Keidanren
Policy & Action

Towards Green Transformation (GX)

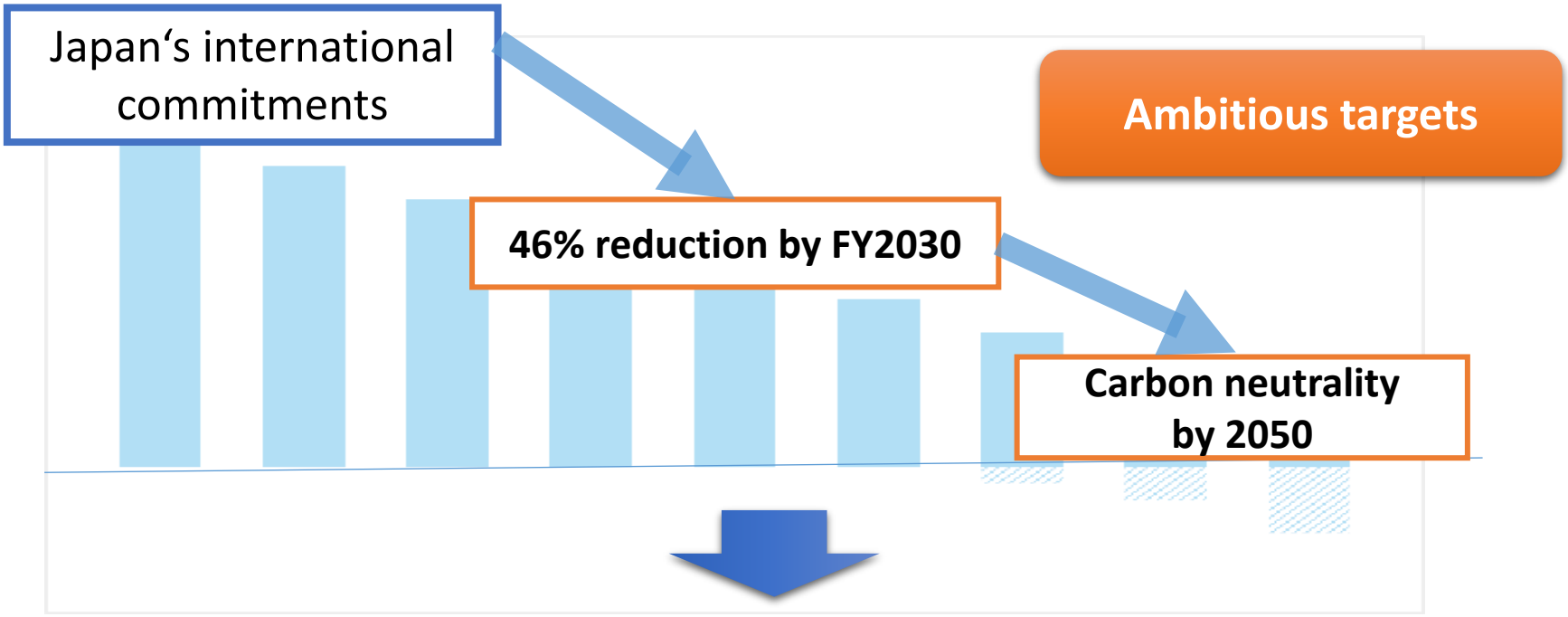
〈Main Points〉

(Provisional Translation)

May 17, 2022

Keidanren

1. Climate Change and GX



GX = transformation of whole economy and society required

→ GX is, also, to be the Pillar of growth strategy. Need to ultimately lead to sustainable development.

