

Can Japan Deliver on Sustainability?



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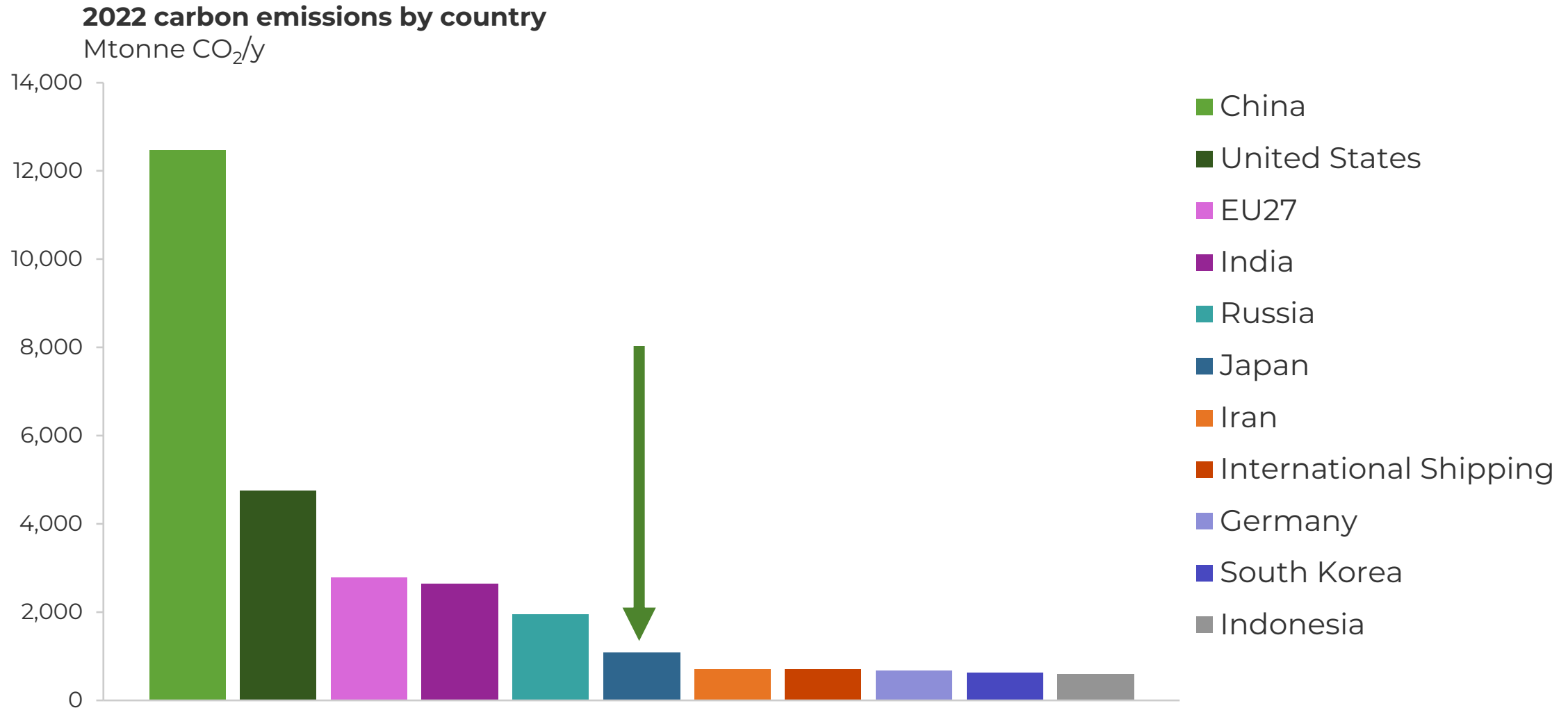
Associate Research Director

**What does it mean to
deliver on sustainability?**

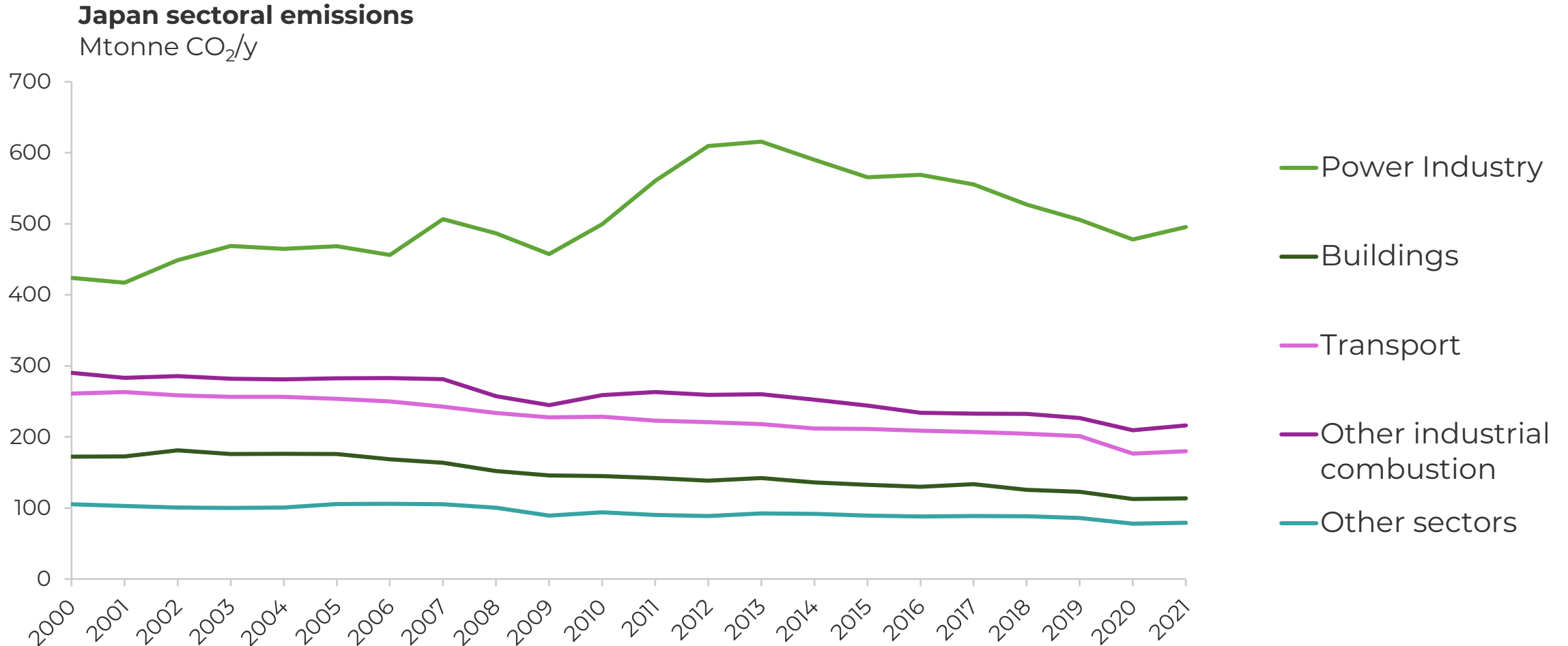
Can Japan decarbonize?

