GJETC Council Meeting, 19 February 2025

Meet the Co-Chairs and GJETC Members

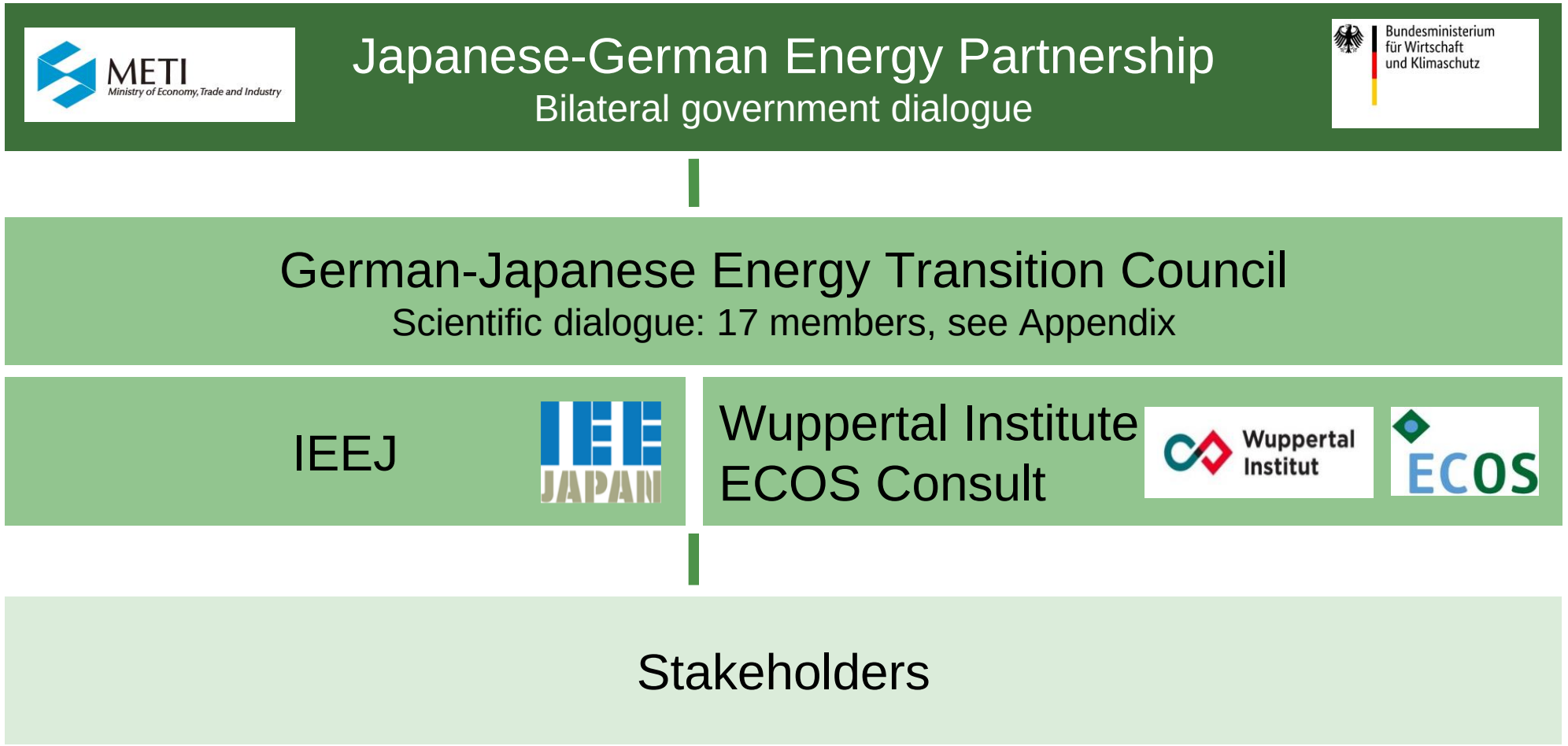
Dr. Stefan Thomas
Prof. Tatsuya Terazawa

The German-Japanese Energy Transition Council (GJETC) at a glance

A role model for international cooperation on climate and environmental issues since 2016

Role of the GJETC

Mutual learning platform to accelerate energy transition.



