Bellesalle Toranomon (Tokyo) and Live streaming

March 4th, 2026

FY2025 ALPS International Symposium

- Global warming countermeasures and policy trends and outlook around the world in a diversifying international context -

Research Institute of Innovative Technology for the Earth (RITE)

Backgrounds and Objectives of ALPS IV

ALPS IV: Project for international cooperation on the analysis and assessment of technologies for climate change mitigation under the Ministry of Economy, Trade and Industry

- As global warming is bound to have severe impacts on the whole planet, there are high expectations for solutions to this issue. However, while global warming affects various sectors in every country of the world, its impacts are not uniform. Mitigation measures and associated costs that countries can afford to take and pay may differ to very large extent. Therefore, model development and model-based analysis and evaluation for global warming countermeasures and policies considering the status of each country/region and industry are needed in order to build truly effective climate policies.
- Within this project, we assess mitigation and adaptation measures, climate finance and climate policy in a consistent and comprehensive manner, taking into account the latest scientific knowledge on the subject, recent trends in international negotiations, and cooperating with international research organizations. Our goal is to contribute to the discussions in international negotiations, e.g., IPCC and COP, and to the development of an international framework and of a national strategy for green growth, namely, a virtuous cycle of environment and growth in the long-term strategy.

ALPS: ALternative Pathways toward Sustainable development and climate stabilization

Overview of the ALPS project

Risk management strategy for climate change responses

- Understanding uncertainties, e.g., climate change science, damages and adaptations, countermeasures and mitigation costs, socioeconomics and international framework.
- Analysis on long-term target and the emission pathways for 2050, 2100 and further (global CO_2 net zero emissions).
- Evaluation of impacts of mitigation costs and international competitiveness regarding short-and-mid-term target up to 2030 (NDCs) and evaluation of Border Carbon Adjustment.
- Research on damages and adaptations and model development to be reflected on risk management strategy.
- Evaluation of long-term low emission scenarios of NETs (BECCS, DACS, etc.) to be reflected on risk management strategy.
- Evaluation of Solar Radiation Management (SRM).
- Evaluation of innovation.
- Synergies and trade-offs with SDGs.

Modeling and Analysis in systematic and quantitative manner

- Improvement of DNE21+, DEARS, and GLaW and analysis using those models.
- Participation in international model comparison projects mainly in Europe & US and presentation of model analysis results.

Evaluation of Green Growth in economic perspective

- Evaluation of Green Growth (decoupling) and data-based analysis.
- Estimation of CO_2 emissions based on consumption.
- Analysis on energy efficiency of Japan and major countries.
- Evaluation of equity of burden by income class due to FIT or other policies.
- Issues regarding CO_2 emission reduction policies under electricity deregulation (learning from Europe).

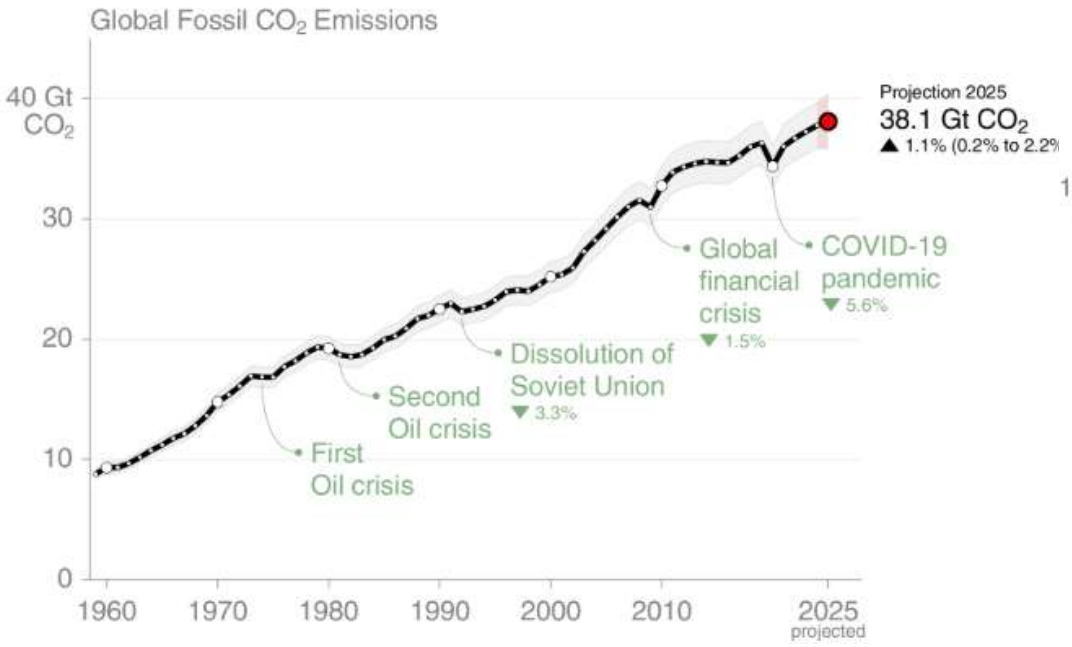
Technological evaluation in cross-sectoral perspective

- Integrated evaluation of social changes, such as acceleration of sharing economy induced by IoT & AI and reduction in embodied goods by improving demand-supply efficiency.
- Evaluation of hydrogen use including CCUS and whole system of oil refinery, petrochemical, shale gas ad biorefinery.
- Evaluation of food system.
- Research on other technologies.