**Can Japanese companies
enable global
decarbonization?**

Japan emitted around 1 Gtonne of CO₂ last year



Emissions from the power sector have remained stubbornly high, and Japan must contend with high industrial emissions



A photograph of a modern, multi-story office building with a glass facade. The words "Silicon Valley Bank" are visible on the upper part of the building. The sky is overcast and grey.

Silicon Valley Bank

The collapse of Silicon Valley Bank

Silicon Valley Bank is dead. The institution that was a major financier for venture capitalists, tech start-ups and other Silicon Valley outfits has collapsed. Enter: the federal government.

Japan's Marunouchi launches \$1bn climate tech fund

CLIMATE CHANGE

Japan charges into green tech race, eyeing solid-state battery prize

Parliament passes law codifying Suga's carbon neutrality pledge

2 narratives of Japan's sustainability policies



THE LUX POLICY COMPASS

EVOLVING

POLICY LIKELIHOOD: LOW
BUSINESS IMPACT: HIGH

DISRUPTIVE

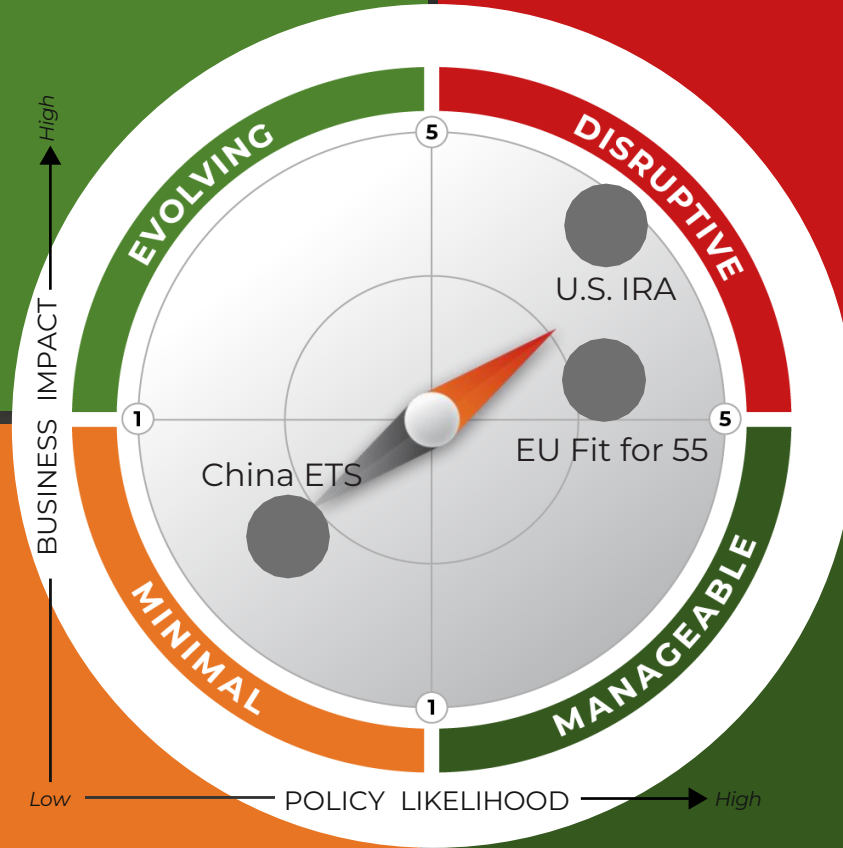
POLICY LIKELIHOOD: HIGH
BUSINESS IMPACT: HIGH