COP-28 (Dubai, 2023; CMA.5) calls on RES, EE, and fossil fuels

- ***Tripling renewable energy capacity*** *globally by 2030*
- ***Doubling*** *the global average annual rate of* ***energy efficiency*** *improvements by 2030*
- ***Transitioning away from fossil fuels*** *in energy systems*

→ **Are these targets feasible for Germany and Japan domestically?**

→ **What has been achieved recently or is on the table for the years to 2030?**

International efforts needed in any case, e.g. JETPs

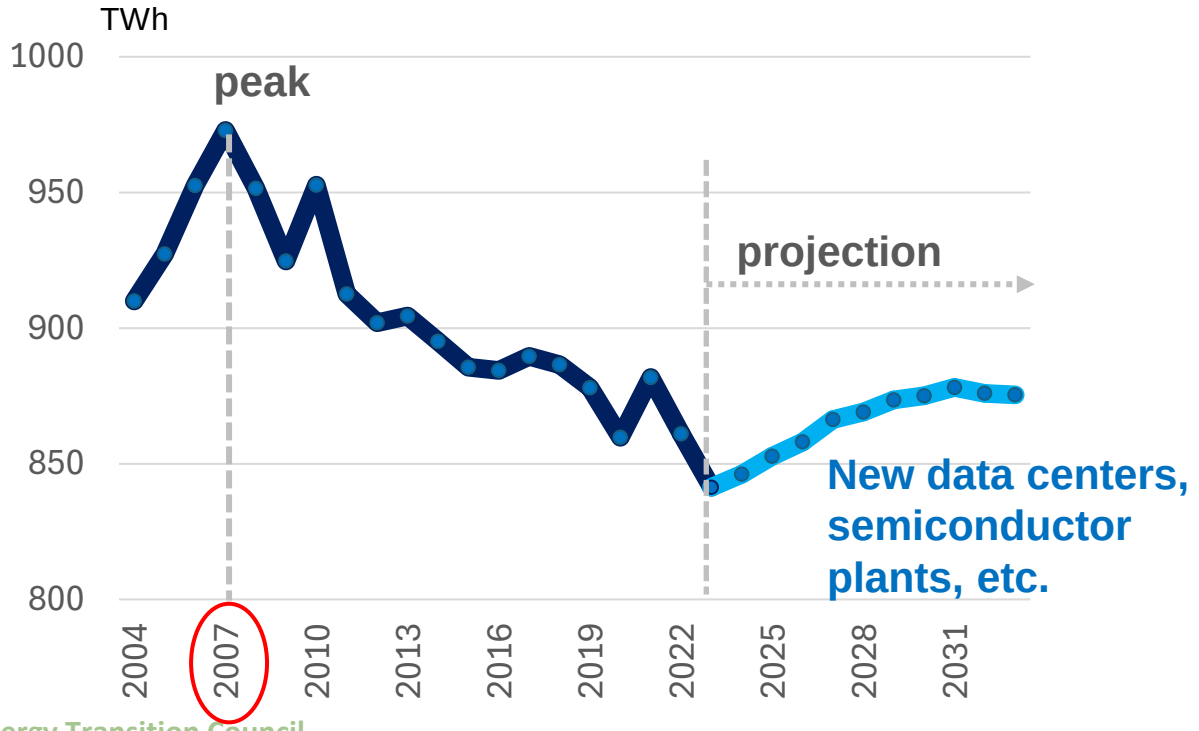
7th Strategic Energy Plan

Responding to changing environment, while keeping principles and ambitions

グラフ入れ替え

Keeping S+3E principles and climate ambitions (-70% by 2040, energy only).

- ***Revise electricity demand upwards*** *due to electrification and data center demand.*
- *Maximizing RE deployment while* ***minimizing integration costs****.*
- *With safety as the top priority,* ***the restart of nuclear reactors will be accelerated****.*