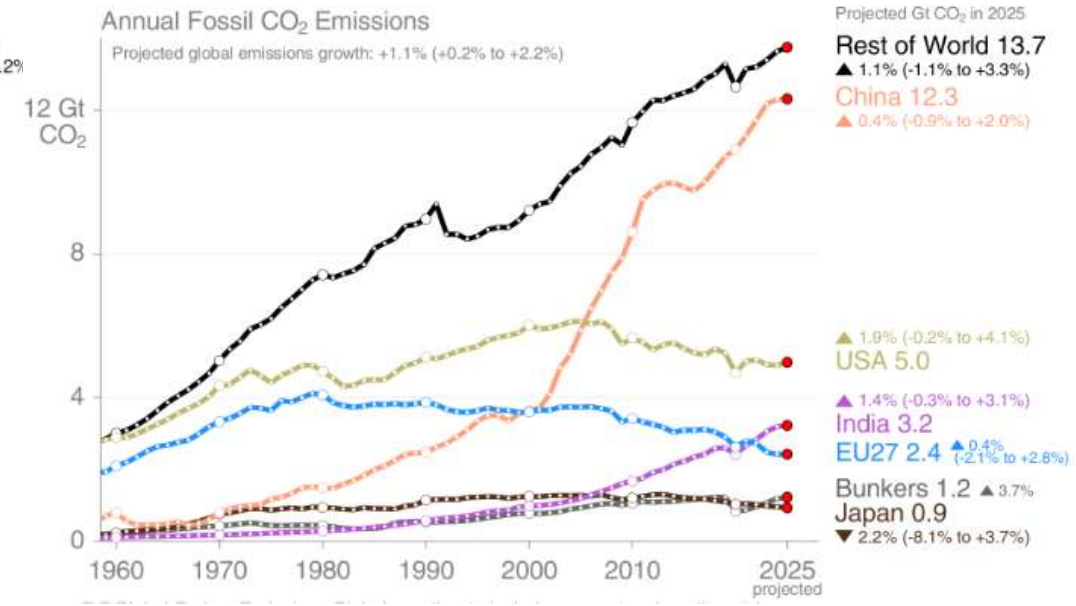
Evaluation of innovation and investment

- Evaluation of the role of general-purpose technologies (e.g., ICT, material technology).
- Evaluation of innovation inducing policies.
- Research on the trend of ESG investment and green finance analysis.

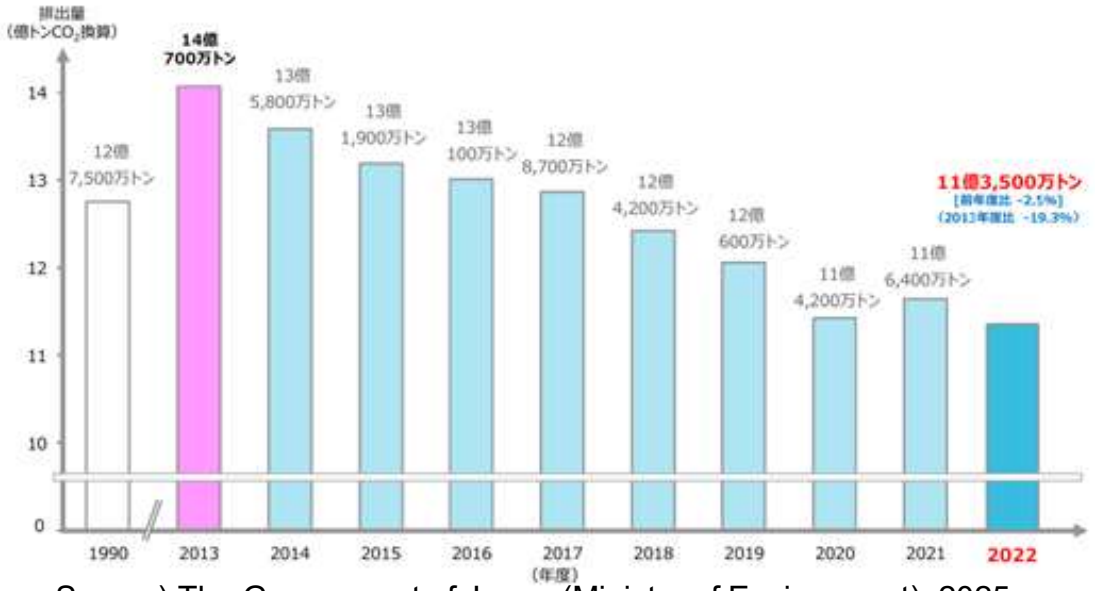
CO_2 emission trajectories in the world and major countries



