

# **Energy White Paper 2023 (Summary)**

**(FY2022 Annual Report on Energy)**

**June 2023**

**Agency for Natural Resources and Energy**

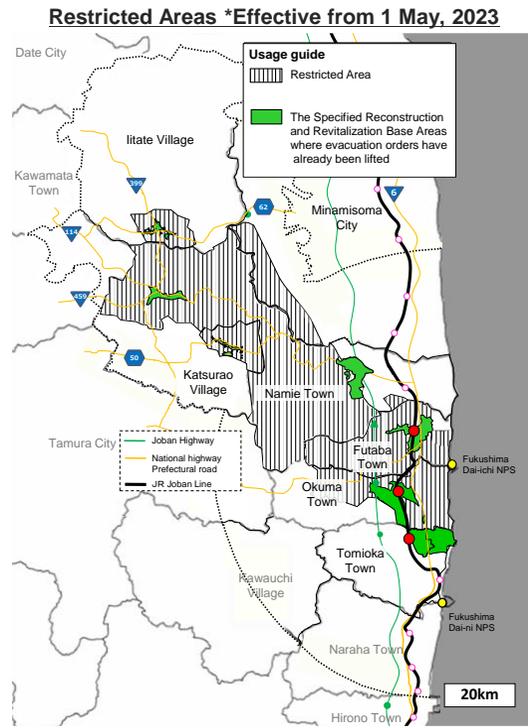
# Starting Point of Formulating Japan's Energy Policy: Reconstruction of Fukushima after the Nuclear Accident

- i. Effective June 2022, the evacuation order was lifted for the specified reconstruction and revitalization base areas in Katsurao Village, Okuma Town, Futaba Town, Namie Town, Tomioka Town and Iitate Village. In particular, this permitted residents of Futaba Town to return home in August 2022 for the first time since the occurrence of the Great East Japan Earthquake.
- ii. A Ministerial Meeting was held in January 2023, and the timing of the discharge of ALPS treated water into the sea was determined to be "likely around the spring to summer of 2023".
- iii. Progress was made in the investigation of the inside of the primary containment vessel of the Unit 1 reactor using underwater robots.

## (i) Efforts toward lifting evacuation orders in Restricted Areas

**Restricted Areas** Policy: **"Strive to lift all evacuation orders in the future and promote reconstruction and revitalization in a responsible manner even if it may take many years."**

- 1. Specified reconstruction and revitalization base areas**  
(Shaded in light green)
- Those Restricted Areas where we aim to lift the evacuation orders and realize residents' return-to-home within around 5 years.



- [Lifting of evacuation orders]**
- Mar. 2020: **Part of Futaba, Okuma, and Tomioka Towns**
  - Jun. 2022: **Katsurao Village, Okuma Town**
  - Aug. 2022: **Futaba Town**
  - Mar. 2023: **Namie Town**
  - Apr. 2023: **Tomioka Town**
  - May: 2023: **Iitate Village**

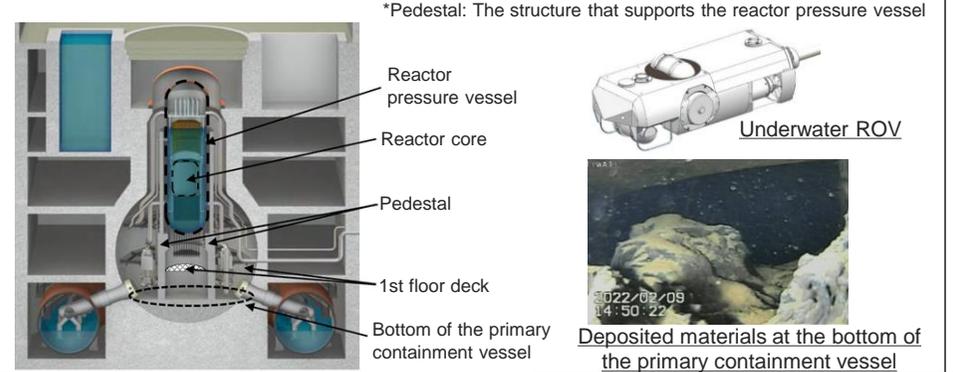
- 2. Areas other than the specified reconstruction and revitalization base areas**  
(Shaded in gray with vertical lines)
- Over the 2020s, we will prepare institutional systems, including amending the Act on Fukushima Special Measures in order to create "specified re-inhabitation areas" so that residents who wish to return home can do so.

## (ii) Efforts toward disposal of ALPS treated water

- At a Ministerial Meeting in January 2023, the timing of the discharge of ALPS-treated water into the sea was determined to be "likely around spring to summer of 2023".
- Regarding the safety of ALPS treated water, Japan underwent a review by the International Atomic Energy Agency (IAEA) and disseminated information on the contents and results thereof. We also conducted public relations activity using TV, online, and newspaper ads, and social media, among other means.
- In addition to establishing a fund to support demand for fishery products in order to guard against reputational damage, we prepared a fund to help fishermen continue fishing in order to overcome the effects of the discharge of ALPS treated water into the sea.