MINIMAL

POLICY LIKELIHOOD: LOW
BUSINESS IMPACT: LOW

MANAGEABLE

POLICY LIKELIHOOD: HIGH
BUSINESS IMPACT: LOW



Japan's decarbonization policies



Green Innovation Fund



Tax credits and incentives



Emissions trading system



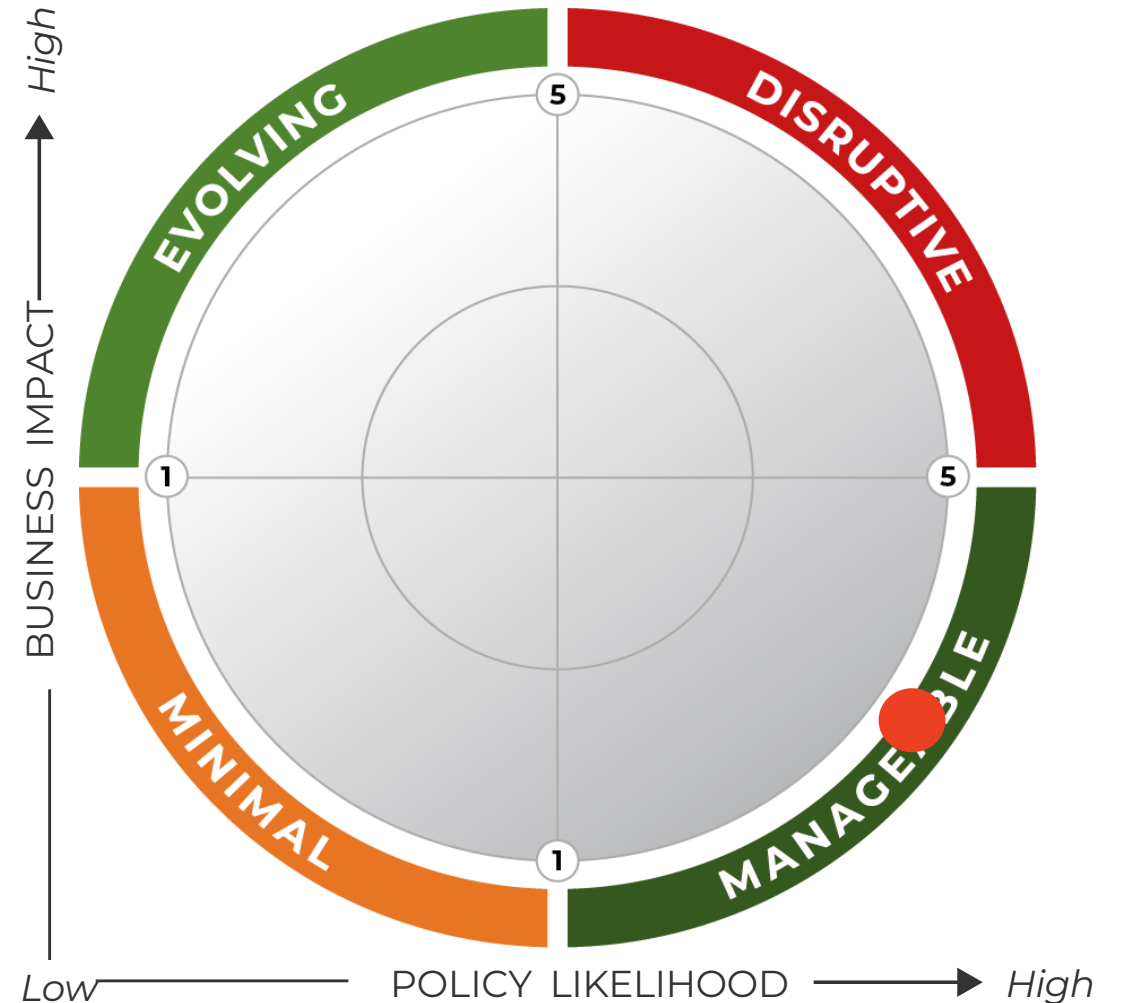
Regulatory reforms



Lux Policy Compass: Decarbonizing Japan

Green Innovation Fund ●

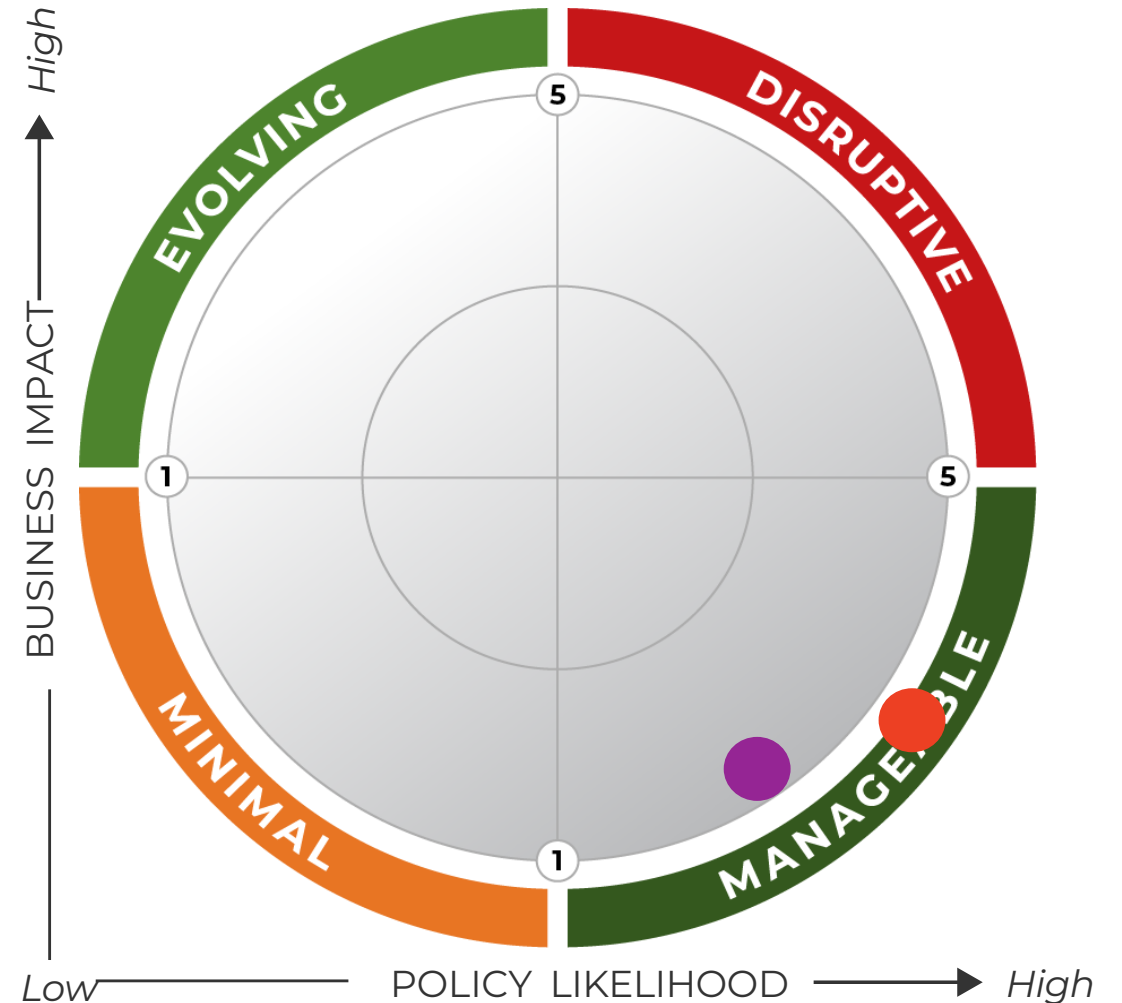
- JPY 2 trillion (USD 13.3 billion) over 10 years.
- Targets GHG* emissions reduction, market potential, and additionality.
- Will solicit proposals from large and small businesses.
- NEDO operates the fund.
- R&D stage through deployment.
- Expects to induce JPY 15 trillion in private capital investment (including R&D).
- Expects to induce even more (1,500x?) investment from global ESG** funds.



Lux Policy Compass: Decarbonizing Japan

Tax credits and incentives ●

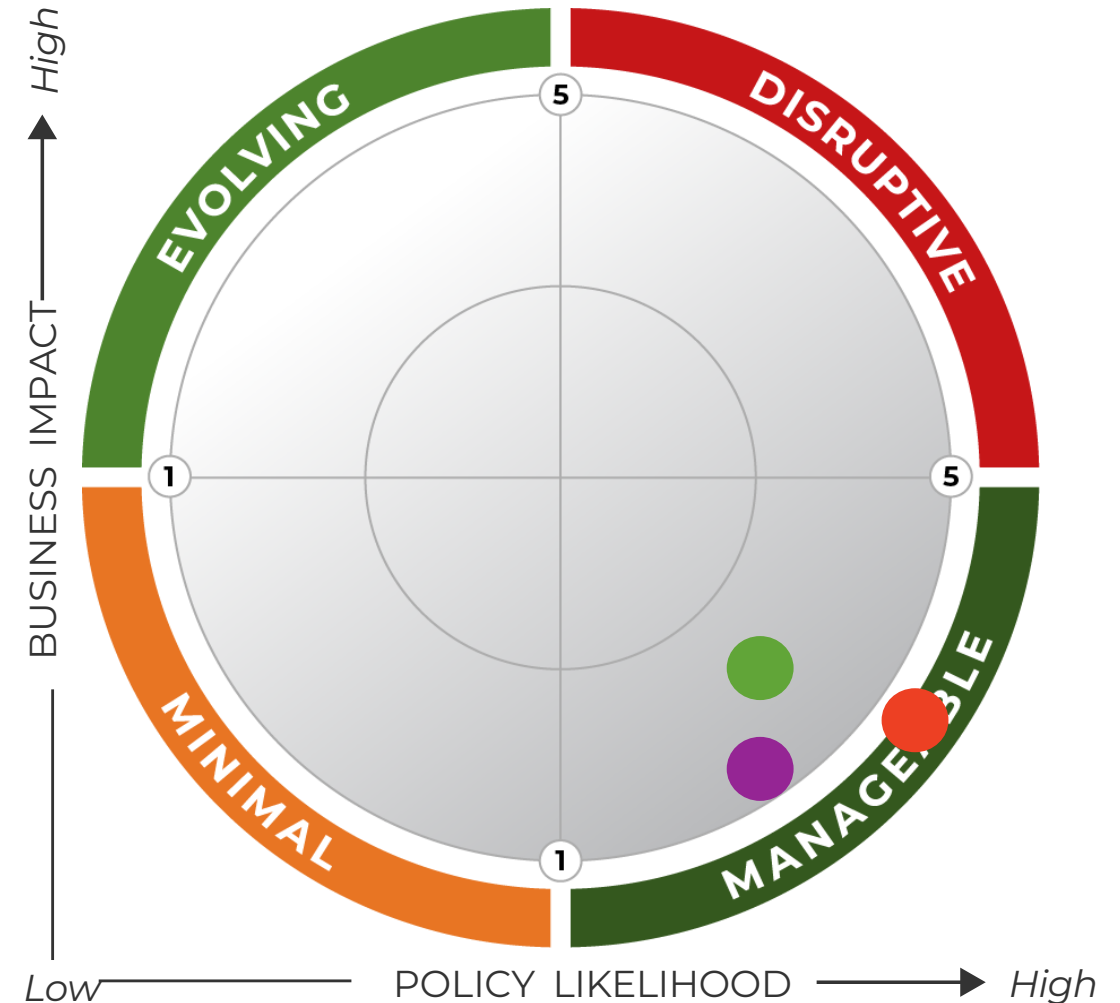
- Expects to induce JPY 1.7 trillion (USD 11.4 billion) in investment over 10 years.
- Tax credits up to 10% for decarbonizing capital investments.
- Tax credits up to 10% for production of decarbonizing equipment (fuel cells, offshore wind, Li-ion batteries, etc.).
- Slight increase to max R&D write-off in some cases.