Source) Global Carbon Project, 2025



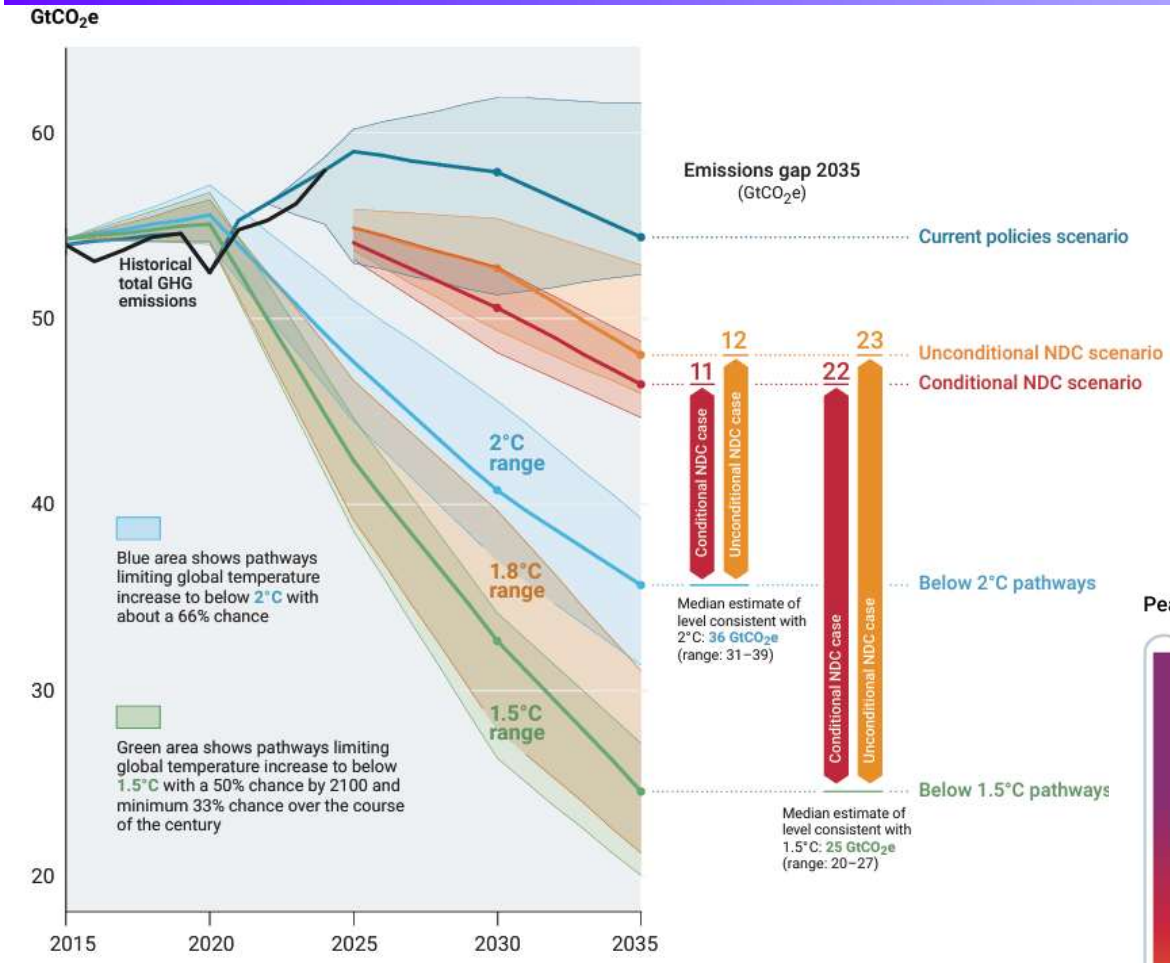
GHG emissions in Japan



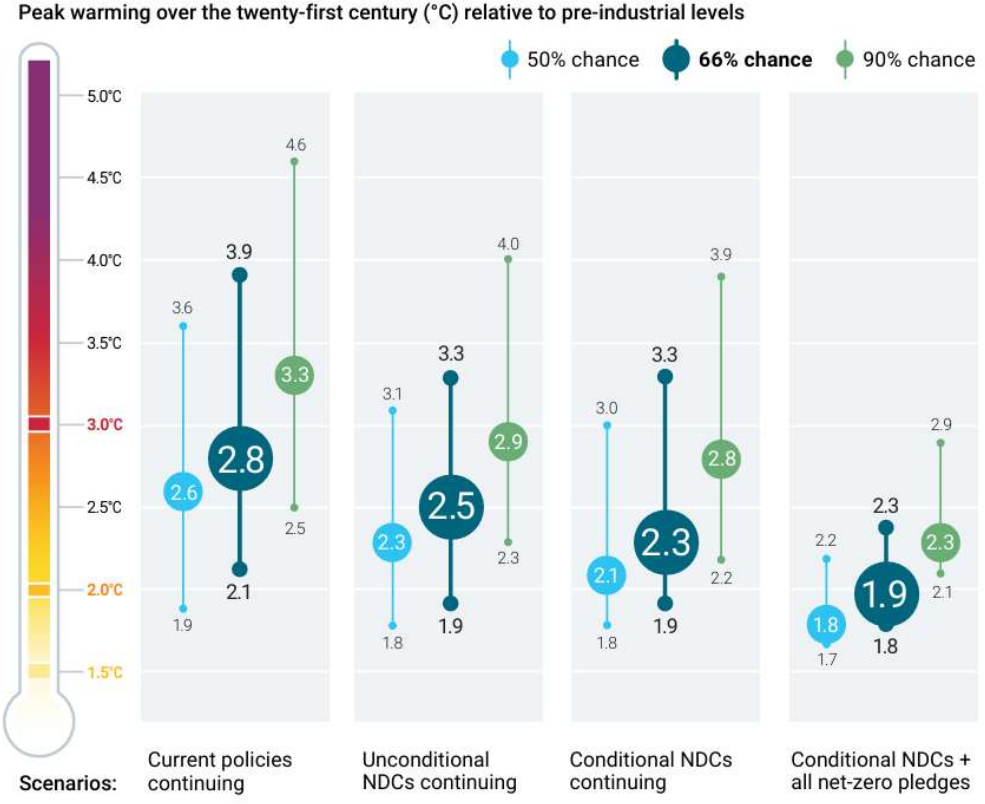
Source) The Government of Japan (Ministry of Environment), 2025

- **The coupling between the economy and CO_2 emissions continues on the global level. It seems that global CO_2 emissions cannot be easily reduced.**
- **Manufacturing industries, with high CO_2 intensity in particular, are being transferred from developed to developing countries.**

