference points
- Peak outages: about 40,000 customers; more than 99% restored within 60 days, except in some hard-to-reach areas

■ Lessons learned and Actions identified

- Mutual assistance among T&D operators under the disaster cooperation framework
- Coordination with national and local governments, including the Self-Defense Forces and the Japan Coast Guard, as well as telecom operators
- Use of drones for damage assessment and a smartphone-based system for real-time sharing of damage and restoration information, including other related measures

Mutual aid by the supporting utilities

Source: RIKUDEN

Mutual Assistance Framework for Power System Disruptions

JEPIC

In 2020, Japan formalized mutual assistance among T&D operators through the statutory Disaster Cooperation Plan (DCP), with a cost-sharing mechanism added in 2021.

■ Framework and Legal Basis

- General T&D operators jointly prepare the DCP under the Electricity Business Act.
- The DCP is submitted to METI via OCCTO and sets out coordination procedures.

■ Arrangements

- Pre-defined inter-utility support procedures and coordination rules under the DCP
- Sharing of crews, equipment, materials, power supply vehicles, and mobile substations
- Training and information sharing on damage and restoration status
- Coordination with government agencies, local governments, and the Self-Defense Forces

■ Cost-sharing Mechanism

- Mutual aid supports temporary restoration and inter-utility assistance

Joint disaster response training by Japan's ten general T&D operators

Source: TDGC

Microgrid

Microgrid and License for Distribution Business

JEPIC

- Several community microgrids are now in operation in Japan to improve disaster resilience and utilize local distributed energy resources.
- Since 2022, the Electricity Business Act has allowed non-utility entities to operate local distribution networks under a distribution business license; however, as of May 2026, no entity has obtained the license, mainly due to profitability and business feasibility challenges.

A practical example of a disaster-resilient community microgrid

Project name	Isumi City Community Microgrid
Location	Isumi City, Chiba Prefecture
Operator	Kandenko Co., Ltd.
Start of operation	February, 2023
Key facilities served	Isumi City Hall, a disaster-response base; Ohara Junior High School, a designated evacuation shelter, and 27 customers around them
Energy resources	Solar PV, battery storage, and LP gas generators
Main purpose	To enhance local resilience against prolonged power outages caused by natural disasters
Emergency operation	Designed to disconnect from the main grid and supply electricity to the local area during large-scale outages

Source: Kandenko Co., Ltd.

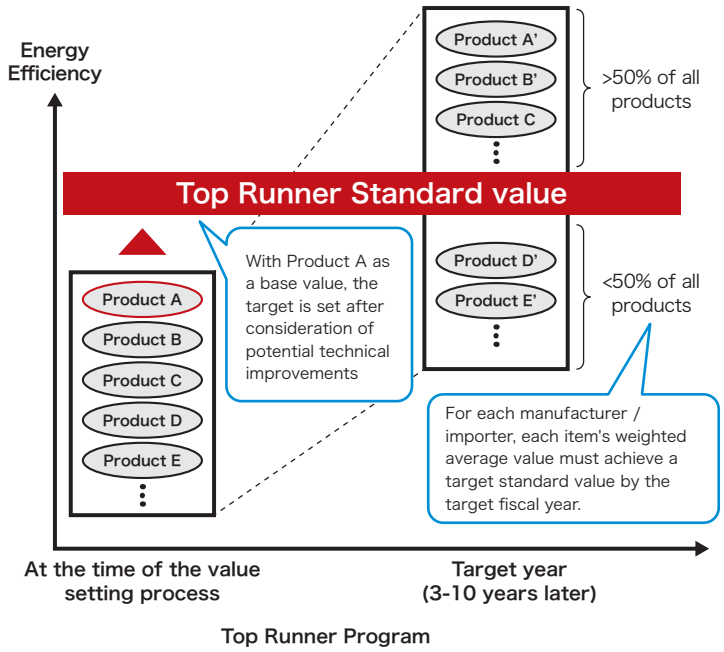
Energy Efficiency & Heat Pump

Efficiency Improvement Policy

JEPIC

■ Top Runner Program

- Efficiency standards for machinery, equipment and materials
- 32 items are in scope (as of March 2023).
  Air Conditioners, Electric Refrigerators, Electric Freezers, Gas Water Heaters, Oil Water Heaters, Vending Machines, Electric (HP) Water Heaters, Showcases, etc