## (iii) Efforts for the retrieval of fuel debris

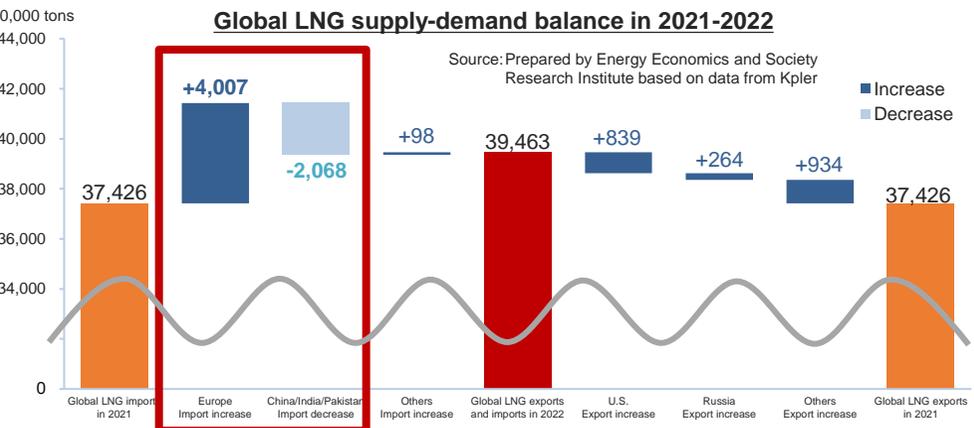
- In preparation for the retrieval of fuel debris, underwater ROV designed to identify the distribution of deposited materials at the bottom of the primary containment vessel of the Unit 1 reactor were employed to investigate the inside of the reactor.
- The investigation confirmed the presence of deposited materials within and outside the pedestals, damage to the concrete of the opening of the pedestals and the underside of the inside wall, and the exposure of reinforcing steel. In light of the results of the interior investigation, Tokyo Electric Power plans to assess the earthquake resilience of the pedestal.



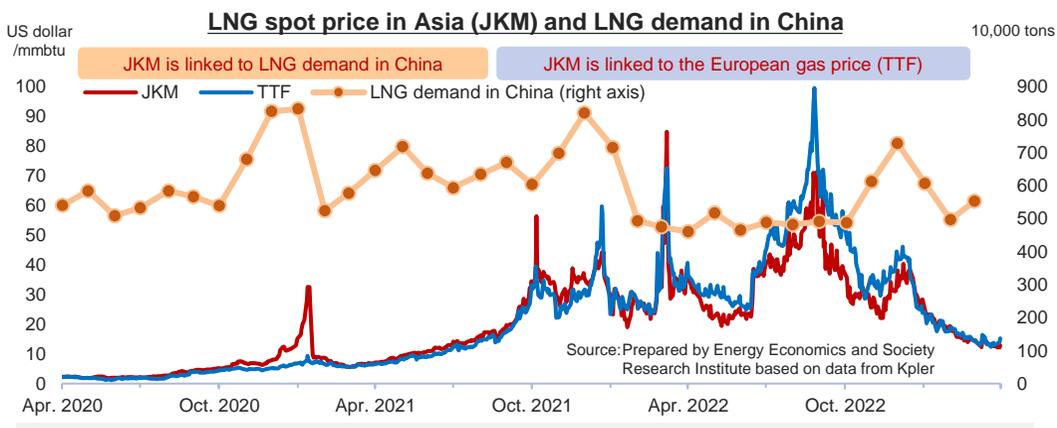
# Impact of the Global Competition for LNG Supply

- i. Due to the impact of an increase in Europe's LNG imports, the LNG supply-demand balance tightened, and prices surged. Some Asian countries reduced imports.
- ii. LNG prices in Asia, which were previously linked to the Chinese economy, have come to be linked to gas prices in Europe. Some Asian countries implemented rolling blackouts.
- iii. As a result of the prolonged economic sanctions, LNG production capacity is expected to be unable to catch up with the growing demand soon. The LNG supply-demand balance is expected to become tighter toward around 2025, so the global "LNG war" is not expected to end in a short period of time.