The process will involve drastic change for individual citizens and companies

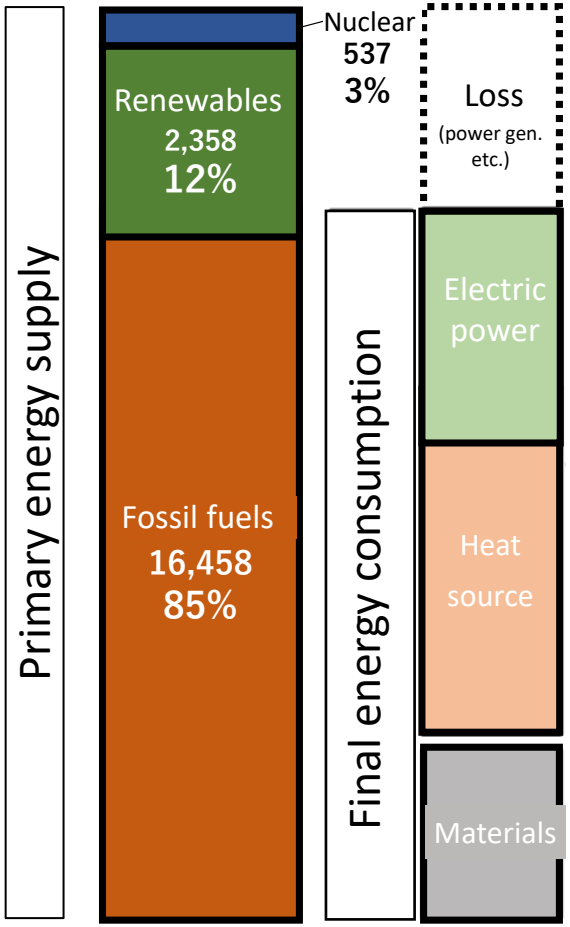
① Workers to be affected by change in industrial structure

② Additional public burden

⇒ Need to **foster public understanding.**

2. Perspectives Towards Achieving CN by 2050

〈Roadmap to achieving CN by 2050>



(7) Negative emissions (forest sink, DACCS, BECCS)

+

(1) Securing zero emission power sources
- Renewables as a major power source
- Proactive promotion of nuclear power
- Decarbonized thermal power (hydrogen, ammonia)

(2) Promoting electrification

(3) Achieving next-generation electricity networks

(4) Introducing carbon-free hydrogen, ammonia, synthetic methane for heat use

(6) Promoting carbon recycling and chemical recycling

(5) Transforming production processes, developing and deploying innovative product and services

(Note) Figures are given in PJ (petajoules)

〈Perspectives towards achieving CN by 2050 〉

①Innovation
Innovative technology development

②Transition
Full mobilization of existing resources

③Promote investment
Investment for R&D and social implementation

④Strengthen industrial competitiveness

3. “GX Policy Package” for Achieving CN by 2050

- The Government should **promptly present its grand design = “GX Policy Package”** to maximize public and private investment and thus maintain and enhance the international competitiveness of the industry.

GX Policy Package

Roadmap

- Show timeline for technologies, investments and policies to be socially implemented by 2050

“Council of GX Realization” (tentative name)

- Formulate and implement the roadmap
- Discuss how to share the social costs of GX

Transition of energy supply structure (Achieve optimal energy mix & next-generation electric power system)

Proactive utilization of nuclear power

Promoting electrification; innovative technology development with a focus on energy demand-side technologies

Green deal

Achieve GX by 2050

Sustainable finance

Addressing changes in industrial structure

Proactive economic diplomacy strategies

Carbon pricing

4. Transition of Energy Supply Structure (1)

- Even as we seek to achieve CN, **the basic of energy policy lies in securing S＋3E.** Given the current international situation, it is particularly **urgent for Japan to strengthen its energy security.**
- **We need to fully consider Japan's circumstances,** including geographic constraints and lack of energy resources.
- **Japan must essentially maximize the use of existing technologies, including nuclear power,** particularly, **during the transition period through 2030.**

Decarbonization of power sources & Achieving next-generation electricity networks

Nuclear

- **Good balance of the 3Es**
- **Clearly present policy to continue use on the premise of securing safety and public understanding. Full utilization of existing facilities (steady restarting, extension of lifespan to 60 years, etc.)**
- **Clearly present policy for new construction,** with consideration for innovative LWR, SMR, and HTGR
- **Enhance R&D for nuclear fusion**

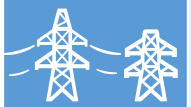
Thermal

- **Current major power source** with frequency response, inertial response, synchronous control
- **Decarbonize in phases by switching fuels to LNG, by utilizing hydrogen and ammonia (co-firing and 100% firing)**
- **Clearly present a roadmap and communicate internationally** for future utilization and decarbonization

Renewable energy

- **Maximum introduction as a "major power source" with low cost, stable supply and responsible business discipline.**