Top Runner Program

■ The uniform energy efficiency labels

▶ Energy efficiency labeling

- The evaluation metric of a 41-point scale (1.0, 1.1, …, 5.0) are now being used in retail outlets.
- The items mentioned above (except for vending machines and showcases) are covered as of March 2023.

Source: Top Runner Program: Ministry of Economy, Trade and Industry Policy - Energy (JP)
The uniform energy efficiency labels: “Japan’s ENERGY 2020”, METI

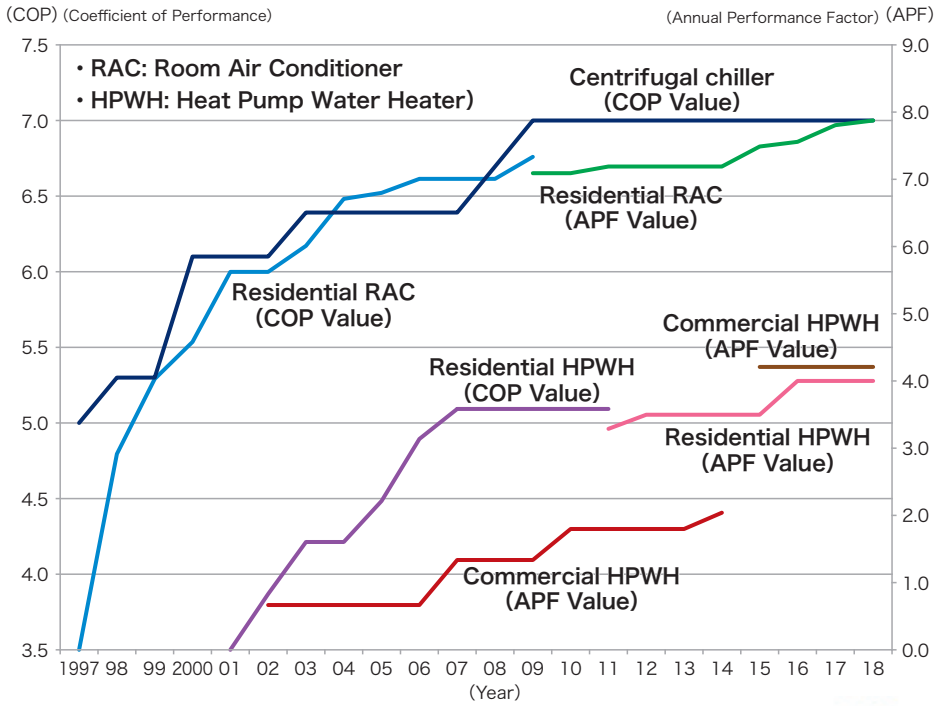
Efficiency Improvement Policy

JEPIC

Awards

- **Efficiency has improved due to energy efficiency policies.**
- **Awards are another driver for efficiency improvement**

- Energy Conservation Grand Prize Award (Since 1990)
- Minister of the Environment's Award for Climate Action (Since 1998)



Efficiency improvement of HPs

www.heatpumpingtechnologies.org

Source:
Efficiency improvement of HPs: Heat Pump and Thermal Storage Technology Center of Japan (HPTCJ)Policy - Awards (JP)
Energy Conservation Grand Prize Award: The Energy Conservation Center, Japan (ECCJ)- Minister of the Environment's Award for Climate action: MOEJ