Lux Policy Compass: Decarbonizing Japan

Emissions Trading System ●

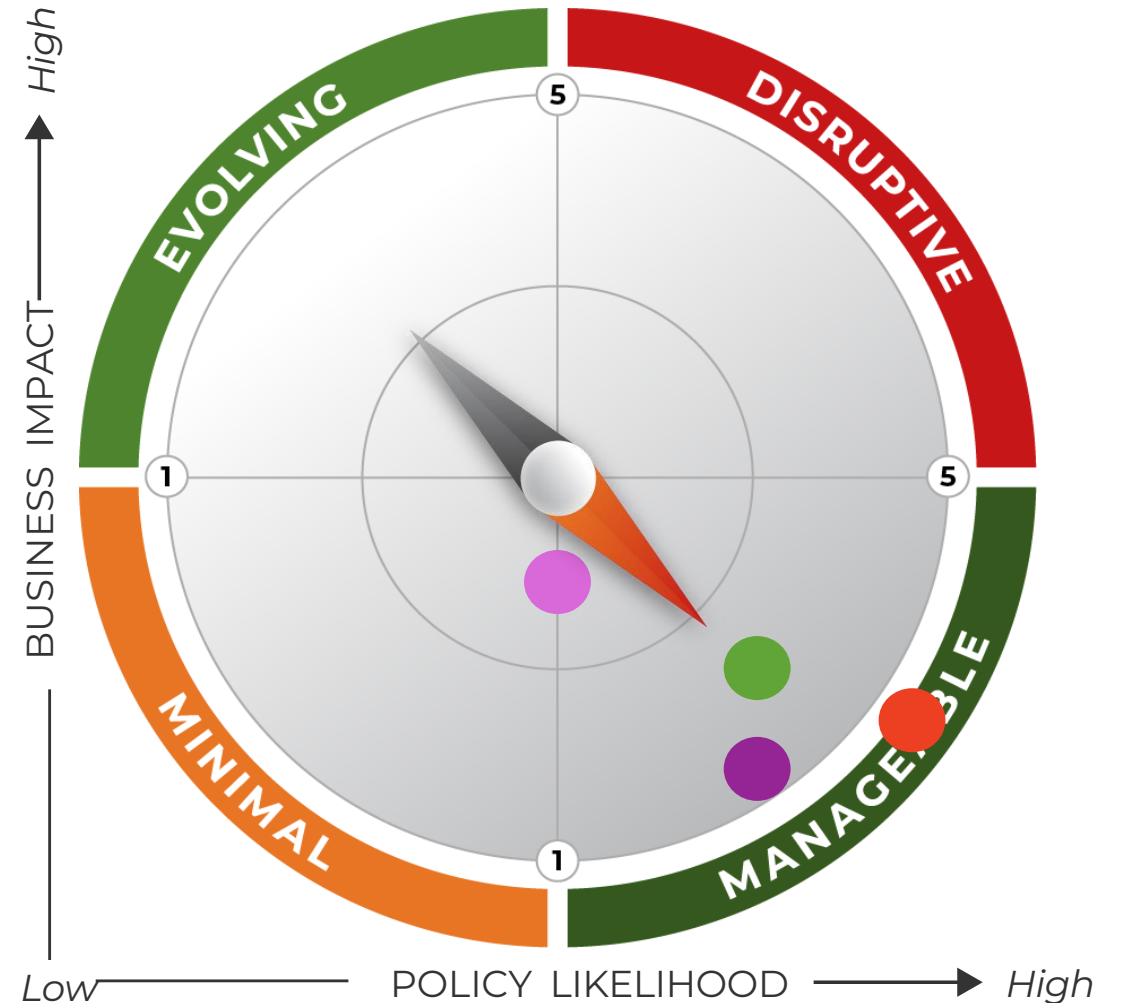
- Plans for emissions trading (alongside voluntary carbon credits) with caps for industrial companies and a new carbon tax.
- Almost 700 companies (40% of Japan's GHG emissions) would have to disclose.
- Voluntary until FY 26/27 — unlikely to have much impact on 2030 goals.
- Initial reports are that carbon price will be set very low — about JPY 2,000 (USD 13) per tonne of CO₂.



Lux Policy Compass: Decarbonizing Japan

Regulatory reforms ●

- Carbon-free power requirement to utilities (required level not indicated).
- Less red tape on connecting renewables to grid.
- Vehicle fuel economy regulations.
- Energy conservation in buildings.



Japan's national decarbonization drivers are weak



Total funding amounts (subsidies and tax credits) are far lower than estimated amount required to meet ambitious goals.

Emissions trading system (ETS) is an important step, but current trajectory is too little, too late.

Bold regulatory reforms could change the landscape for decarbonization, but the most impactful changes may slow GDP growth.