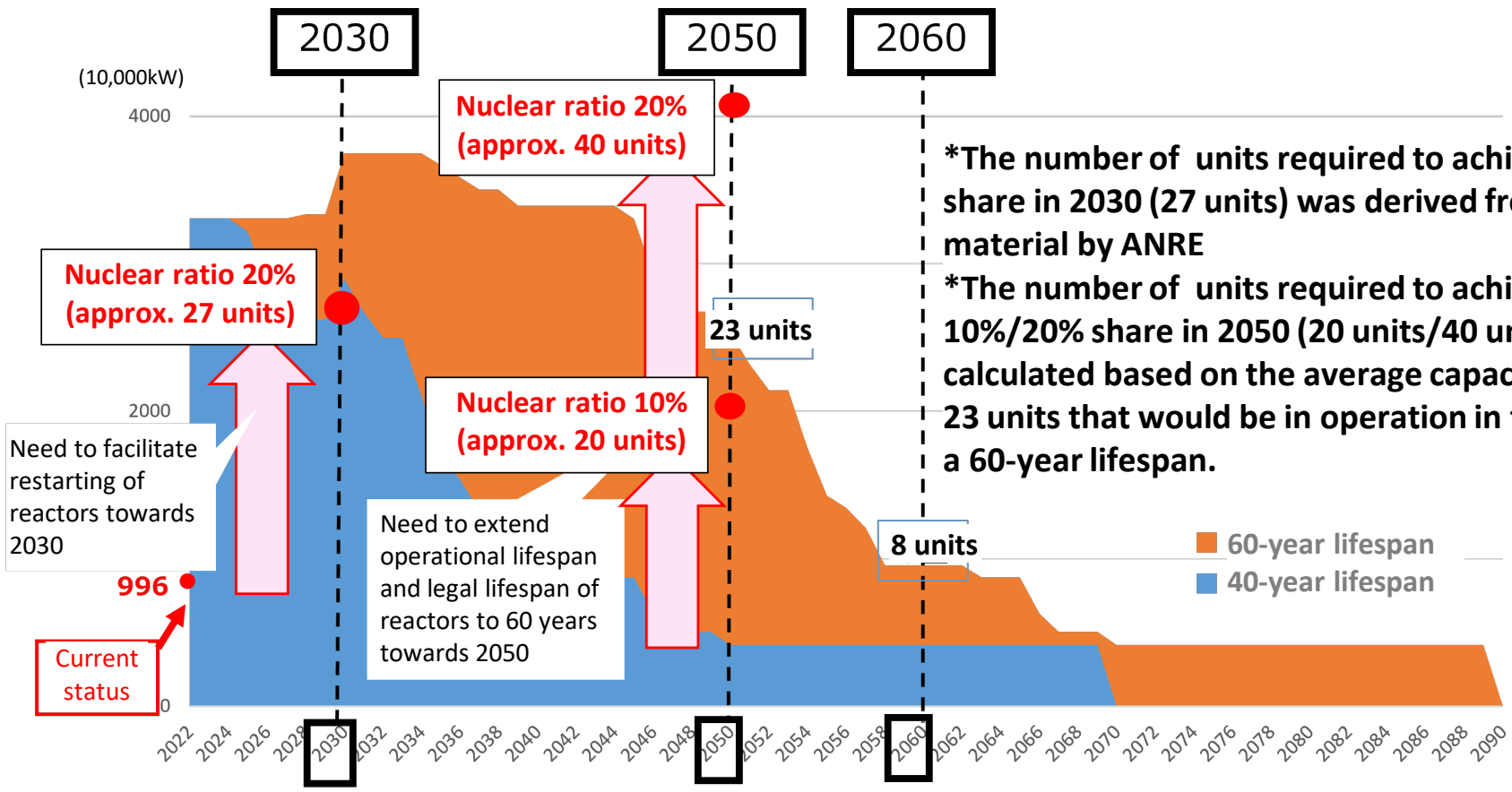
Networks



- **Upgrading transmission networks and sophisticate distribution networks for massive introduction of renewables.** Secure investment for maintenance and renewal of existing infrastructure.
- **Utilize power storage facilities, such as storage batteries (including EVs) and pumped storage**