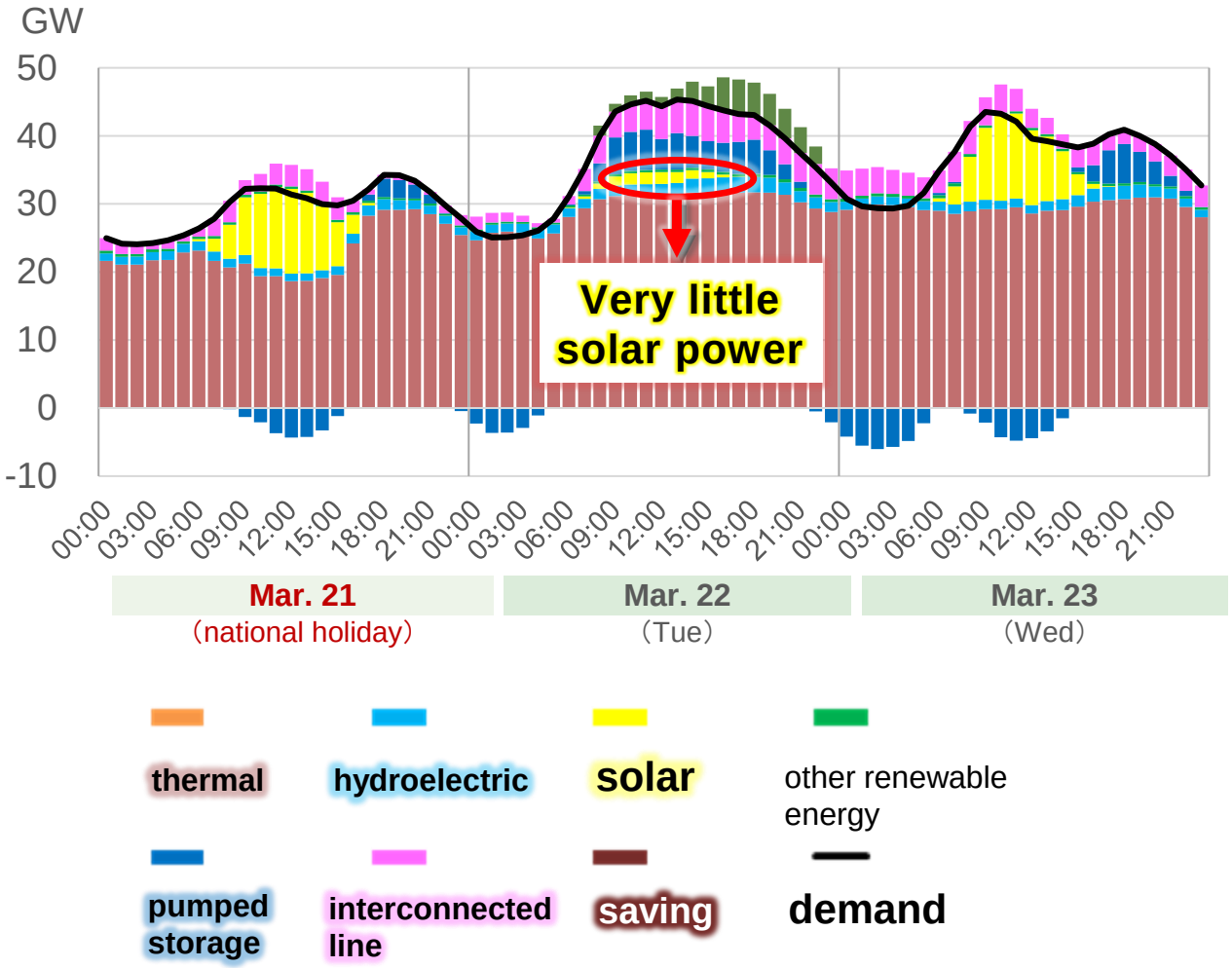
Electricity Demand Projection (national total)

Source: OCCTO

Responding to Intermittency
(March 22, 2022 : Tokyo Area)