Emissions gap between 1.5℃ target and current policies



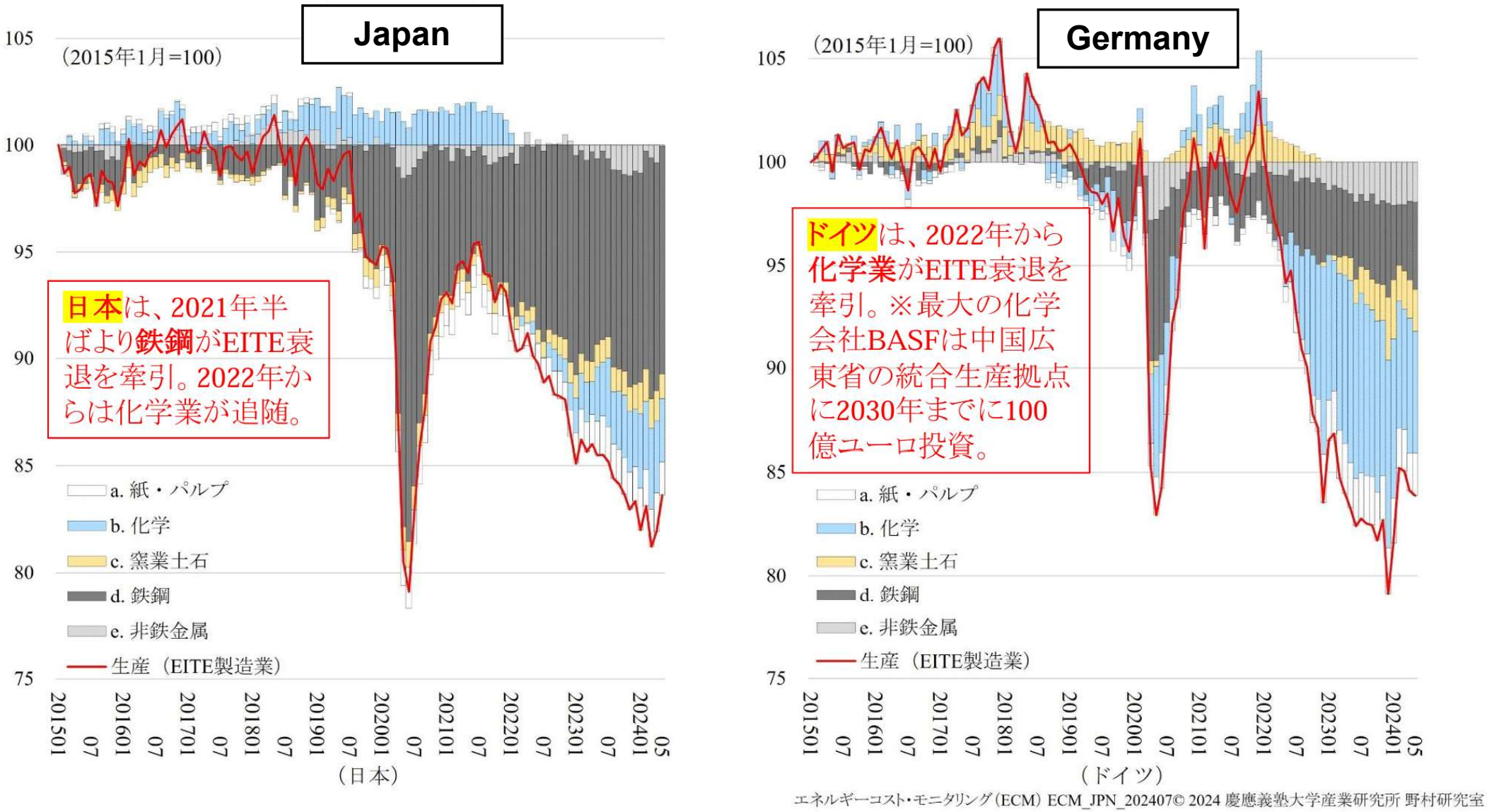
- ✓ There is a significant gap between aggregated emissions of NDCs and the 1.5℃ or 2℃ target.
- ✓ UNEP EGR(2025) estimates that the global temperature rise will be around 2.6℃ in 2100 under the current policies.
- ✓ In the outcome of the GST in COP28, global temperature rise is predicted to be in the range of 2.1-2.8℃ with the full implementation of the latest NDCs.