Heat Pump

JEPIC

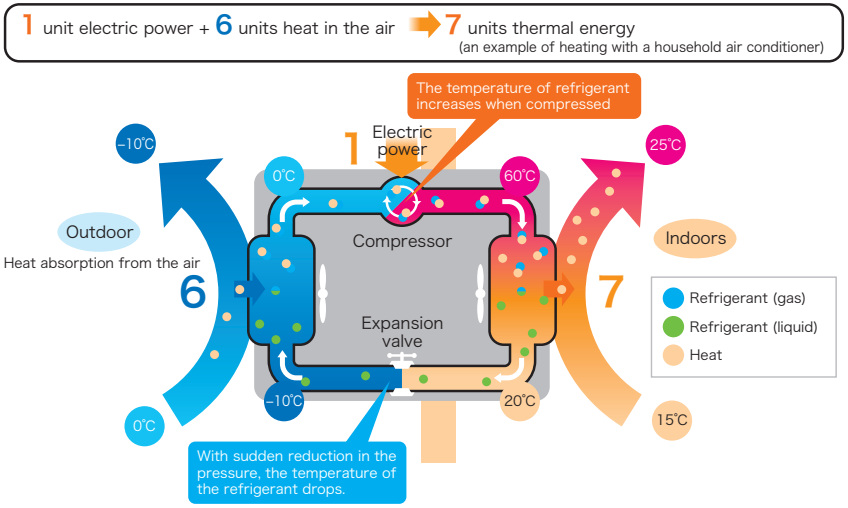
■ Efficient heat supply by Heat Pump

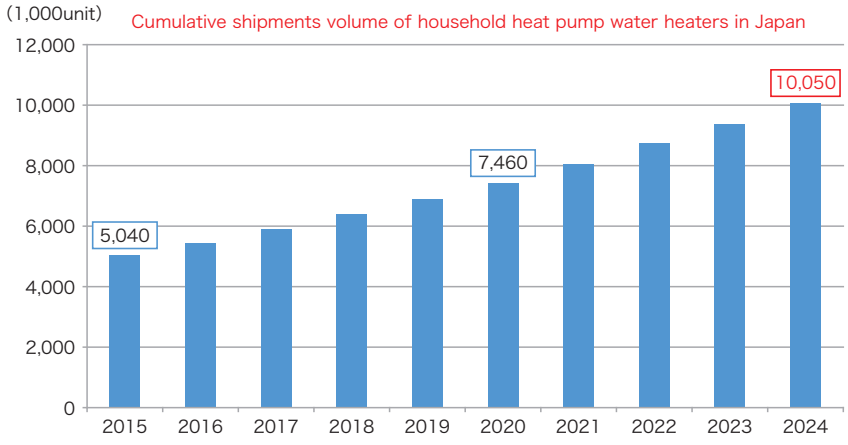
- Heat pumps extract the ambient heat, amplify the heat by compressor and transfer to the destination.
- Heat pumps achieve COPs of 7.0 or higher for space heating and cooling, while standard EcoCute heat-pump water heaters typically achieve COPs of 3-5.

■ Expansion of the use of “EcoCute”

Residential natural refrigerant heat pump water heater

- Utilizing EcoCute with a time-of-use rate can encourage shifting electricity consumption away from peak demand periods.
- The cumulative number of EcoCute units shipped has exceeded 10 million units in March 2025, thanks to the recent policy support in Japan.
- Heat pumps remain less recognized in the U.S. but are rapidly expanding in Europe, where ambient heat has been treated as renewable energy since 2009 and calculation rules were established in 2022.





Source: Heat Pump & Thermal Storage Technology center of Japan (HPTCJ)

Statistical Data

Electric Power Generation*

JEPIC

[TWh]