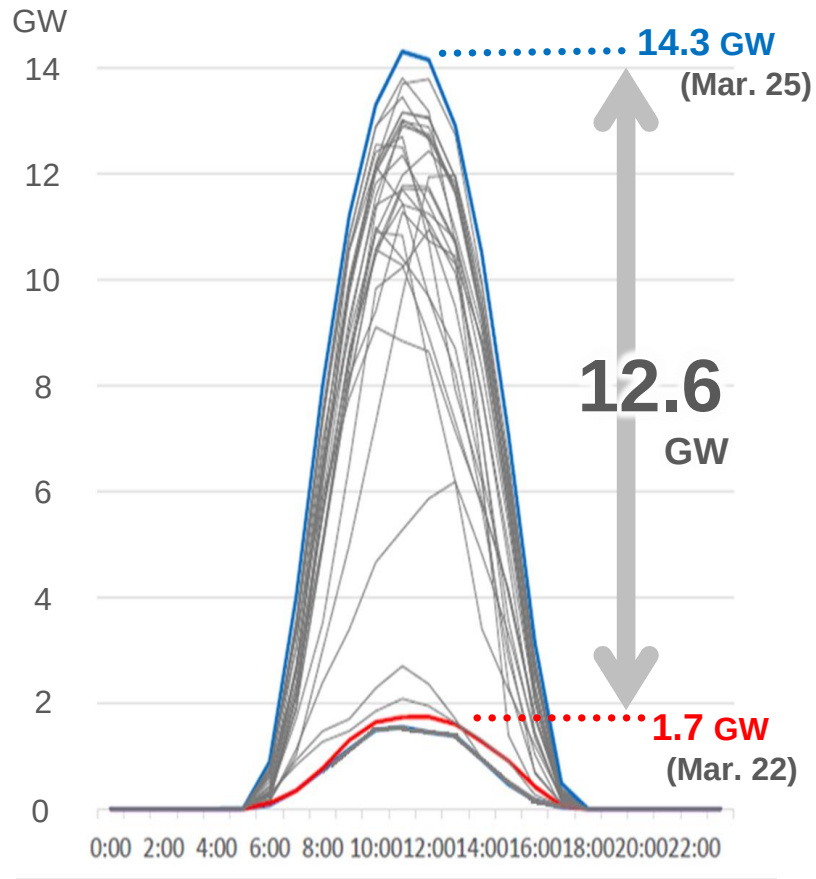
追加

Electricity Supply and Demand (Tokyo Area)



Source: Tepco Powe Grid ,METI and Cabinet Office

Solar output on each day of March 2022

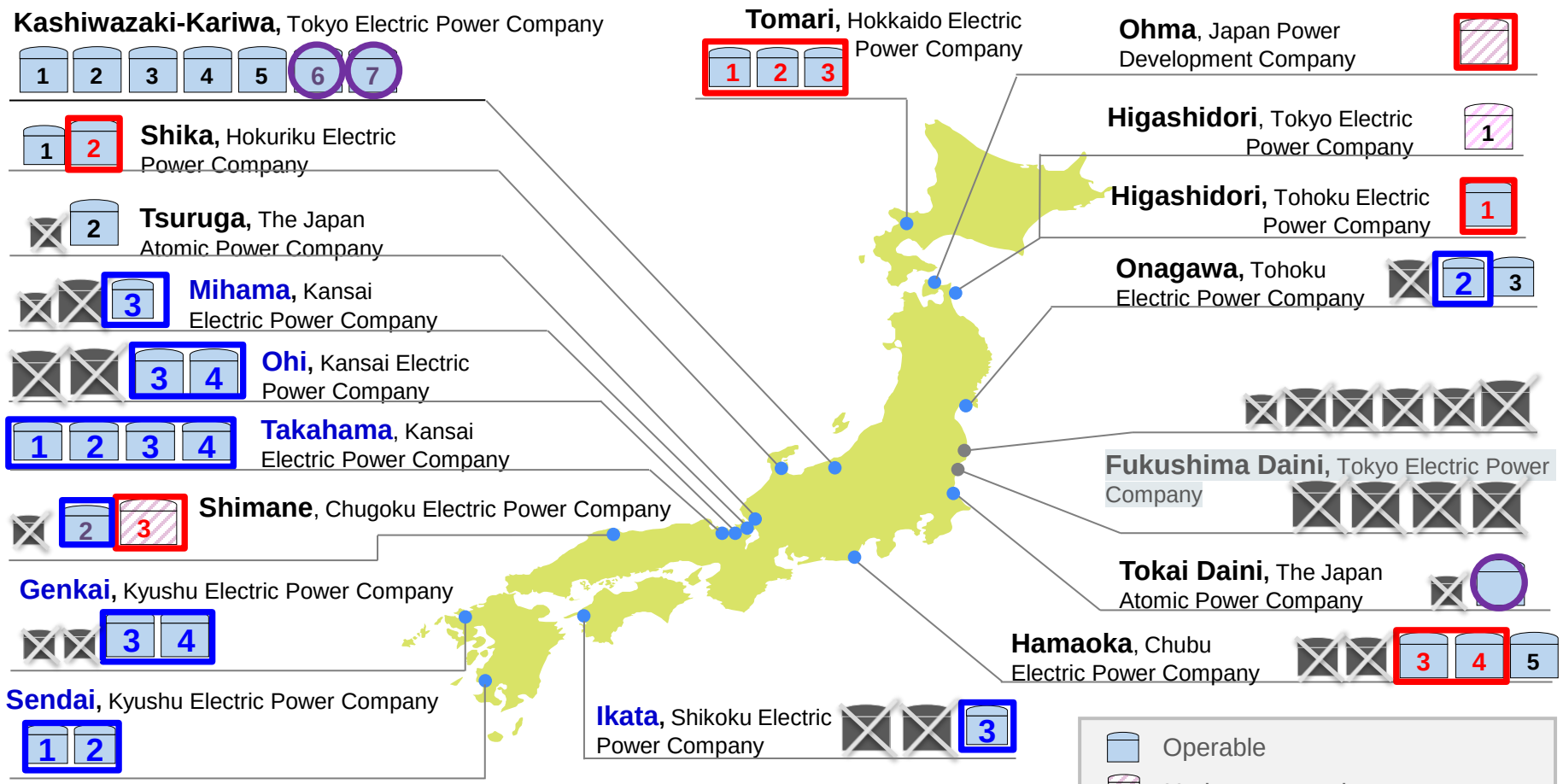


Source: Agency for Natural Resources and Energy, METI

Nuclear Power Plants in Japan
(as of Dec 23, 2024)