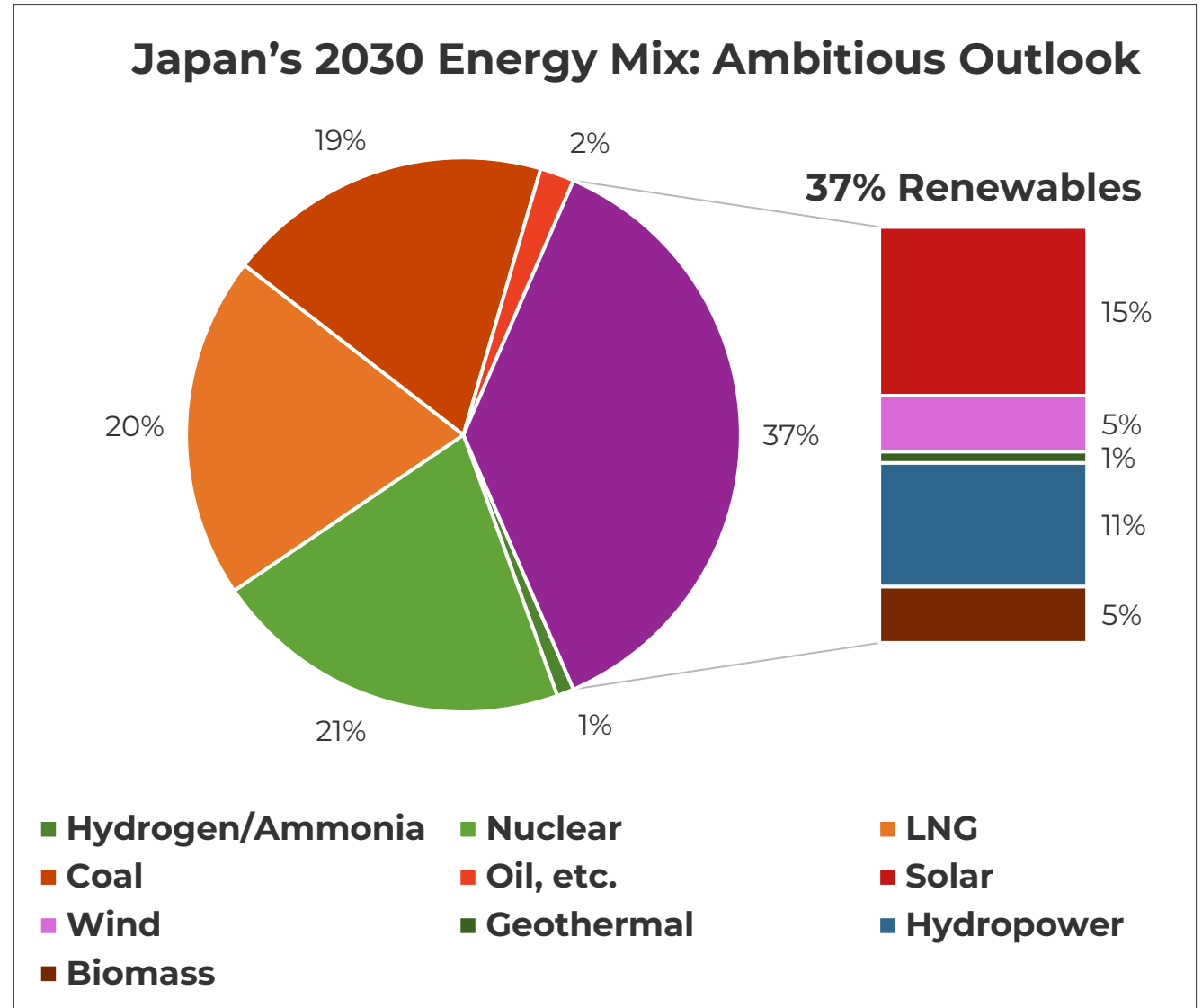
Ministries will micromanage corporations — is the arm-twisting enough?

Hopes for decarbonizing power in 2030 assume lower costs

Top two energy priorities are stability (security) and low cost.

Green Growth Strategy and Strategic Energy Plan expect big increase in wind and solar deployment, restart of nuclear plants.

Big question: What level of renewable power will the Japanese government mandate?



How can we measure the performance of the Japanese innovation ecosystem?

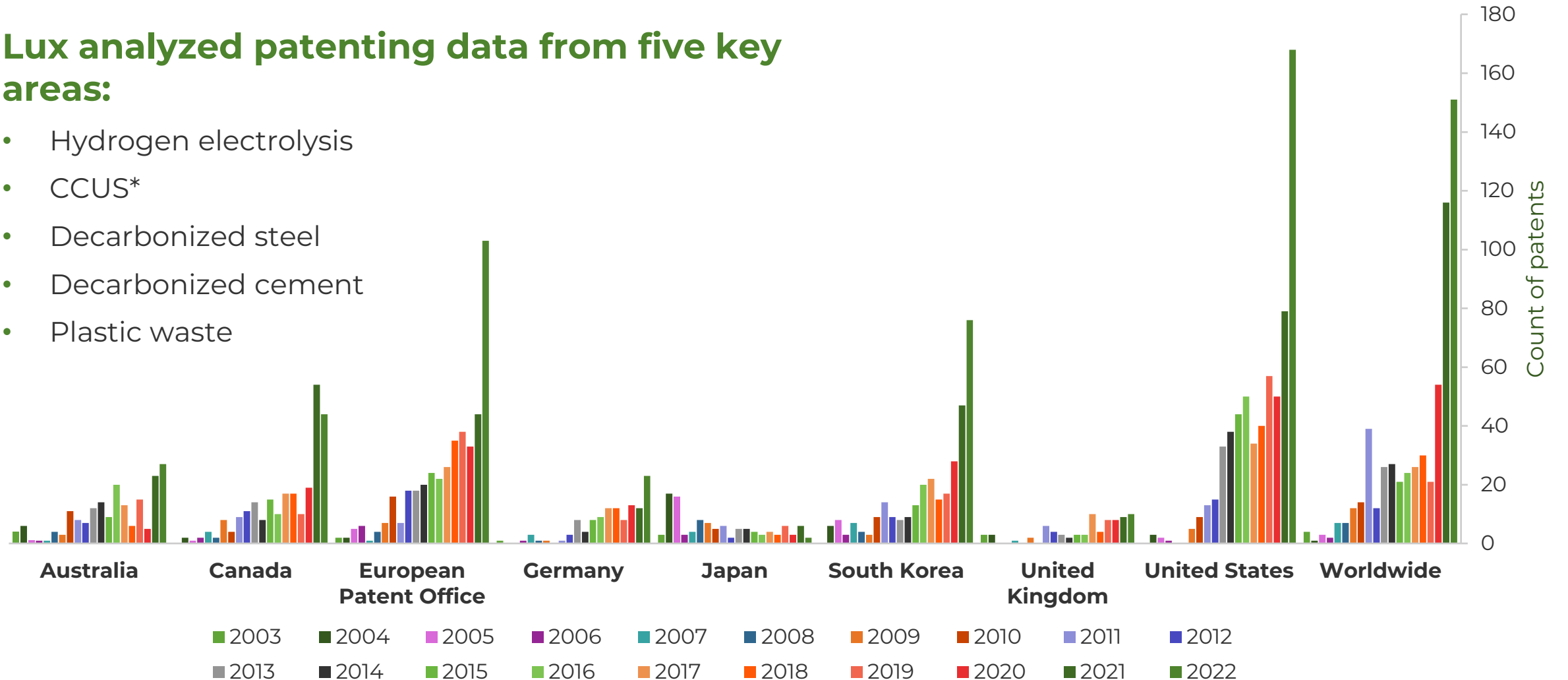
Let's look at three factors:

- Corporate R&D
- The startup ecosystem
- Open innovation

Patenting data shows weakness in industrial decarbonization

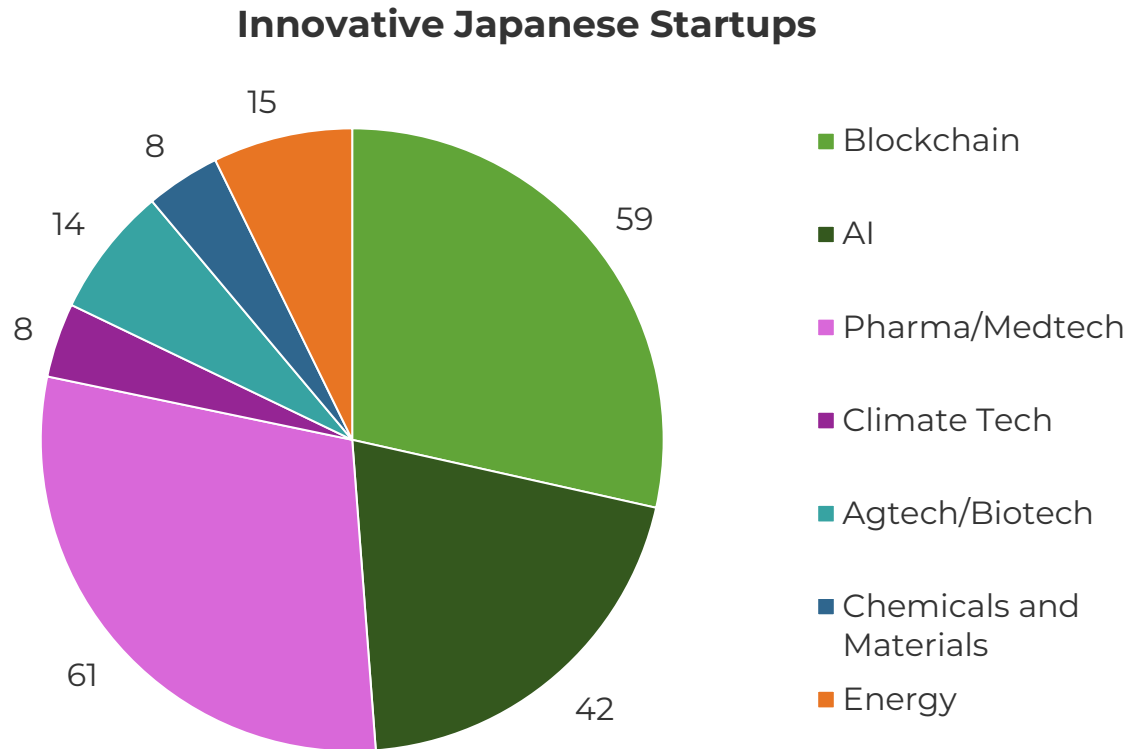
Lux analyzed patenting data from five key areas:

- Hydrogen electrolysis
- CCUS*
- Decarbonized steel
- Decarbonized cement
- Plastic waste



Japanese deep-tech startup formation lags peers'

Lux analyzed 1,000 startups founded in Japan between 2020 and 2023:



Out of the thousand most recently formed startups in Japan:

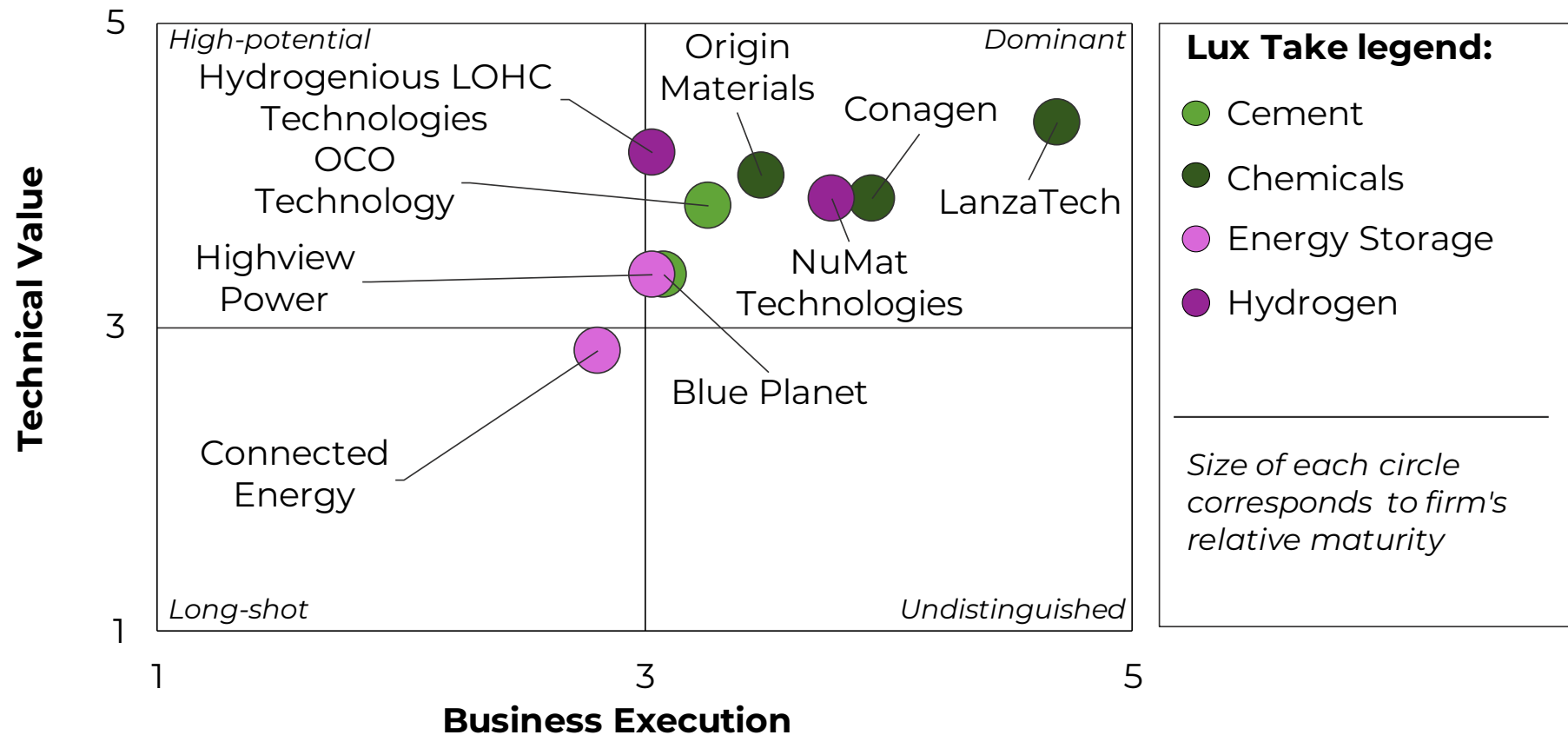
- Just 45 are tackling core sustainability issues.
- Major parts of Japanese sustainability goals aren't represented.
- Industrial decarbonization — cement, steel, CCUS — is significantly underrepresented.

Compare with Germany:

- **Seventy-seven core sustainability startups — including 45 climate tech startups**
- Much higher rate of startup foundation temporally — 1,000 startups in just 1.5 years.
- Somewhat higher rate of startup formation on a population/GDP adjusted basis.

Japanese companies are doing a good job engaging with global innovation

Lux Innovation Grid: Japan Investments and Partnerships



Japanese corporations are already leveraging skills at cross-border collaboration

Japan's most successful companies tend to have a strong presence in international markets.

Japanese trading companies and financial institutions have long experience and skill arranging large cross-border projects.

Leading manufacturers have already developed world-class decarbonization technology, ready for deployment.