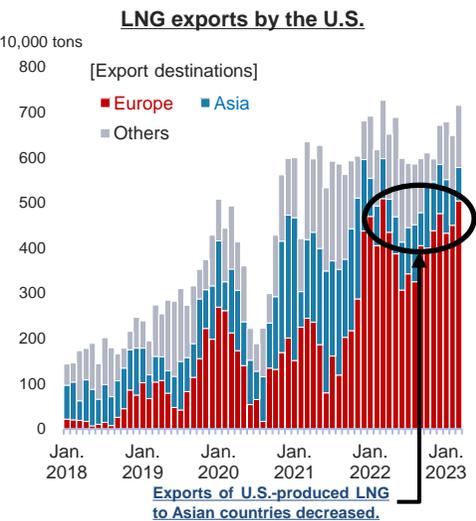
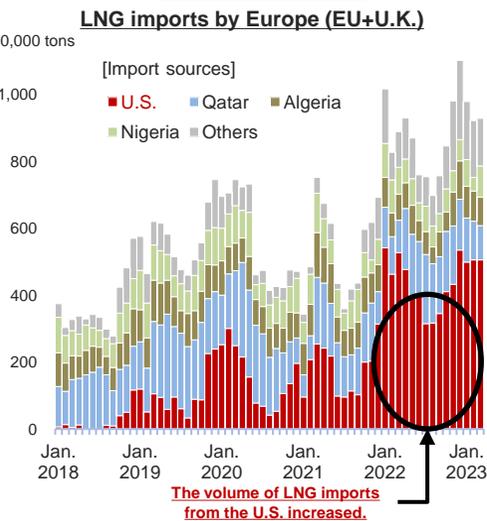
(i) Global LNG exports and imports



(ii) The impact of the tight LNG supply-demand balance and price upsurge in Asia



**Impact of the price upsurge** Some Asian countries, such as Pakistan, refrained from procuring LNG due to shortages of foreign currency reserves, and **rolling blackouts** were implemented in some cases.



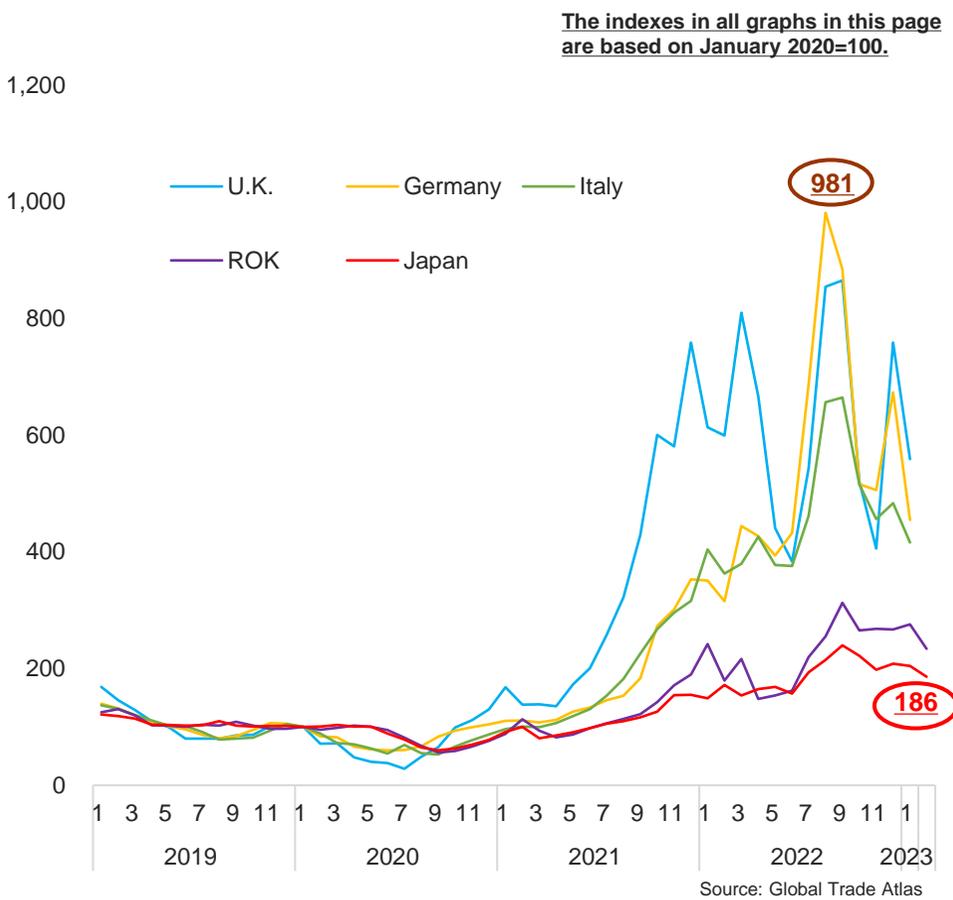
(iii) Global LNG excess supply capacity \*On a peak month (January) basis