FY	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Hydroelectric	**84.9**	**86.9**	**91.4**	**84.6**	**90.1**	**87.4**	**86.3**	**86.3**	**87.6**	**85.0**	**84.1**	**83.4**
Electric Utilities	68.6	70.3	74.9	81.9	87.9	85.0	84.3	84.5	85.8	83.2	82.4	81.7
Industry-owned	16.3	16.7	16.5	2.7	2.3	2.4	2.0	1.8	1.8	1.8	1.7	1.7
Thermal**	**987.3**	**955.4**	**908.8**	**877.0**	**861.4**	**823.6**	**792.8**	**789.7**	**776.3**	**758.5**	**716.8**	**712.3**
Electric Utilities	743.1	717.8	675.7	794.4	777.5	726.2	696.2	697.9	681.5	666.4	629.0	626.7
Industry-owned	244.2	237.6	233.1	82.6	83.9	97.4	96.7	92.1	94.8	92.1	87.7	85.6
Nuclear	**9.3**	-	**9.4**	**17.3**	**31.3**	**62.1**	**61.0**	**37.0**	**67.8**	**53.5**	**80.3**	**89.3**
Electric Utilities	9.3	-	9.4	17.3	31.3	62.1	61.0	37.0	67.8	53.5	80.3	89.3
Industry-owned	-	-	-	-	-	-	-	-	-	-	-	-
Wind Power	**5.2**	**5.0**	**5.2**	**5.5**	**6.1**	**6.5**	**6.9**	**8.3**	**8.2**	**8.2**	**9.2**	**10.8**
Electric Utilities	0.2	0.0	0.1	5.0	5.5	5.9	6.3	7.6	7.4	7.4	8.4	9.8
Industry-owned	5.0	5.0	5.1	0.5	0.7	0.6	0.6	0.7	0.8	0.8	0.8	1.0
Solar	**1.2**	**3.8**	**6.8**	**11.1**	**15.9**	**18.5**	**21.4**	**25.0**	**28.0**	**31.5**	**33.2**	**36.0**
Electric Utilities	0.1	0.1	0.1	6.5	8.7	10.8	13.2	16.2	19.0	22.1	23.8	25.3
Industry-owned	1.1	3.7	6.7	4.6	7.2	7.7	8.2	8.8	8.9	9.5	9.3	10.6
Geothermal	**2.6**	**2.6**	**2.6**	**2.2**	**2.1**	**2.1**	**2.1**	**2.1**	**2.1**	**2.0**	**2.2**	**2.3**
Electric Utilities	2.4	2.4	2.4	2.2	2.1	2.1	2.0	2.0	2.0	1.9	2.1	2.1
Industry-owned	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Others	-	-	-	**0.3**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.4**
Electric Utilities	-	-	-	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.4
Industry-owned	-		-	-	-	-	-	-	-	-	-	-
Total	**1090.5**	**1053.7**	**1024.2**	**997.9**	**1007.3**	**1000.4**	**970.8**	**949.0**	**970.2**	**939.0**	**926.1**	**934.5**
Electric Utilities	823.7	790.6	762.6	907.6	913.2	892.2	863.2	845.4	863.8	834.7	826.4	835.3
Industry-owned	266.8	263.2	261.6	90.4	94.1	108.2	107.6	103.6	106.5	104.3	99.7	99.2

*Figures for industry-owned generation represent the total amount generated by power plants with a generating capacity of 1,000kW or above.
*In conjunction with the launch of the licensing system in fiscal 2016, certain utilities' electricity generated that had been counted under "Industry-owned" up through fiscal 2015 has been counted under "Electric Utilities" since fiscal 2016.
**Including biomass and waste-to-energy.

Source: METI, "Electric Power Generated" (2025) and "Electric Power Generated for Self-consumption" (2025)

Electric Power Consumption

JEPIC

[TWh]

FY		2013	2014	2015	2016	2017	2018
Low Voltage	Residential	284.3	273.1	266.9	272.9	280.4	271.4
	Commercial and Industrial	42.8	40.5	39.2	37.9	38.4	37.1
Specified-Scale Demand*	High Voltage	544.4	537.8	531.5	308.3	310.6	307.8
	Extra-High Voltage				231.4	233.8	236.3
Specified Supply**		0.0	0.0	0.0	6.0	6.1	6.3
Self-Consumption		4.5	3.9	4.0	43.2	45.1	37.4
Supplied by Electric Utilities		**876.0**	**855.4**	**841.5**	**899.8**	**914.4**	**896.2**
Power Generated and Consumed by Privately-owend Power Facilities		116.6	114.1	113.8	70.8	70.0	77.2
Total Consumption		**992.6**	**969.4**	**955.3**	**970.6**	**984.3**	**973.4**
Others (Last Resort Supply and Isolated Area Supply)		-	-	-	2.3	2.3	2.3