NEWS COMMENTARY

Global Thermostat brings DAC to Japan with a new joint venture

NEWS COMMENTARY

Sojitz sets up a new entity, Carbon Xtract, to commercialize membrane-based DAC

Nexeon to Begin Commercial Supply of Silicon Anode Material to Battery Giant Panasonic, Boosting Electric Vehicle Range

July 25, 2023

Canada CO2 capture pilot to become first full-scale CCUS solution for cement industry

Homepage / Media / News Articles

19 June 2023

ArcelorMittal and SEKISUI CHEMICAL's Carbon Recycling Project achieves target ahead of schedule

**Can Japan deliver
sustainability?**

**Japanese decarbonization
drivers are weak**

**Japanese domestic
innovation ecosystem lags**

**Japanese corporations are
finding tech partners**

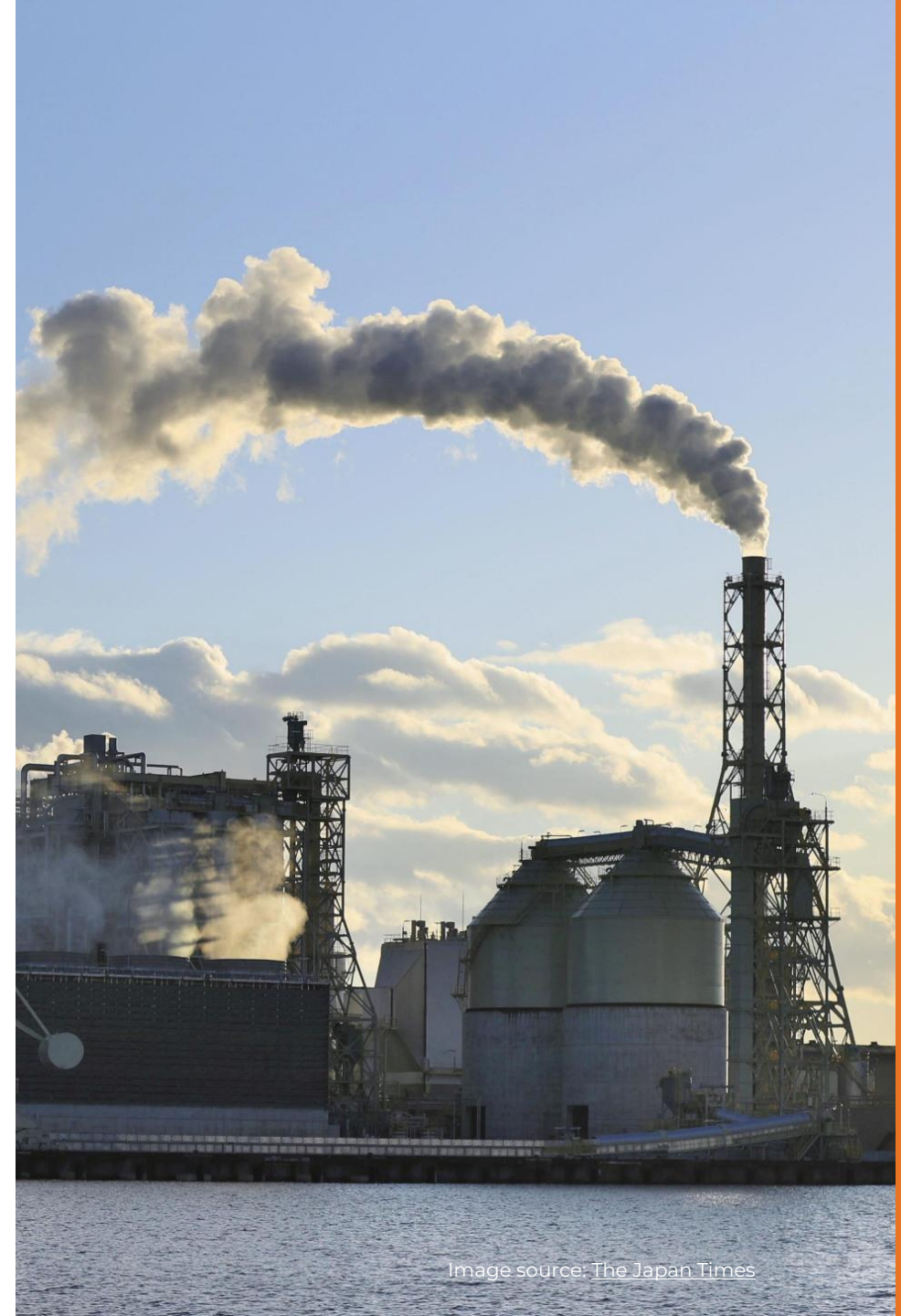
Japan isn't doing enough to meet its national decarbonization ambitions

Japan is **missing the financial incentives** needed to make major progress on decarbonized energy.

A strategy based entirely on economic growth does not offer an approach for **difficult trade-offs**.

Japan is **already very energy efficient**: tweaking around the edges will lead to limited results.

The **startup ecosystem** isn't robust enough to supply high-impact innovations.



There are risks and opportunities in Japan's domestic technology ambitions

Japan has somewhat unique energy challenges, which will require unique technologies like ammonia combustion.

There will be government support (**tax breaks**) for development of offshore wind power generation, Li-ion batteries (mobility and stationary storage), and fuel cells.

Japan will have fewer “shots on goal” to domestically develop crucial technologies to secure energy independence while decarbonizing.



Japanese corporations are well positioned to export climate tech

Japan can draw on several mature sources to **finance** large projects and exports.

Trading companies and other conglomerates have strong footholds in **Southeast Asia**, which is expanding sustainable infrastructure.

Don't forget other **middle-income countries**: Brazil, Mexico, Türkiye, maybe even India.