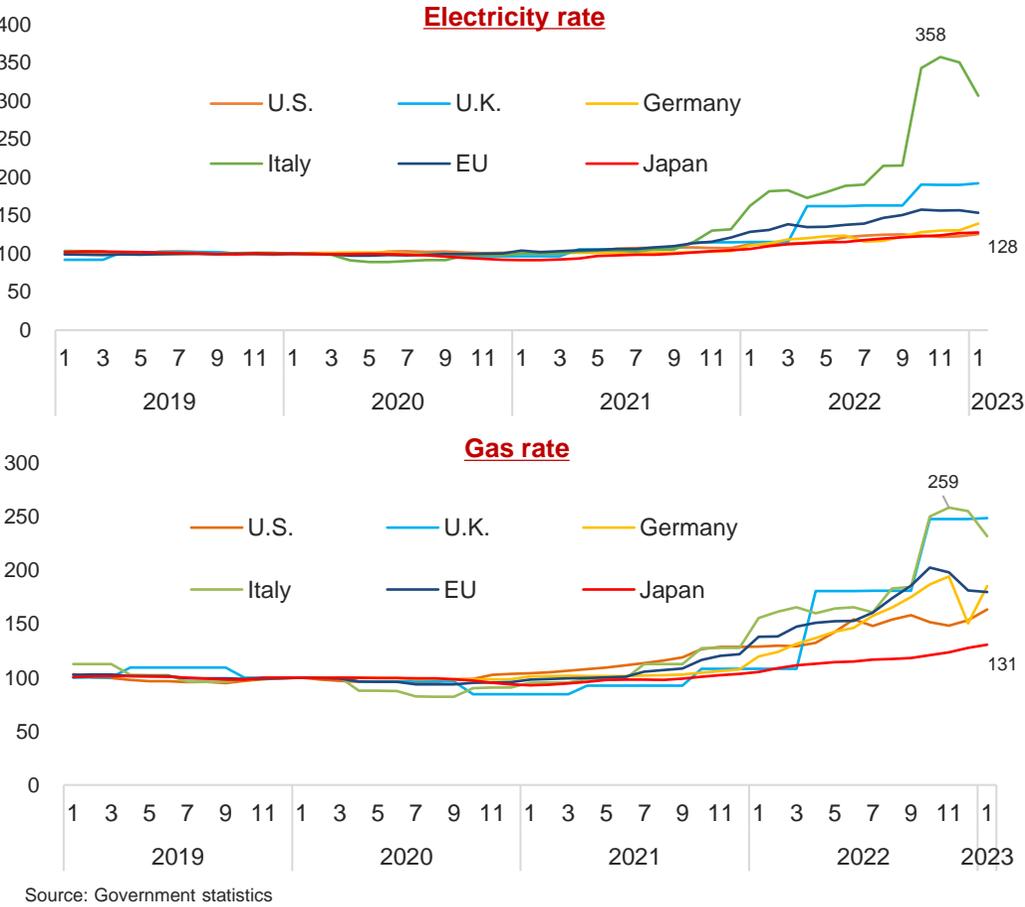
# Country-by-country Impact of the Global Energy Price Upsurge

- i. Germany faced a temporary 10-fold surge in the import price of natural gas. In Japan as well, the import price of natural gas nearly **doubled** (from that of January 2020). (Increases in LNG prices in Japan were not as high as in Europe because Japan procures most of its LNG under long-term contracts at prices linked to the oil price.)
- ii. Electricity and other charges increased dramatically in Japan, as in other countries. Japan faces an imminent energy crisis, which might be the tensest situation it has had to deal with since the oil crises. (The rise in electricity rates was smaller than in Europe because of a lower LNG import price and the effects of a fuel cost adjustment system applied to electricity rates, among other factors.)