Source) UNEP, Emissions Gap Report 2025

Manufacturing production and contribution by sector in EITE in Japan and Germany

EITE: Energy-Intensive Trade-Exposed



エネルギーコスト・モニタリング（ECM） ECM_JPN_202407© 2024 慶應義塾大学産業研究所 野村研究室

単位：2015年1月値＝100 。出典：ECM_JPN_202407（慶大産研野村研究室，2024年8月3日公表）。測定の詳細はNomura and Inaba (2024)"Post-Pandemic Surges of Real Unit Energy Costs in Eight Industrialized Countries,“ RCGW Discussion Paper, Research Center on Global Warming, Development Bank of Japan.

Source) Koji Nomura, Working Group of Experts for the Realization of GX, 2024

Decline of energy-intensive industries and job losses in Germany

Germany, which had been moving away from nuclear power, shut down all nuclear power plants in April 2023.

The CEO of the world's largest steel manufacturer has issued a grim warning as plants continue to shut down amid the mounting energy crisis.

"Production in Germany is currently no longer competitive."

Gas and electricity prices, which have soared in recent months, have left many industrial companies with input costs too high to remain profitable.

"World's Largest Steel Manufacturer Warns of Crisis as Plants Shut Down", Slay News October, 2022

https://slaynews.com/news/worlds-largest-steelmanufacturer-warns-crisis-plants-shut-down/

BASF said costs at its European sites must be cut to a "permanently" smaller size because of a triple burden of sluggish growth, high energy costs and over-regulation, with the German industrial giant's boss throwing his weight behind a planned expansion in China.

"World's largest chemical company to leave Europe 'permanently' due to energy costs and over-regulation, plans to expand in China", Sott.net/Signs of the Times October, 2022

https://www.sott.net/article/473656-Worlds-largest-chemical-company-to-leave-Europe-permanently-due-to-energy-costs-and-over-regulation-plans-to-expand-in-China

German Chancellor Friedrich Merz said in January 14th, 2026 that his country's exit from nuclear energy was 'a serious strategic mistake'. He wants Germany to have acceptable market prices for energy production again, but the government can't support that in the long run. He also said that Germany should have at least left the last remaining nuclear power plants on the grid three years ago.

UN Secretary-General's Remarks

Secretary-General of the United Nations,
Mr. António Guterres, said at the WMO Congress
on 22 October 2025,

- "… one thing is already clear: we will not be able to contain the global warming below 1.5 degrees in the next few years."
- "The overshooting is now inevitable, which means that we are going to have a period, bigger or smaller, with higher or lower intensity, above 1.5 degrees in the years to come."
- "If there is a paradigm shift and people assume seriously that we need to deal with the problem, it is possible to anticipate as much as possible to get to net zero … in order for temperatures to again go down and the 1.5 still remains, according to all the scientists I met, possible before the end of the century…"

US Trump Administration

- Officially withdrew from the Paris Agreement on January 27th, 2026
- Announced withdrawing the US from 66 international organizations on January 7th, 2026
  - UN Framework Convention on Climate Change (UNFCCC)
  - Intergovernmental Panel on Climate Change (IPCC)
  - International Renewable Energy Agency (IRENA) etc.
- Announced repeal of the 2009 Greenhouse Gas “Endangerment Finding” on February 12th, 2026