FY		2019	2020	2021	2022	2023	2024
Low Voltage	Residential	267.7	278.0	278.1	270.3	266.8	276.0
	Commercial and Industrial	35.7	35.4	34.8	34.2	33.5	34.0
Specified-Scale Demand*	High Voltage	302.8	290.3	296.5	283.5	285.6	290.5
	Extra-High Voltage	229.9	214.9	225.5	218.7	216.9	219.3
Specified Supply**		6.2	5.5	6.1	6.2	6.1	6.0
Self-Consumption		34.9	36.8	38.1	38.1	34.1	32.2
Supplied by Electric Utilities		**877.1**	**863.2**	**881.6**	**851.0**	**849.6**	**861.0**
Power Generated and Consumed by Privately-owend Power Facilities		75.6	66.3	68.4	68.9	65.2	64.3
Total Consumption		**952.7**	**929.5**	**950**	**919.9**	**914.8**	**925.4**
Others (Last Resort Supply and Isolated Area Supply)		2.2	2.4	2.4	15.6	6.6	3.1

*Contracted demand of 50 kW or above (in principle) received from general electricity utilities or specified-scale electricity suppliers.
**System that permits an electricity supplier to directly supply electricity to a consumer with which it shares a close relationship in manufacturing processes, capital, etc., without having to register as an electricity retailer.

Source: METI, "Electric Power Generated" (2024) and "Electric Power Generated for Self-consumption" (2024)

Installed Generating Capacity*

JEPIC

[MW]

FY	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Hydroelectric	**48,932**	**49,597**	**50,035**	**50,117**	**50,014**	**50,037**	**50,033**	**50,033**	**50,009**	**50,008**	**50,066**	**50,072**
Electric Utilities	44,676	45,403	45,786	49,521	49,562	49,582	49,635	49,635	49,612	49,613	49,667	49,698
Industry-owned	4,256	4,194	4,248	596	452	455	398	398	396	395	399	373
Thermal	**191,258**	**193,356**	**190,805**	**194,669**	**193,462**	**193,026**	**189,784**	**191,758**	**188,256**	**187,879**	**179,497**	**182,141**
Electric Utilities	141,901	143,777	143,040	174,392	173,261	171,469	168,760	170,260	167,482	166,321	158,680	161,244
Industry-owned	49,357	49,579	47,765	20,277	20,201	21,557	21,024	21,498	20,773	21,558	20,816	20,897
Nuclear	**44,264**	**44,264**	**42,048**	**41,482**	**39,132**	**38,042**	**33,083**	**33,083**	**33,083**	**33,083**	**33,083**	**33,083**
Electric Utilities	44,264	44,264	42,048	41,482	39,132	38,042	33,083	33,083	33,083	33,083	33,083	33,083
Industry-owned	-	-	-	-	-	-	-	-	-	-	-	-
Wind Power	**2,646**	**2,750**	**2,808**	**3,246**	**3,483**	**3,498**	**3,951**	**4,119**	**4,262**	**4,483**	**5,369**	**5,778**
Electric Utilities	82	30	50	2,893	3,091	3,165	3,580	3,750	3,870	4,097	4,954	5,335
Industry-owned	2,563	2,720	2,758	353	391	332	371	369	392	386	415	443
Solar	**1,559**	**4,085**	**5,624**	**9,257**	**12,592**	**14,974**	**16,522**	**19,028**	**21,042**	**23,499**	**25,393**	**25,657**
Electric Utilities	67	81	87	5,655	7,318	8,922	10,549	12,408	14,132	16,505	18,140	18,375
Industry-owned	1,492	4,005	5,536	3,602	5,274	6,052	5,973	6,620	6,910	6,994	7,253	7,281
Geothermal	**512**	**508**	**517**	**526**	**471**	**473**	**481**	**487**	**487**	**437**	**441**	**461**
Electric Utilities	477	473	473	511	466	463	463	469	469	419	425	427
Industry-owned	35	35	43	15	5	11	18	18	18	18	16	34
Battery Energy Storage System	-	-	-	-	-	-	-	-	-	-	-	**345**
Electric Utilities	-	-	-	-	-	-	-	-	-	-	-	331
Industry-owned	-	-	-	-	-	-	-	-	-	-	-	14
Others	-	-	-	**63**	**54**	**43**	**43**	**43**	**60**	**60**	**263**	**172**
Electric Utilities	-	-	-	63	54	43	43	43	60	60	263	172
Industry-owned	-	-	-	0	0	0	0	0	0	0	0	0
Total	289,171	294,560	291,836	298,362	299,209	300,093	293,897	298,550	297,197	299,450	294,112	297,708
Electric Utilities	231,468	234,028	231,484	274,519	272,885	271,685	266,112	269,648	268,708	270,098	265,212	268,668
Industry-owned	57,703	60,532	60,352	24,844	26,324	28,407	27,785	28,903	28,489	29,351	28,900	29,039