追加

Restarted 14 | Passed review 3 | Under review by NRA 9 | Not applied for review 10 | To be decommissioned 24



Source: Compiled by IEEJ, based on “Current status of nuclear power plants” The Agency for Natural Resource and Energy (ANRE), Dec 13th, 2024
Chugoku Electric Power company Press Rease Dec 23rd, 2024

LNG安定供給の説明削除

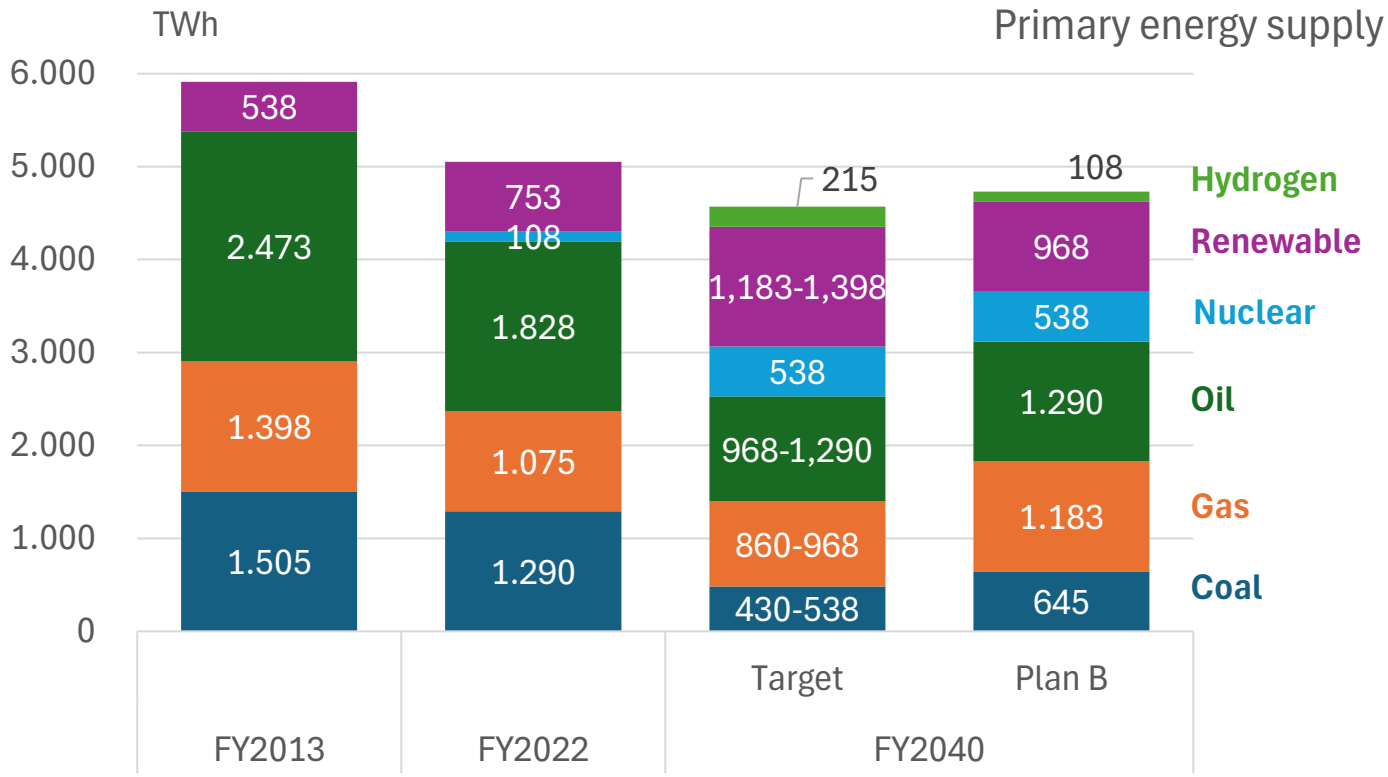
Plan B, What if the expectation desire for technological development is not realized?

Achieving clean energy targets, REs, hydrogen and CCS, will not be easy.