**(i) LNG import price index**



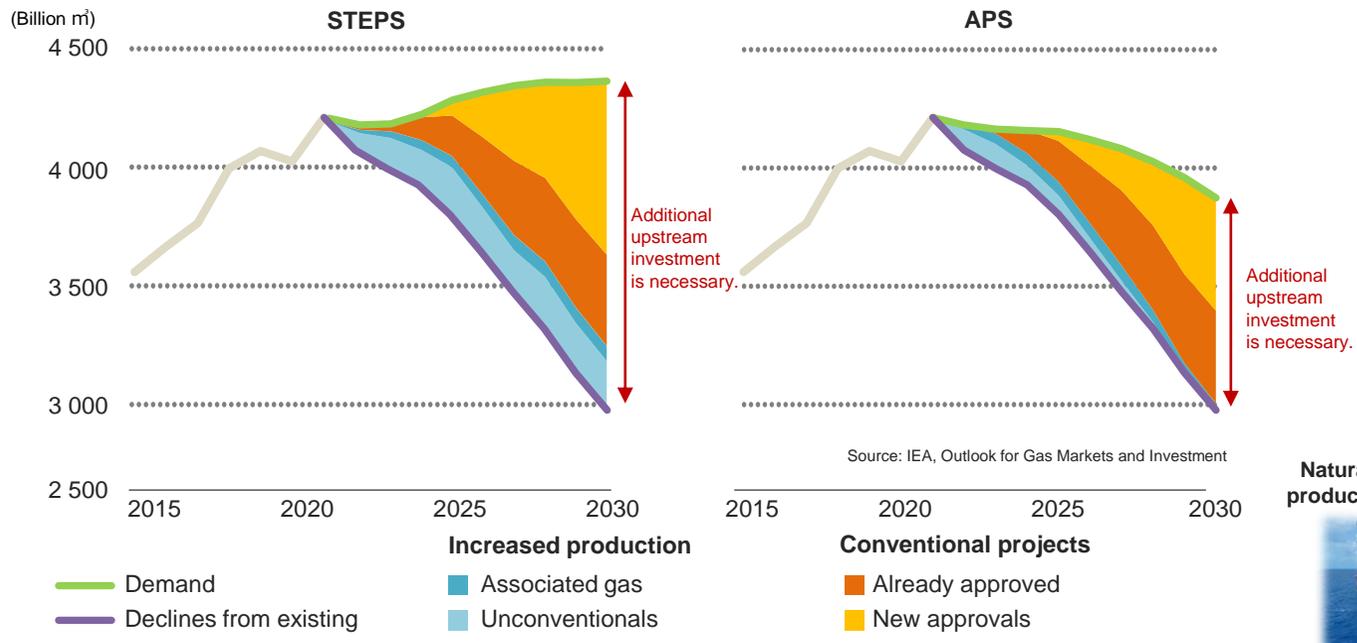
**(ii) Consumer price indexes for electricity and gas rates**



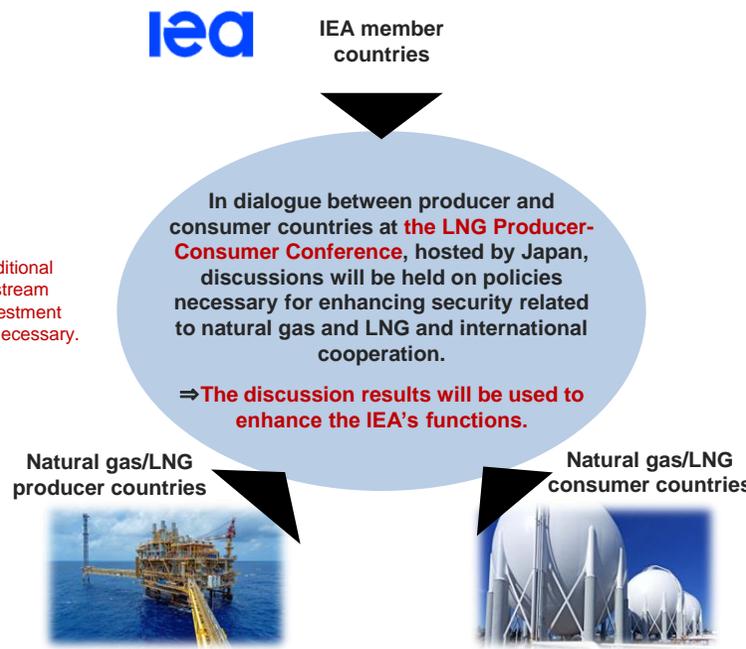
# Discussions on Natural Gas and LNG at the G7 Ministers' Meeting on Climate, Energy and Environment in Sapporo

- ◆ A report published in April 2023 by the International Energy Agency (IEA) made clear that **additional upstream natural gas investments are necessary** due to such factors as the depletion of existing gas fields even under the APS, an ambitious scenario incorporating country-by-country CN targets.
- ◆ In addition, the Ministers' Communique issued at the G7 Ministers' Meeting on Climate, Energy and Environment in Sapporo also stated the need for natural gas and LNG. Some of the specific points of the communique are as follows:
  - As exemplified by its reference to the negative environmental, economic and social impacts of the intensifying global competition to secure resources, the communique represented an agreement that **gave consideration to the Global South group, mainly Asian countries, where gas demand is expected to increase further.**
  - In addition, the communique stated that **investment in the gas sector can be appropriate to help address potential market shortfalls provoked by the crisis.**
  - It also expressed **hopes that the IEA's functions and role in gas security will be further strengthened through dialogue** between gas producing and consuming countries **taking into account longer-term perspectives.**

Additional gas supply volumes that will become necessary toward 2030 under STEPS and APS\*