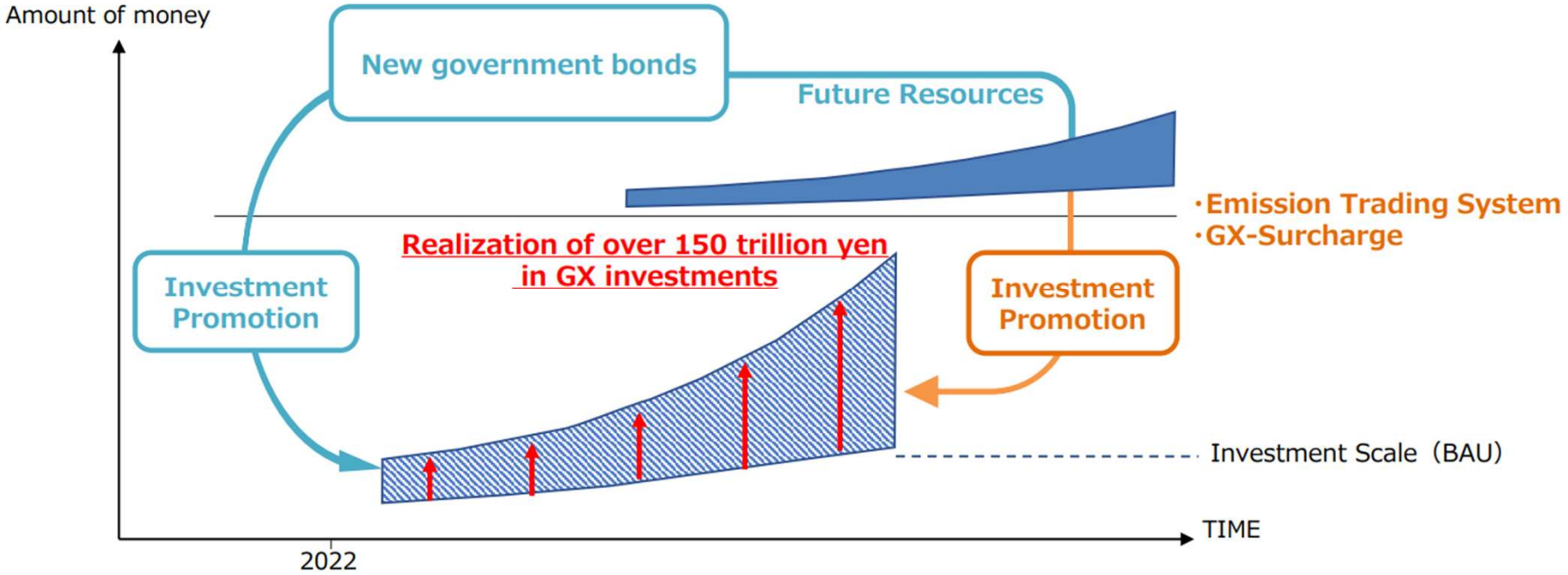
Implementation of explicit carbon pricing policy (Japan's GX-ETS)

■ To promote the GX investment as described above, a "Pro-Growth Carbon Pricing Concept" will be embodied and implemented as soon as possible.

① **Government support for advance investment by issuing new government bonds (Japan Climate Transition Bonds)**

② Introduction of carbon pricing to incentivize early GX investment
(1) Full-scale operation of emissions trading system in high emission industries [from FY2026]. + Allowance auctioning to be phased in gradually to power generation companies [from FY2033]
(2) Introduction of a GX-Surcharge on fossil fuel supply [from FY2028]

③ Strengthen financial support through public-private partnership (e.g. blended finance with the GX Promotion Agency)