4. Transition of Energy Supply Structure (2)

Outlook of nuclear power plant capacity

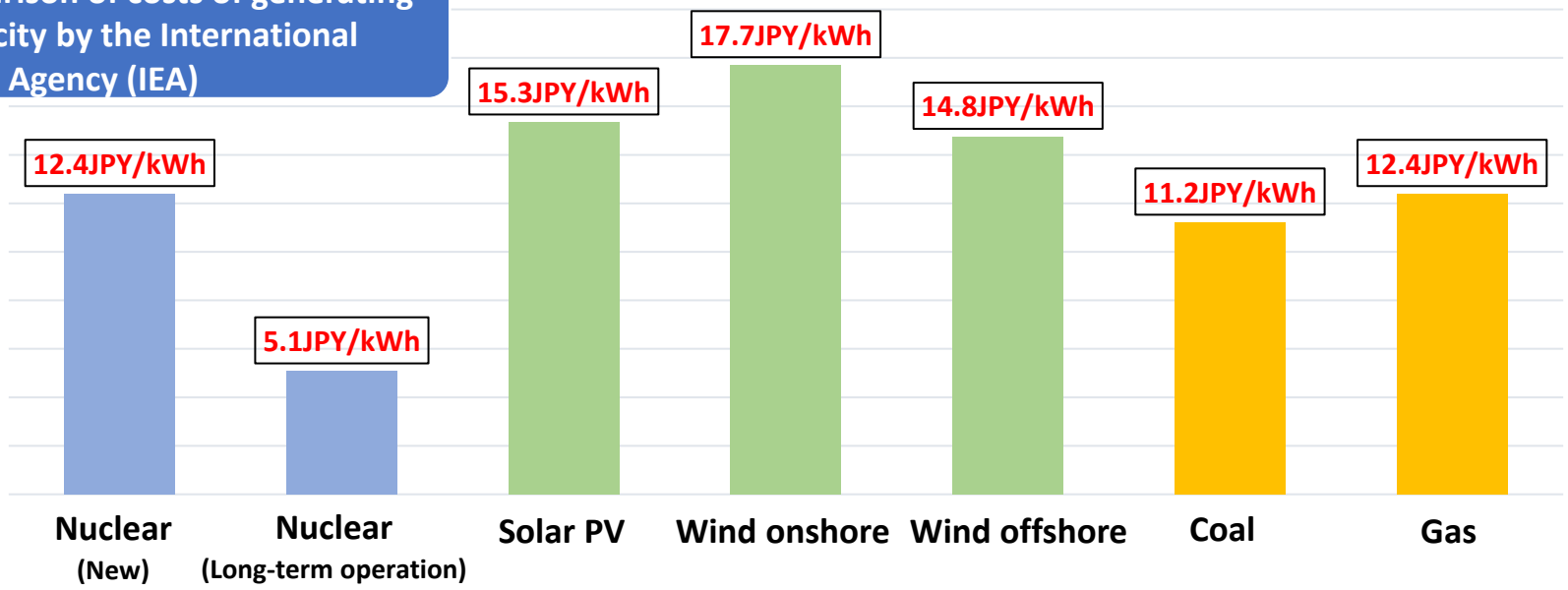


***The number of units required to achieve a 20% share in 2030 (27 units) was derived from material by ANRE**

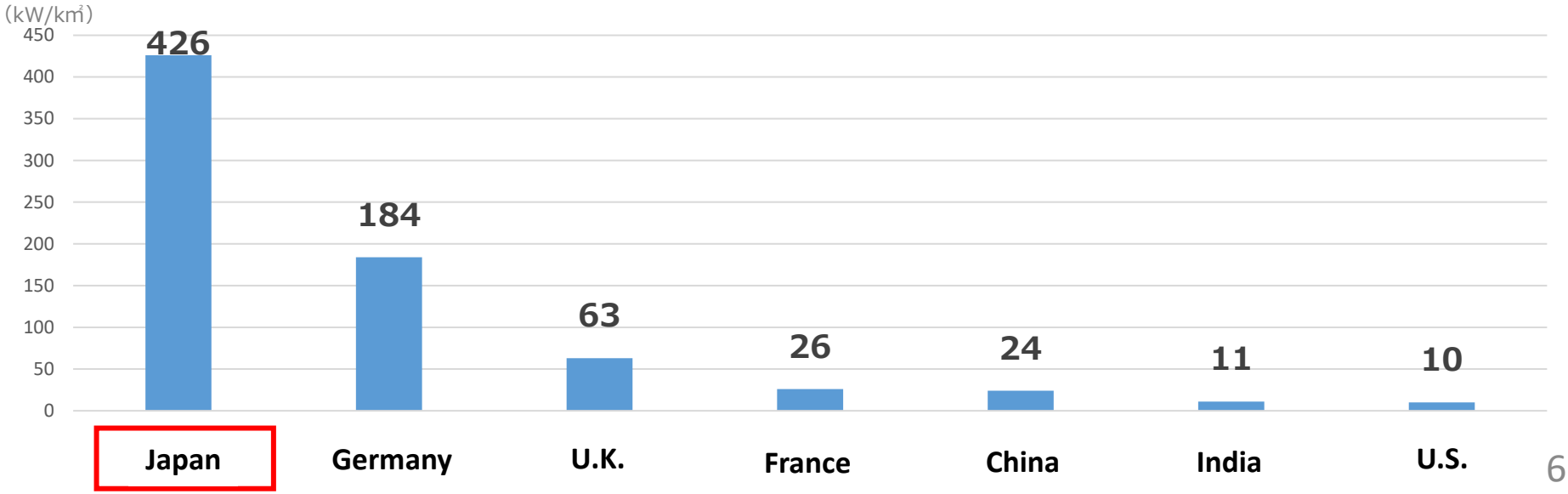
***The number of units required to achieve a 10%/20% share in 2050 (20 units/40 units) was calculated based on the average capacity of the 23 units that would be in operation in the case of a 60-year lifespan.**