Japan's future efforts

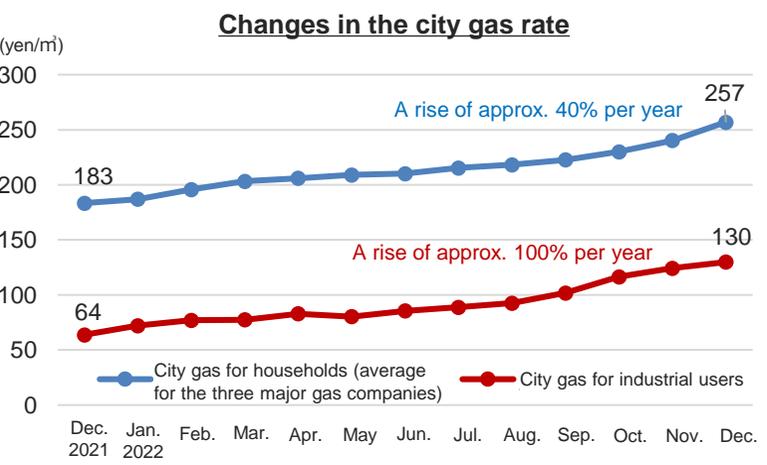
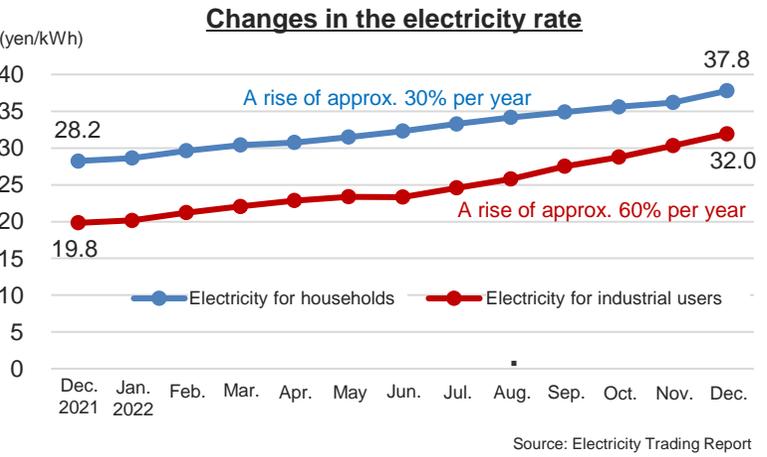


\*STEPS stands for Stated Policies Scenario, which reflects concrete policies announced by governments, while APS stands for Announced Pledges Scenario, which reflects ambitions declared by willing countries (both are future scenarios developed by the IEA).

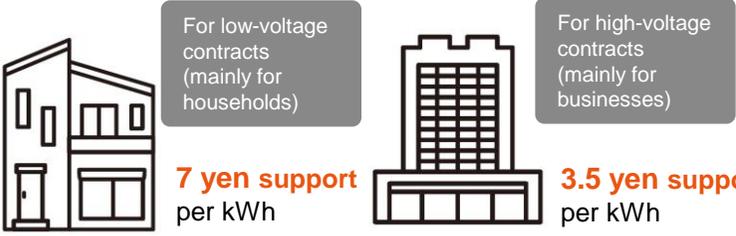
**Challenges and Responses Involving Energy Security**

**The Energy Price Surge in Japan and Corrective Measures**

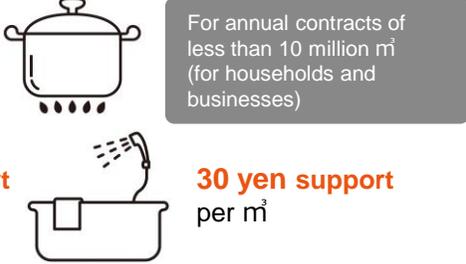
- ◆ In Japan, the government supports households and companies affected by price rises of electricity, city gas, and gasoline.
- ◆ Electricity and gas: **A discount of 2,800 yen\* for the monthly electricity charge and a discount of 900 yen\* for the monthly gas charge** (applied to the charges for usage in January 2023 and later) \*Case of the standard household that uses 400 kWh of electricity and 30 m<sup>3</sup> of city gas per month
- ◆ **Gasoline: Kept at around 170 yen per liter (would have been temporarily above 200 yen without the subsidy)**