- *Hasty decommissioning of natural gas infrastructure should be avoided.*

Outlook of primary energy supply in different scenarios

FY = fiscal year (April-March), p.a. = per annum
Source: METI (2024), Outlook of energy supply-demand balance in the fiscal year 2040



Germany: national targets in line with COP-28

- *Germany wants to become GHG neutral by 2045*
- *EU-Emissions trading: last CO_2 certificates issued before 2040/45*

→ **Fossil fuel target feasible**

National RES and EE targets 2030 in line with COP-28 targets:

- RES for Electricity: Target 600 TWh (80%) by 2030

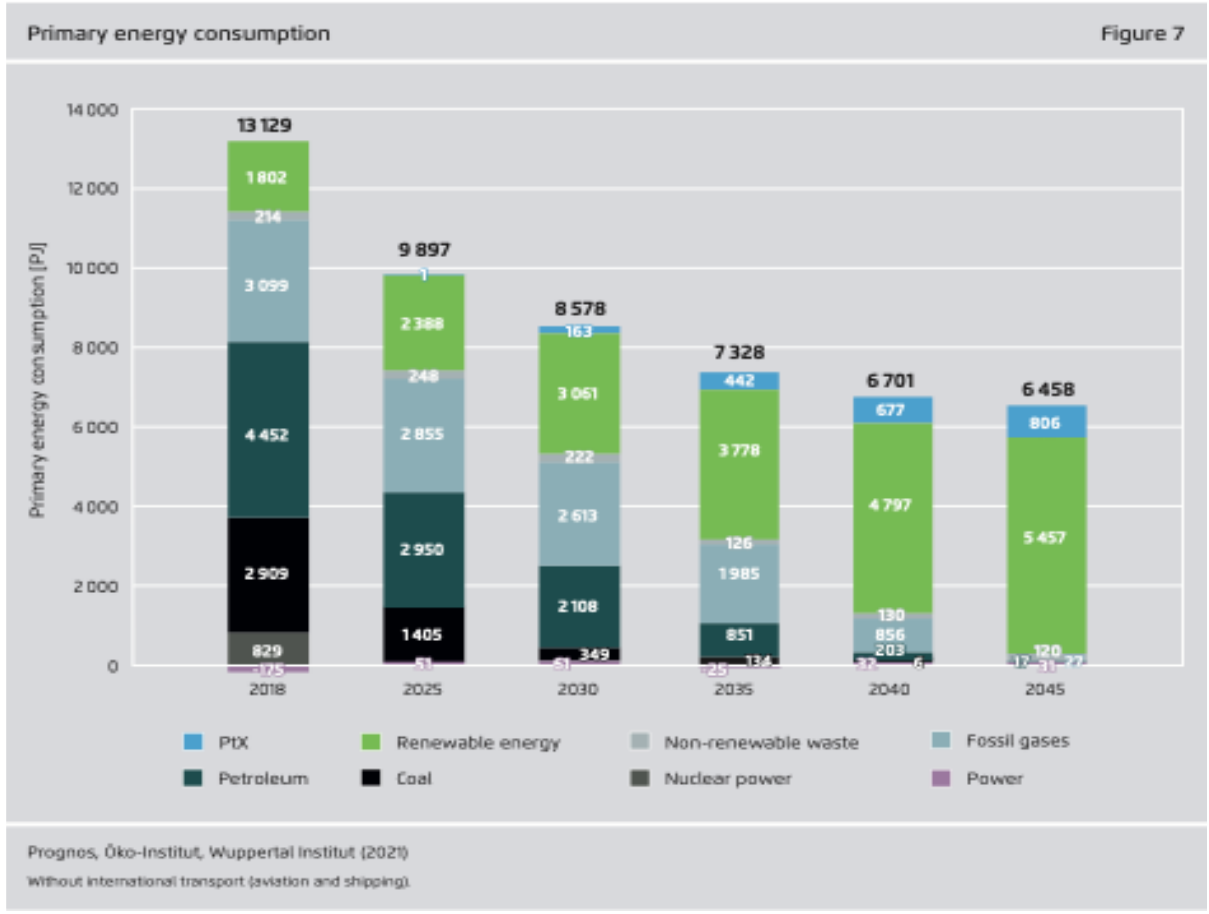
→ **National target close to achievement**

- Energy Efficiency: for primary energy, ca. 4.7 %/yr

→ **National primary energy target = overachievement**

But will national targets be reached?