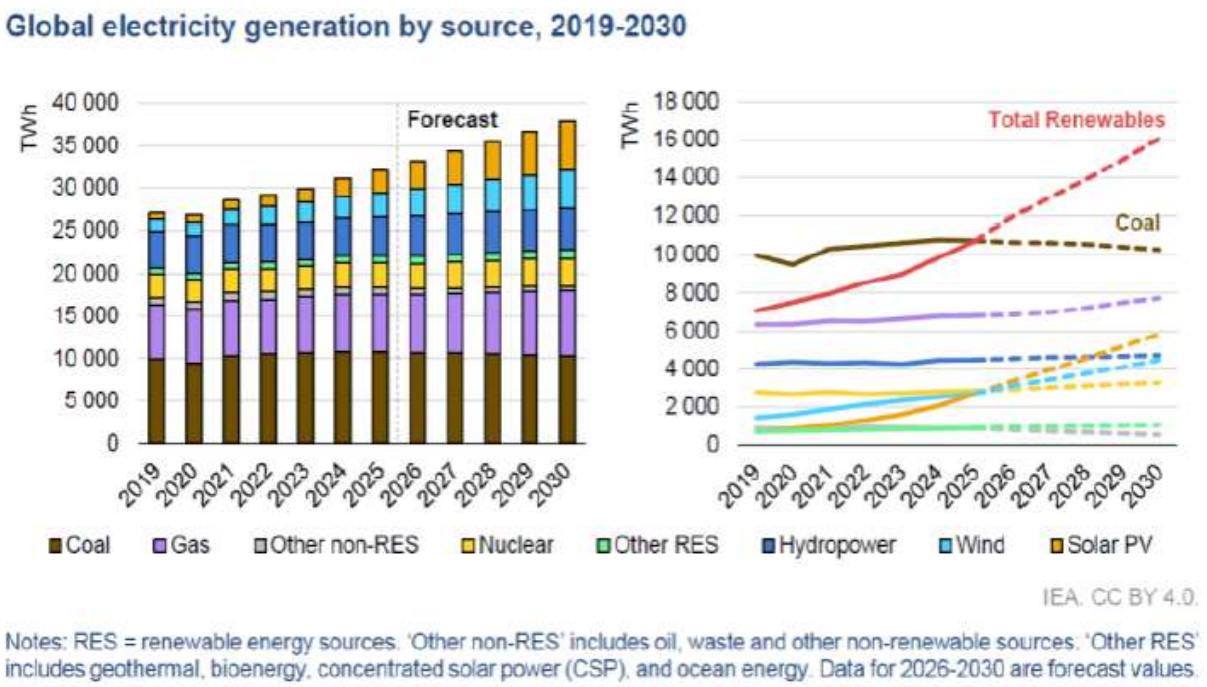


Source) Pathways to Japan's Green Transition

Age of Electricity: IEA Electricity 2026

- On February 6, 2026, IEA released Electricity 2026, which indicates that as the Age of Electricity takes hold, 1) global electricity demand is set to grow strongly through 2030 mainly in emerging economies, and 2) half of the world's electricity is forecast to come from renewables and nuclear by 2030.
- It also points out that since grid investment has lagged well behind investment in generation capacity, many power systems are already experiencing rising congestion-related curtailment, and grids are emerging as a bottleneck for connecting supply, demand and storage.

Global electricity generation outlook



Notes: RES = renewable energy sources. 'Other non-RES' includes oil, waste and other non-renewable sources. 'Other RES' includes geothermal, bioenergy, concentrated solar power (CSP), and ocean energy. Data for 2026-2030 are forecast values.

Key Points

- Global electricity demand is forecast to increase, supported by rising consumption from Industry, EV, air conditioning, and data centers. The age of Electricity takes hold.
- Emerging economies continue to be the main pillar of demand growth, accounting for nearly 80% of additional electricity consumption through 2030.
- Power generation from renewables and nuclear set new records in 2025. Half of the world's electricity is forecast to come from renewables and nuclear by 2030.
- Although coal-fired generation remained broadly flat in 2025 and is set to lose ground globally, it remains the single largest source of electricity in 2030.
- Since grid investment has lagged well behind investment in generation capacity, many power systems are already experiencing rising congestion-related curtailment.
- As electrification increases, safeguarding the security and resilience of power systems is a critical priority.

Importance of strengthening measures in Asia

AZEC（Asia Zero Emission Community）is a Platform for cooperation towards carbon neutrality/net-zero emissions in the Asia region, involving partner countries from 11 nations (Australia, Brunei Darussalam, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Philippines, Singapore, Thailand, and Viet Nam)

- AZECは、2022年１月、岸田総理（当時）が、施政方針演説において、**アジア各国が脱炭素化を進めるとの理念を共有し、エネルギートランジションを進める**ために協力することを目的として提唱。
- ASEANの多くの国は、**電力の大宗を石炭・天然ガスの火力発電に依存し、産業構造の高い割合を製造業が占めるなど日本と同様の課題。脱炭素化の取組が遅れると、**ASEANは**グローバルなビジネス機会を喪失**するおそれ。
- 但し、現下の国際情勢下、**脱炭素化の取組**は、**経済成長とエネルギー安全保障を両立**する形で進める必要あり。
- 即ち、各国の事情に応じた**多様な道筋による現実的な形**で、**着実にアジアの脱炭素を進めていく**必要があり、そのため、AZECの枠組みの下、**日本の技術やファイナンスを活用していくことは、世界の脱炭素化のために重要**（日本自身の温室効果ガス（GHG）排出量は世界の３％）。

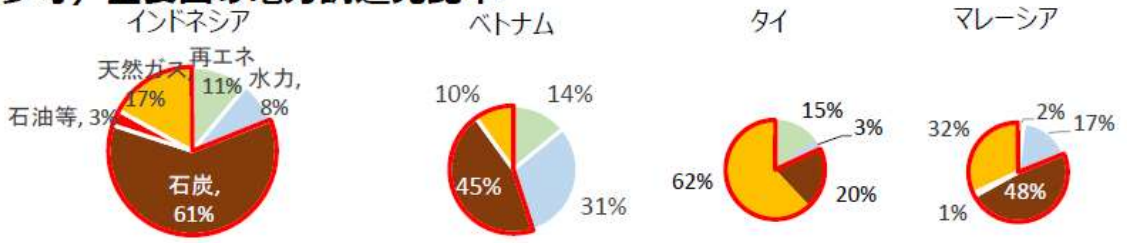
参加国

- これまで首脳会合（2023年12月：東京）と閣僚会合（2023年3月：東京、2024年8月：ジャカルタ）を開催
- エネルギーセクターを中心に、再エネやグリーンアンモニア等の個別プロジェクトを推進