**Subsidy for electricity charges**

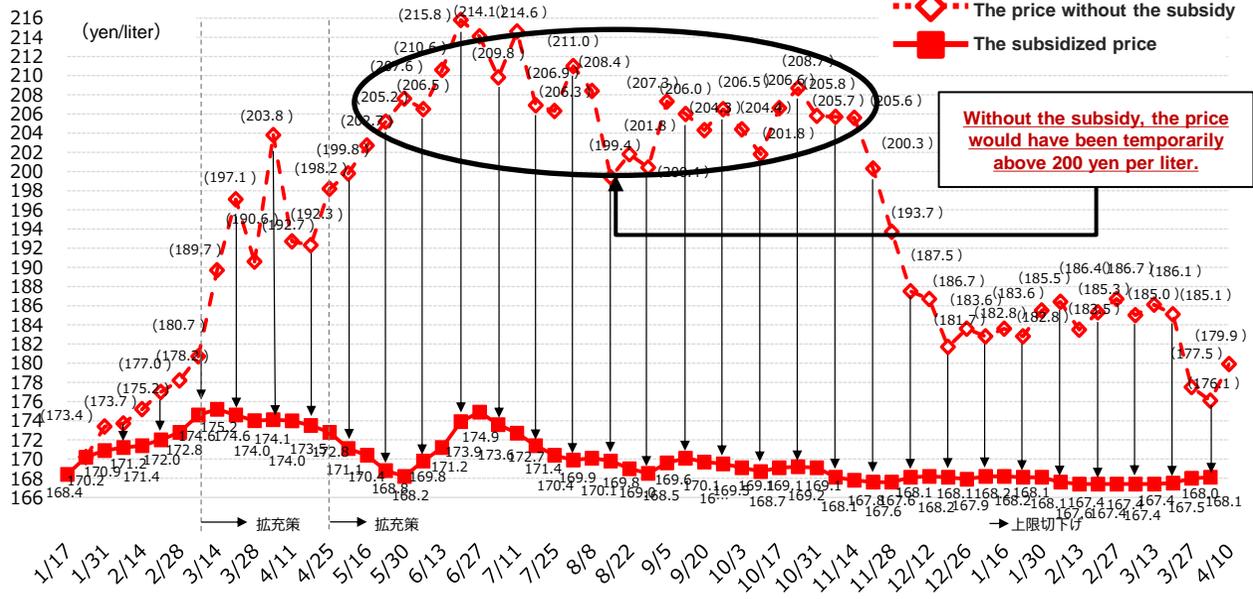


**Subsidy for city gas charges**



**Subsidy for gasoline prices**

**Changes in the average nationwide price of regular gasoline**



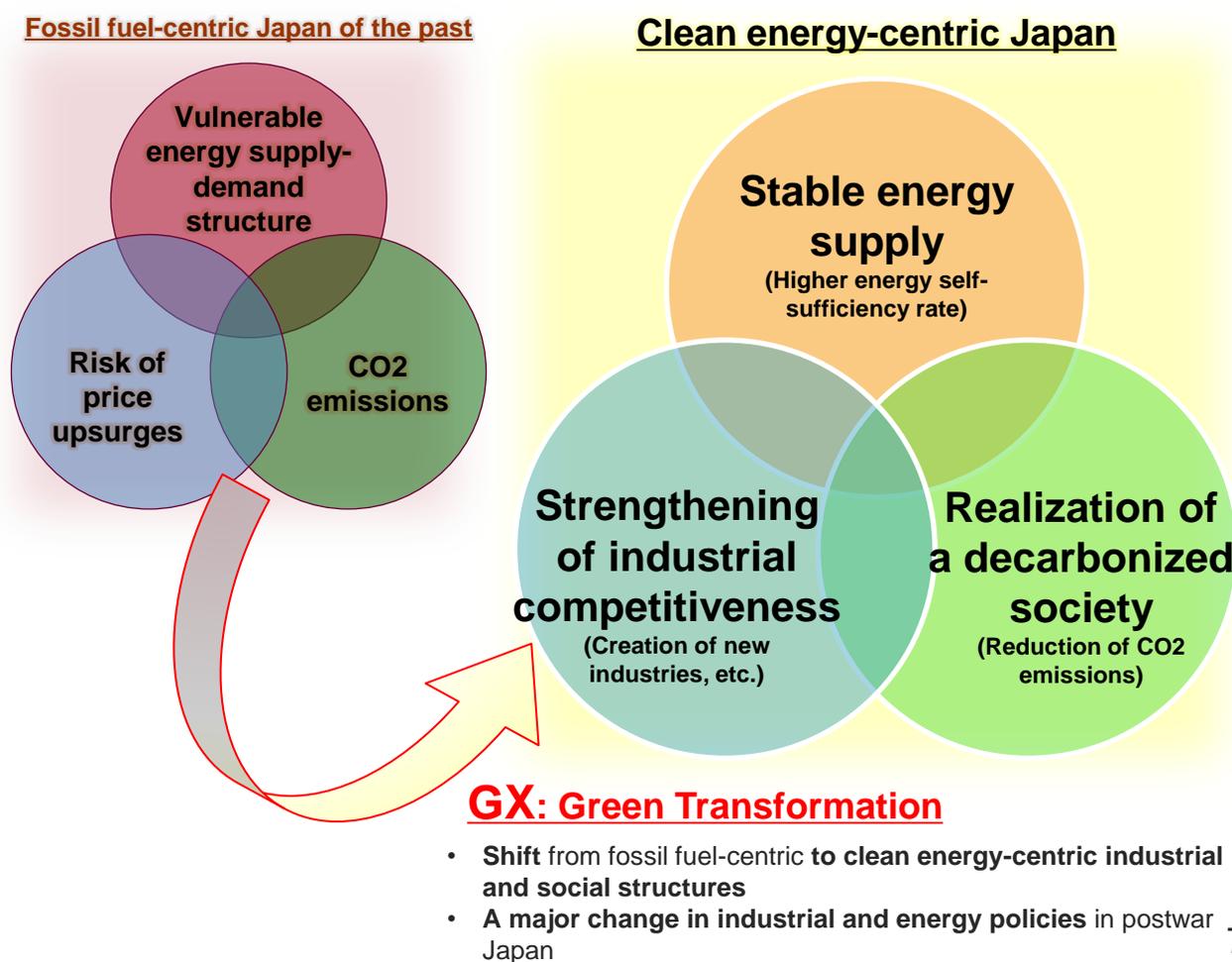
# Global Trends and Japan's Basic Policy for the Realization of GX