Roadmaps towards GHG neutrality by 2045:
Energy scenarios, Agora EW long-term scenarios as an example



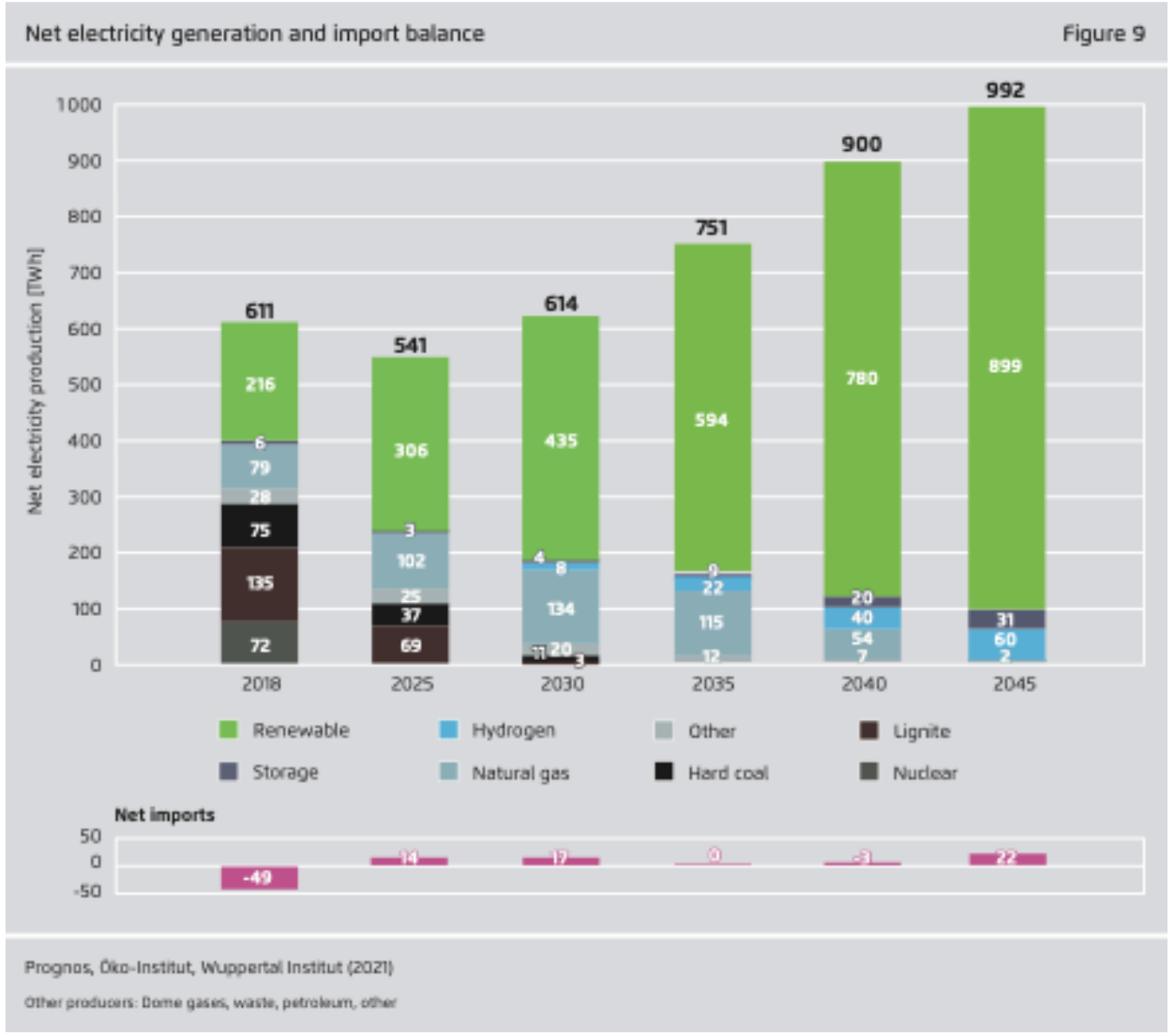
Germany: Electrification with green power

Power demand about to double:

- *Battery electric vehicles*
- *Heat pumps*
- *Industrial heat and processes*
- *Hydrogen generation*

Power supply almost GHG neutral by 2035/40

- *Electrified demand as a source of flexibility, with hydrogen power plants as backup*



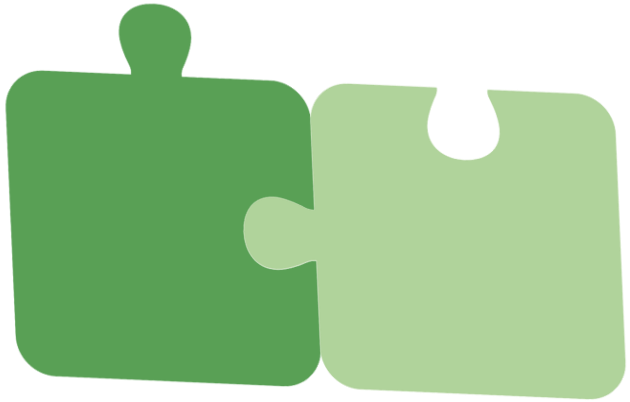
Roadmaps towards GHG neutrality by 2045:
Energy scenarios, Agora EW long-term scenarios as an example