⇒ アジアの産業やエネルギー構造を変えていくための面的なアクションが必要な状況

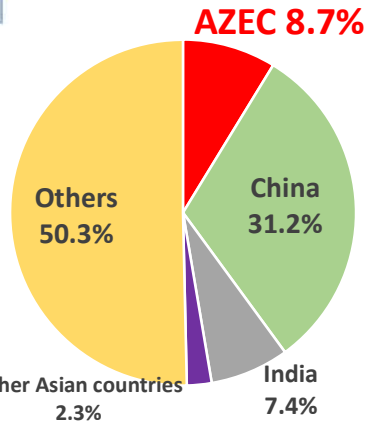
2024年は今後10年のためのアクションプランを含む共同声明に合意し、新たなフェーズへ

（参考）主要国の電力調達先比率



Source) The Government of Japan

Regional share of global CO_2 emissions (2022)



Source) Created based on IEA2024

Major topics of this symposium

- Global CO_2 emissions keep increasing. The rise in global mean temperature has exceeded 1.5℃ in 2024, and UN Secretary-General Mr. Guterres stated that overshooting the 1.5℃ target would be inevitable. Major advanced economies are not reducing emissions as planned.
- Submission of NDCs in 2035 lagged in general, and there is a significant gap between aggregated emissions of NDCs and the 1.5℃ or 2℃ target.
- The world is, under the ambitious long-term goals, making efforts to achieve carbon neutrality, with shifting more towards energy security and its stable supply, and affordability than ever.
- There are growing concerns about the effects on international competitiveness of industries, carbon leakage, China-dominant clean techs, and CBAM implementation in Europe.
- For integrated policies of energy, climate and industry, the Government of Japan revised the Energy Strategic Plan and Plan for Global Warming Countermeasures (including new NDC), and also developed the GX2040 Vision in 2024. The specific design of the mandatory emission trading system, or GX-ETS, starting in FY2026, has launched. Any impacts of GX-ETS?
- The manufacturing locations are shifting from incumbent advanced economies to Asian countries. How should energy transitions in Asia be?
- What should Governments and firms do to achieve CN and the transitioning stage? Risks and opportunities?
- What is a pathway to realize sustainable development and high well-being, beyond climate change countermeasures?

Today's Symposium Program

10:00	**Welcome Remarks**	Dr. YAMAJI Kenji, President, RITE
10:05	**Introductory Remarks**	Mr. MACHII Hiroaki, Director, Global Environmental Affairs Office, GX group, Ministry of Economy, Trade and Industry (METI)
10:15	**Introduction**	Dr. AKIMOTO Keigo, Group Leader, Systems Analysis Group, RITE
10:30	**Lecture**	**"Technological Dynamics and Social Change for a Carbon-Neutral Future: Navigating Geopolitics and Inequality to Achieve a Safe and Just Transition"** Dr. Nebojsa Nakicenovic, Distinguished Emeritus Scholar and Former Deputy Director General, International Institute for Applied Systems Analysis (IIASA)
11:10	**Lecture**	**"A year of recalibration for climate policy in the United States"** Dr. William A. Pizer, President and CEO, Resources for the Future (RFF)
11:50	**Lunch break**	
13:00	**Lecture**	**"Power Sector for the Developing Asian Regions by 2050: Modelling the strategic vision"** Dr. Joyashree Roy, Distinguished Professor and Center Director, Asian Institute of Technology (AIT)
13:40	**Lecture**	**"2035 NDC and Carbon Neutrality in Korea"** Dr. Tae Yong Jung, Professor, Graduate School of International Studies, Yonsei University（延世大学）
14:20	**Lecture**	**"Analyses on Japanese emissions reduction scenarios and policy trends"** Dr. AKIMOTO Keigo, Group Leader, Systems Analysis Group, RITE
15:00	**Break**	
15:20	**Panel discussion**	**"Carbon pricing policies and international competitiveness"** Moderator: Dr. NAGASHIMA Miyuki（RITE） Panelist: Mr. TEZUKA Hiroyuki (The Japan Iron and Steel Federation), Mr. UENO Takahiro (Central Research Institute of Electric Power Industry), Dr. Tae Yong Jung（Yonsei Univ.）, Dr. William A. Pizer（RFF）.
17:20	**Closing Remarks**	Mr. HONJO Takashi, Senior Managing Director, RITE