4. Transition of Energy Supply Structure (3)

Comparison of costs of generating electricity by the International Energy Agency (IEA)



Solar PV capacity per area of flat land



4. Transition of Energy Supply Structure (4)

Decarbonizing heat and fuels (deploying carbon-free hydrogen, ammonia & synthetic fuels)

Industry and consumer sectors

2030

☐**Shift to low-carbon energy, such as LNG, and sophisticated use;** utilize hydrogen, ammonia, carbon neutral LNG

2050

☐**Deploy hydrogen, ammonia, synthetic methane across society; promote R&D and build international supply chains for stable low-cost supply.**

Transport sector

Automobiles

☐**R&D and creating an enabling environment for electrification and the utilization of existing internal combustion engines (ICE) in carbon neutral way.** Develop EV and H2 fueling stations; **promote R&D and develop supply chains for using H2, e-fuels, and biofuels in ICE.**

Air, sea and rail transport

☐Implement R&D and demonstration projects for **sustainable aviation fuels (SAF)** and using ammonia as a shipping fuel.

5. Promoting Electrification & Innovative Technology Development

- **Energy demand-side** also needs to tackle the below issues.

Energy saving & electrification

- Increase the electrification rate especially in households & offices by promoting the deployment of heat pumps, etc., while advancing further energy savings.

Innovation

- Introduce strong support measures and develop a business environment that will promote investments in energy demand-side innovations.
- Need to assume various pathways, including portfolios of diverse technologies.

Transforming production processes

ZEB／ZEH

Electrifying automobiles

Negative emissions

Global value chains

- Emissions should be reduced from the LCA (Life Cycle Assessment) perspective.

6. Green Deal & Carbon Neutral Economy in 2050

Presumption

- Based on the IEA report, Japan is estimated to need **cumulative investments of around JPY 400T through 2050**.

Required measures

- The Government should commit to medium- to long-term spending to encourage continued private investment.
- Require **Government spending of an annual average of around JPY 2T** (funded by **GX bond ***)
- Government's role will be particularly important in areas where market forces will not facilitate efforts: **high-risk innovative technology development** and **large-scale infrastructure development.**

Ref. Budget allocation in US & EU

	US	EU
Scale	Infrastructure Investment and Jobs Act: **JPY 9.4T** Build Back Better Act: **JPY 64.9T**	**JPY 71.5T** (7-year budget + restoration fund)
Period	5-10 years	7 years
Annual budget	**8.4T JPY/year**	**10.2T JPY/year**

Ref. Comparison of CO2 emissions

(Energy-derived CO2, 2019)

Japan	US	EU
1.06B t	**4.74B t**	**2.99B t**

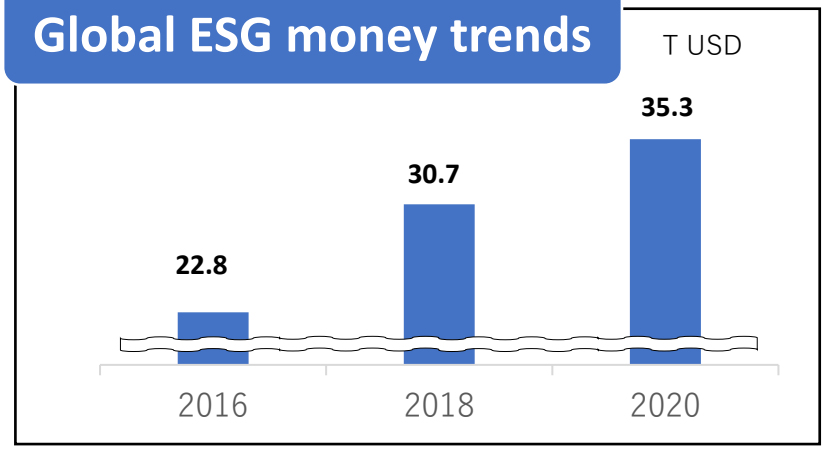
* Government bond issued for GX. To be allocated solely for development and social implementation of technologies for transition to CN and innovation

Figure of carbon neutral economy in 2050 = over JPY1,000T GDP

	FY 2019 (results)	FY 2050
Real GDP	JPY 537.5T (5-year average of 0.9% growth)	**JPY 1,026.8 T (2.1% average annual growth)**

7. Sustainable Finance

Global ESG money trends



- Finance massive funding needs for achieving CN by attracting rapidly growing global ESG funds that are reported to amount to around JPY 4,200T (USD 35.3T).