* In conjunction with the launch of the licensing system in fiscal 2016, certain utilities' power generation facilities that had been counted under "Industry-owned" up through fiscal 2015 have been counted under "Electric Utilities" since fiscal 2016.

Source:Economy, Trade and Industry Statistics Association, "Handbook of Electric Power Industry (2025)"

Transmission, Substations and Distribution

JEPIC

(As of March 2025)

Voltage (kV)	Transmission Lines [km]				Substations	
	Route length		Circuit length		Number	Output Capacity [MVA]
	Overhead	Underground	Overhead	Underground		
500 ≦	8,167	113	15,847	201	85	231,850
275	7,442	620	14,699	1,548	164	178,358
220	2,542	52	4,880	116	70	45,550
187	2,756	15	5,366	35	49	19,230
110-154	15,429	1,079	28,001	1,993	757	161,647
66-77	38,440	7,600	68,723	13,702	4,656	230,147
≦ 55	13,791	6,172	14,963	9,994	1,329	10,223
Total	**88,567**	**15,534**	**152,479**	**27,590**	**7,110**	**877,005**

Distribution Lines [km]				Distribution Lines [km]	
Route length		Circuit length		Output Capacity [MVA]	
Overhead	Underground	Overhead	Underground	Overhead	Underground
1,296,898	46,604	4,067,132	76,200	359,914	40,962

Source: Federation of Electric Power Companies of Japan, DATEBASE

Peak Load, Supply Capability, Annual Electricity Demand, Reserve Margin and Load Factor

JEPIC

(As of March 2025)

FY	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Peak Load (GW)	161.6	154.3	164.5	155.9	155.5	164.8	164.6	166.5	164.6	166.1	160.9	160.8
Supply Capability (GW)	179.5	179.8	183.5	177.6	177.2	187.5	185.8	186.1	188.0	185.6	182.7	176.4
Annual Electricity Demand (TWh)	917.5	898.9	888.2	890.5	900.9	896.5	878.4	867.8	885.2	870.0	862.6	869.7
Reserve* (GW)	17.9	25.6	18.9	21.8	21.7	22.7	21.2	19.6	23.4	19.5	21.8	15.5
Reserve Margin* (%)	11.1	16.6	11.5	14.0	13.9	13.8	12.9	11.8	14.2	11.7	13.5	9.7
Load Factor** (%)	64.8	66.5	61.6	65.8	66.0	62.1	60.7	59.5	61.4	59.8	61.0	61.7

* Reserve = Supply Capability – Peak Load　　Reserve Margin = Reserve / Peak Load × 100
* Figures for 2015 onward are for summer only.
** Load Factor = Annual Electricity Demand / (Peak Load × 365(366) × 24 hours) × 100

Source: Japan Electric Power Survey Committee (2011–2014),
OCCTO," Annual Report " (2016–2024)

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