Achievements in Germany to date and challenges ahead – some examples

- *2024: 59% of RES in power generation, 55% in power consumption*
- *PV: +17 GW in 2024, now 100 GW;*
  Wind: now 64 GW onshore, 9 GW offshore; +14GW permissions in 2024
- *Challenge: flexibility resources needed (demand response, storage, gas/H2 power plants) => capacity mechanisms/market planned; follow energy efficiency first principle*
- *Grid expansion accelerated, but costs need to be stretched out into the future*
- *Mastered gas crisis; consumption fell ca. 10-15%*
- *Challenge in energy efficiency/electrification, especially buildings and transport sectors: e.g., conversion to heat pumps and BEVs saw setback in 2024; restart in 2025?*
- *Decision on hydrogen core network (ca. 10,000 km)*
- *First carbon contracts for difference with industry (e.g., green steel, chemicals, glass, pulp and paper))*

Findings from the current GJETC study topics

Carbon pricing and social acceptance



Critical raw materials

Carbon pricing and social acceptance

Learnings/Findings

- **Similar concerns** on challenges for competitiveness and aggravating economic divide in society in both countries => **address** in a wise manner
- Carbon pricing is **not the magic rod** and depends on sectors but is **important**
- Embedding carbon pricing into **a policy mix** to reconcile the private and societal perspectives and to overcome barriers for mitigation actions is likely to **achieve GHG mitigation targets faster and with much lower carbon price levels** needed
- Carbon pricing works best if market actors can choose between **alternatives** and /or the necessary **infrastructures** are in place.

Policy recommendations

- **A combination of carbon pricing with financial and technical support** for abatement of emissions seems **key for acceptance** of carbon pricing by citizens and businesses.
- One of the best ways to **use revenues** from carbon pricing is for funding this support
- The policy mix needs to be **sector-specific** and possibly technology-specific. It should also **address** concerns of market actors and aim for progressive distributional effects.
- An **introduction in phases** of few years will enable policy learning, e.g., on sectors that do not need free allocation or compensation

Critical raw materials

Learnings/Findings

- CRM are essential for the energy transition towards renewable energies
- The demand of CRM is increasing faster than supply can be expanded
- Both countries will not reach self-sufficiency of CRM but should aim to diversify their supply
- China is controlling a majority of the value chain of many CRM
- Domestic production to reduce dependency - Germany has 7th largest reserves of Lithium
- Currently established policy measures need updates to secure the supply of CRM

Policy recommendations

A long-term strategy, based on a quantitative outlook of the supply-demand gaps, encompassing the following, should be established

- Demand reduction through
  - Substitution by innovative and alternative technologies, optimal mix of technologies for rational use of CRM
  - Efficiency and behavior measures
- Circular economy principles
- Alternative sources of mining and processing, including domestic
- Access to international suppplies and markets

Japan and Germany could initiate a ***CRM Club*** of like-minded CRM supplier and user countries

For further information please visit gjetc.org

Thank you for your attention

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Appendix: Members, organisation, and funding

JAPAN		GERMANY
METI Ministry of Economy, Trade and Industry	**Funding**	BMWK Federal Ministry for Economic Affairs and Climate Action
Co-Chair: Prof. Tatsuya TERAZAWA (IEEJ)	**Management**	Co-Chair: Dr. Stefan THOMAS (Wuppertal Institute)
Scientific & Organizational Secretariat: Institute of Energy Economics Japan (IEEJ)		Scientific Secretariat: Wuppertal Institute
		Organization & Consulting: ECOS Consult
		Principal Advisor: Prof. Peter HENNICKE

Council Members

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Prof. Makoto NIREI (University of Tokyo)	Prof. Yasuo TAKAHASHI (Institute for Global Environmental Studies)	Prof. Dr. Andreas LOESCHEL (Bochum University)	Dr. Felix C. MATTHES (Oeko Institute)
Prof. Dr. Toshiharu IKAGA (Keio University)	Junichi OGASAWARA (Institute of Energy Economics Japan)	Manfred RAUSCHEN (Ökozentrum NRW)	Dr. Carsten ROLLE (BDI Fed. of German Ind.)
Sumiko TAKEUCHI (U3 Innovations)		Prof. Miranda SCHREURS (Techn. Univ. of Munich)	Dr. Christine WOERLEN (Arepo GmbH)