Required measures

Businesses, investors, etc.

- Businesses announce and implement their **commitment to GX** and strategies.
- Investors **make appropriate assessments and efficiently supply funds** through constructive engagement.

Government

- **Present the grand design** towards GX, while developing the following foundations and **enhance market functions**.

Development of disclosure platform

<Promote disclosure> Increase both quantity and quality of TCFD disclosure
<Develop standards> Develop standards under the IFRS Sustainability Disclosure Standards Board
<Improve access> Build information platform

Development of evaluation basis for financing

<Transition> Domestic diffusion and overseas communication of Basic Guidelines on Transition Finance and Sector Roadmaps
<Green> Domestic diffusion of Guidelines on green bonds & loans
<Third-party evaluation> Establish code of conduct for ESG evaluation institutions and data providers.

8. Addressing Changes in Industrial Structure

■ Need to facilitate (internal & external) transformation to new businesses and labor reallocation in order to connect efforts for CN with economic growth.

Measures required to facilitate business shifts and labor reallocation

Support for smooth business transformation

- **Temporary legislation to facilitate** CN-driven **business transformation**
- Creating an **enabling environment for structural reform of domestic companies and organizations**

Promotion of smooth labor reallocation

- **Enhancing recurrent education and re-skilling**
- Labor reallocation **within companies and corporate groups**
- **Society-wide** labor reallocation

JPY 400B policy package for fundamentally increased investment in human resources

- Various measures to secure workforce to lead GX in terms of both **quantity and quality**

9. Carbon Pricing

【Current status】

Carbon Neutrality Action Plan

The proactive action plan continued by the business community to achieve CO2 emission reductions in each industry

GX League

Voluntary emissions trading by companies in credit market

Various policy mixes should be considered to achieve **the ambitious Government target**

In addition to the firm implementation of the Carbon Neutrality Action Plan and promotion of the GX League, discussions on a cap & trade system which need careful considerations should be started now.

1. **Firmly implement Carbon Neutrality Action Plan**
2. **Promote GX League**
3. **Launch discussions on cap-and-trade system***

Ideal future vision

- Possibility of developing the GX League into a cap and trade system should be discussed. Emissions will initially be grandfathered.

Basic stance on carbon tax

- It is not rational (at least under current circumstances) to newly introduce a carbon tax or raise the Tax for Climate Change Mitigation. **Careful discussion is needed.**
  - Consistent **emission reductions will not be guaranteed.**
  - Given high energy prices, taxation will **undermine international competitiveness.**
  - **"GX bonds"** should be utilized to raise funds required to achieve GX.

10. Proactive Economic Diplomacy Strategies

- The following measures should be taken as **proactive economic diplomacy strategies** for **contributing to CN on a global scale** and **achieving growth by capturing the increasing green demand overseas.**

Supporting the decarbonization of developing/emerging economies, and create business opportunities for Japanese companies

- Realize the "**Asia Zero Emissions Community**" through supporting the energy transition in Asian economies, creating enabling environments by formulating policies, exporting infrastructures and systems with the support of public funds such as ODA, etc.
- **Joint Crediting Mechanism (JCM):** Strategically expand target countries, increase project size, improve institutional operations; etc.
- Proactive participation in formulating **international standards and criteria** in energy and climate change areas

Economic growth rate, population forecast

	Average growth rate 2020→2050	Population 2020→2050
SE Asia	3.8%	0.6%
World	3.0%	0.8%
N. America	2.1%	0.5%
EU	1.5%	▲0.2%

Source: METI

Promoting resource diplomacy to secure hydrogen, ammonia, rare earths, etc.

- Build international supply chains in collaboration with countries concerned
- Secure stable supply of fossil fuels, incl. LNG, during the transition period

Approach to the CBAM

- Formulate rules to calculate carbon intensity per unit product; study real carbon costs in major countries; etc.