- i. **Competition for investment in GX, which realizes emission reduction and economic growth, is intensifying**, particularly in Europe and the U.S.  
 ⇒ **Respective governments are supporting investment for decarbonization** in order to accelerate the adoption of renewable energy, nuclear power, hydrogen, and EVs, etc.
- ii. In Japan, **in order to ensure stable energy supply, strengthen industrial competitiveness, and achieve decarbonization at the same time**, a Cabinet decision was made on the **Basic Policy for the Realization of GX**, which summarizes efforts that should be made over the next 10 years.

**(i) U.S. and European investment support measures intended to realize a decarbonized society**

 <b>U.S.</b>	<ul style="list-style-type: none"> <li>◆ Governmental support worth <b>50 trillion yen</b> over <b>a 10-year period</b> for clean electricity (e.g., renewable energy and nuclear power) and clean fuels (e.g., hydrogen and biofuels).</li> </ul>
 <b>EU</b>	<ul style="list-style-type: none"> <li>◆ Support measures aiming to realize investment worth <b>140 trillion yen</b>, including <b>public and private sectors</b>, over <b>a 10-year period</b> for the realization of a decarbonized society.</li> <li>◆ Announced deregulation measures, etc. aiming to increase the self-sufficiency rate regarding net-zero technologies, such as renewable energy and storage batteries, within the EU region to 40% by 2030.</li> </ul>
 <b>U.K.</b>	<ul style="list-style-type: none"> <li>◆ Governmental support worth <b>4 trillion yen</b> over <b>an eight-year period</b> for offshore wind power, nuclear power, hydrogen, etc.</li> <li>◆ Announced an infrastructure strategy for disseminating EVs.</li> </ul>
 <b>Germany</b>	<ul style="list-style-type: none"> <li>◆ Governmental support worth <b>7 trillion yen</b> over <b>a two-year period</b> for the mobility and digital sectors, including EVs.</li> <li>◆ Announced a policy to expand renewable energy and hydrogen production capacity.</li> </ul>

**(ii) Japan's Basic Policy for the Realization of GX, on which a Cabinet decision was made in February 2023** 



## Outline of The Basic Policy for the Realization of GX

- ◆ The Basic Policy for the Realization of GX was formulated at the end of 2022 and a cabinet decision was made in February 2023.



### 1. GX initiatives based on the premise of ensuring a stable energy supply

#### (i) Promote energy efficiency

- Promote companies' energy efficiency investment by subsidies applicable to multi-year investment plans
- Strengthening financial support for replacing residential windows with high-insulation models, etc.

#### (ii) Making renewable energy a mainstay power source

- Promote social installation of next-generation solar cells (perovskite type) and floating offshore wind power

#### (iii) Utilization of nuclear power

- Work out the specifics of plans to rebuild nuclear power stations scheduled for decommissioning to install next-generation reactors at the same sites on the premise of ensuring their safety
- Approve the exclusion of operation suspension periods that meet certain conditions from the counting of the operating period under the upper limit of 40 years + 20 years on the premise of conducting strict safety examinations

#### (iv) Other important matters

- Implement a support system that focuses on price differences between hydrogen/ammonia and existing fuels
- Promote research and development, capital investment, demand creation and other GX efforts in areas such as carbon recycling fuels (e.g., methanation, SAF, and synthetic fuels) and storage batteries

### 2. Realization and implementation of the Pro-Growth Carbon Pricing Concept and other initiatives

#### (i) Upfront investment support worth 20 trillion yen over the next decade utilizing GX economic transition bonds

#### (ii) GX investment incentives through the Pro-Growth Carbon Pricing Concept

#### (iii) Utilization of new financial instruments

⇒ Realization and implementation of GX investment worth more than 150 trillion yen over the next decade through public-private cooperation

#### (iv) International strategy

- Exercise leadership in the development of a clean energy market and in innovation cooperation
- Realize the Asia Zero Emissions Community (AZEC) vision

#### (v) Promotion of GX for the entire society, including for a just transition

- Support the facilitation of labor mobility in growth areas
- Realize decarbonization of local communities and everyday lives

#### (vi) Promotion of GX for small and medium enterprises

- Promote GX efforts for entire supply chains