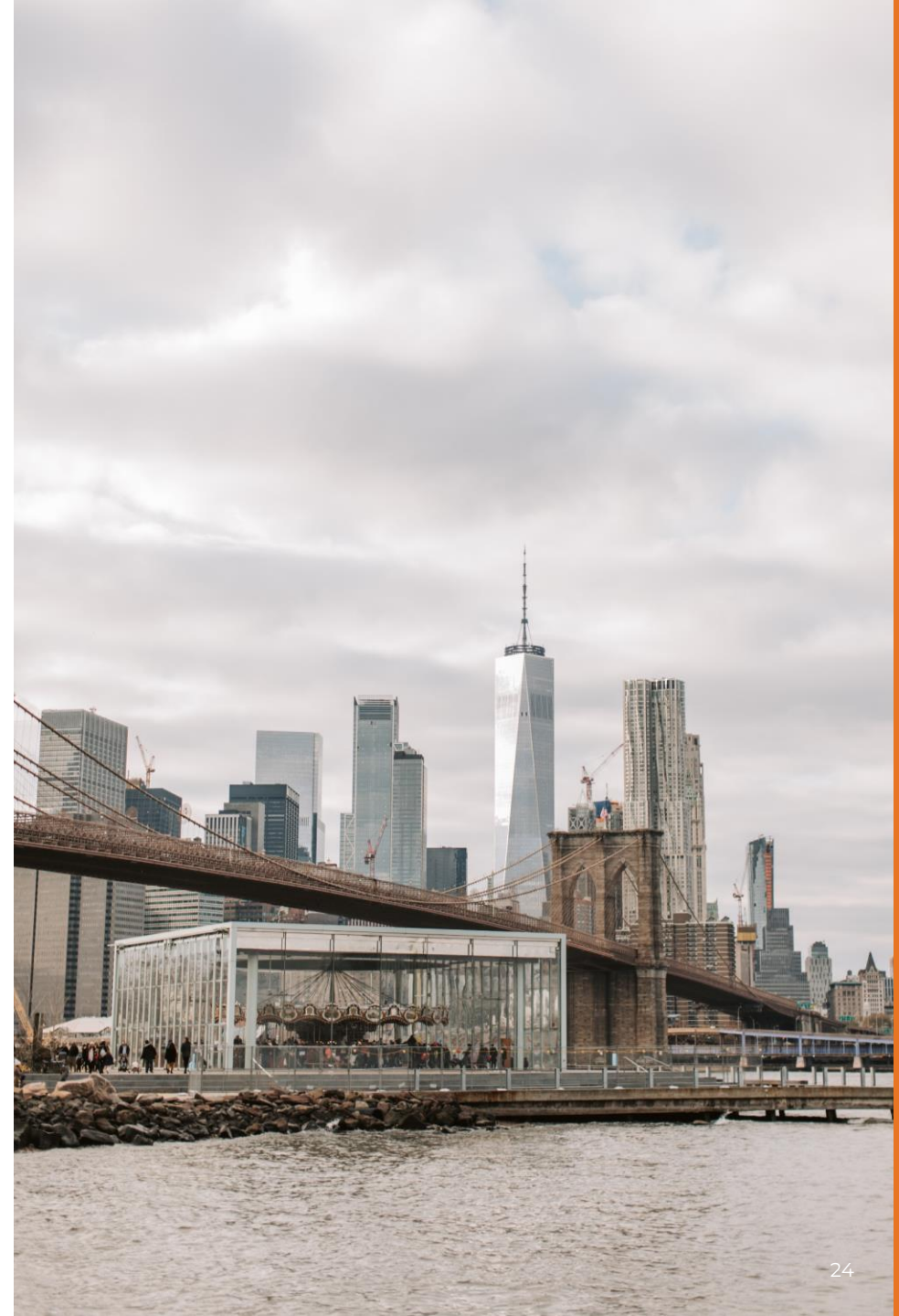
What does this mean for U.S. and European companies?

Energy imports are going to be a fixture for Japan going forward.

Competition for subsidies and opportunities will increase as Japanese companies look abroad to seize growth markets.

Japanese competitors may be **slower** to make expensive decarbonization investments.

Leading climate tech startups will find willing **partners in Japan.**



Disruptors? Politics, tech, policy

1

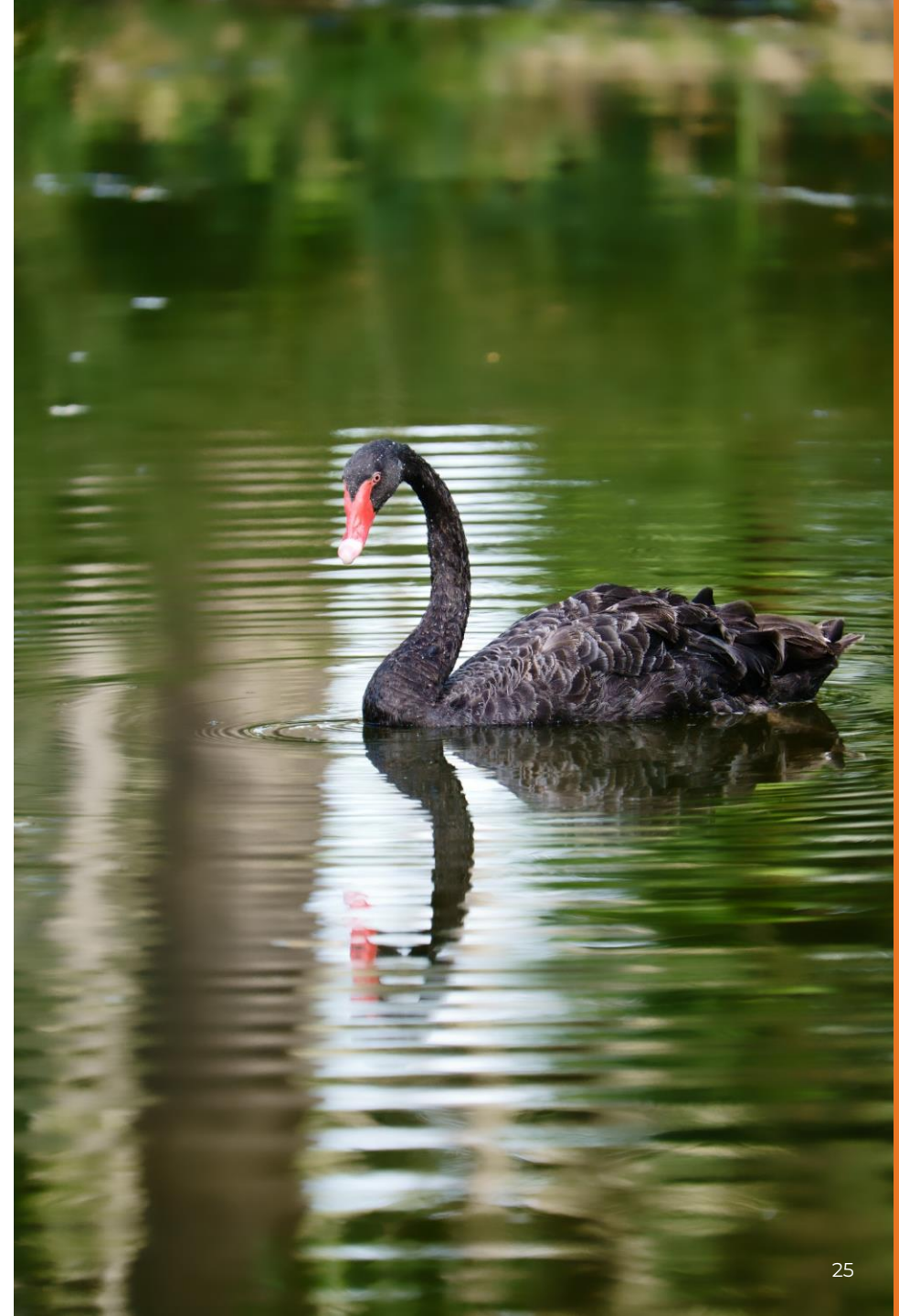
Nuclear accident

2

CO₂ utilization

3

China policy



Key Takeaways

- 1 Japan is not on track to meet national decarbonization goals — more policy support is needed**
- 2 Japanese companies are moving ahead with climate tech and are likely to play an important role in global decarbonization**
- 3 Partnerships with overseas startups will be crucial for Japanese industry**

Thank you

A link of the webinar recording will be emailed within 24–48 hours.

UPCOMING WEBINARS

SEPTEMBER 12

Balancing Consumer Perspectives and Environmental Sustainability in the Adoption of CO₂-Based Plastics

SEPTEMBER 19

The Global Hydrogen Trade: Comparing Developments in the EU, the U.S., and Globally



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