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RENEWABLE ENERGY INSTITUTE

INETTT
International
Network of
Energy Transition
Think Tanks

Challenges, analyses, and solutions for scaling up the national and global plans for green energy transition and cooperation

Mika Ohbayashi, Director, Renewable Energy Institute

Thursday, 30 March, 14:00-17:00

Energy Sector Outreach Side Event, BETD - Berlin - Germany

Japan renewable energy profile

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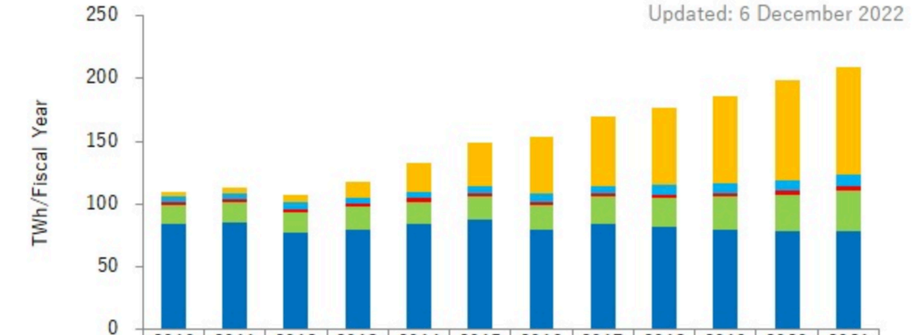
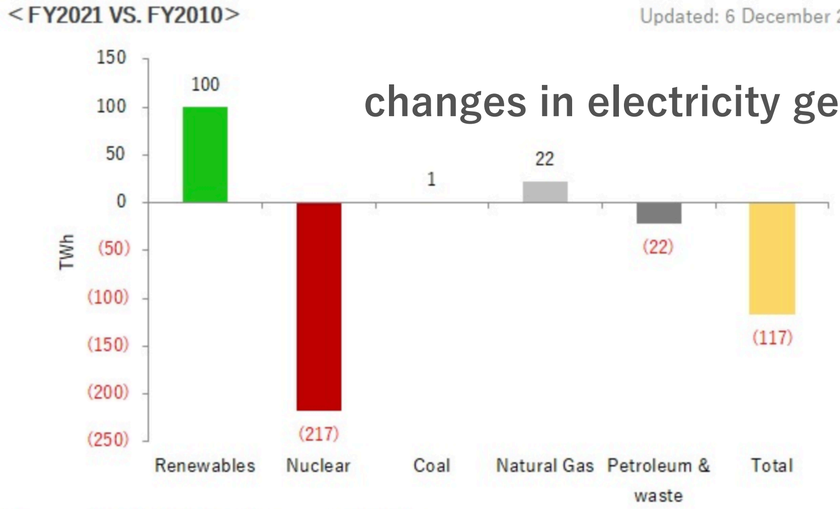
renewable electricity trends



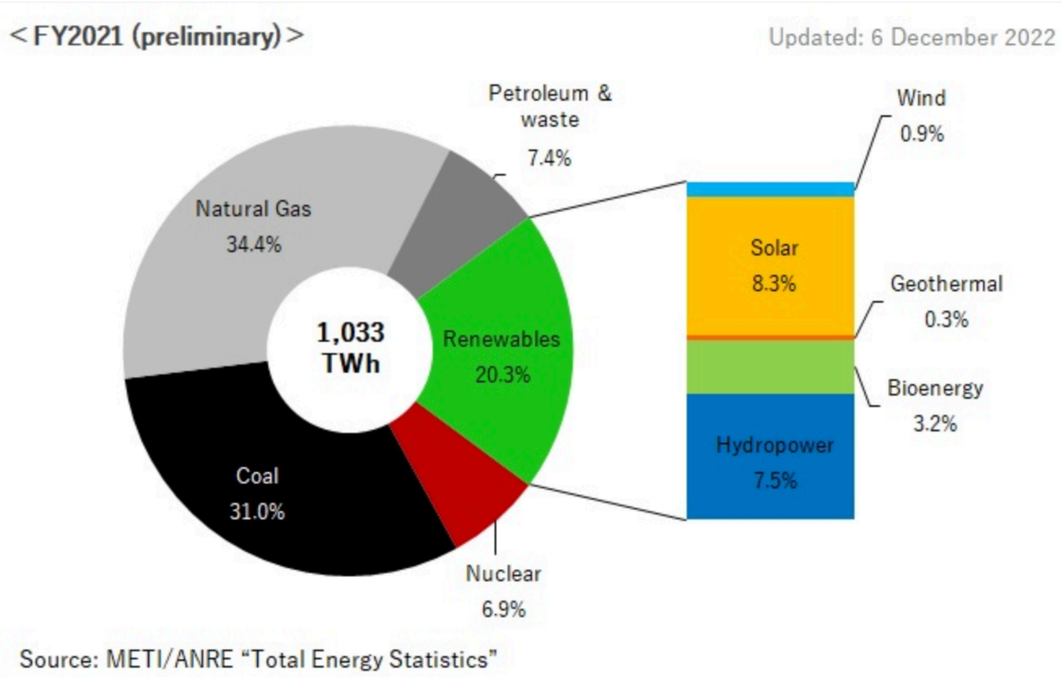
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Solar	4	5	7	13	23	35	46	55	63	69	79	86
Wind	4	5	5	5	5	6	6	6	7	8	9	9
Geothermal	3	3	3	3	3	3	3	2	3	3	3	3
Bioenergy	15	16	17	18	18	19	20	22	24	26	29	33
Hydropower	84	85	77	79	84	87	79	84	81	80	78	78
Total	109	113	107	118	133	149	154	170	177	186	198	210

changes in electricity generation



Source: METI/ANRE "Total Energy Statistics"

electricity generation mix



Source: METI/ANRE "Total Energy Statistics"

source: REI statistics,

https://www.renewable-ei.org/en/statistics/energy/?cat=electricity

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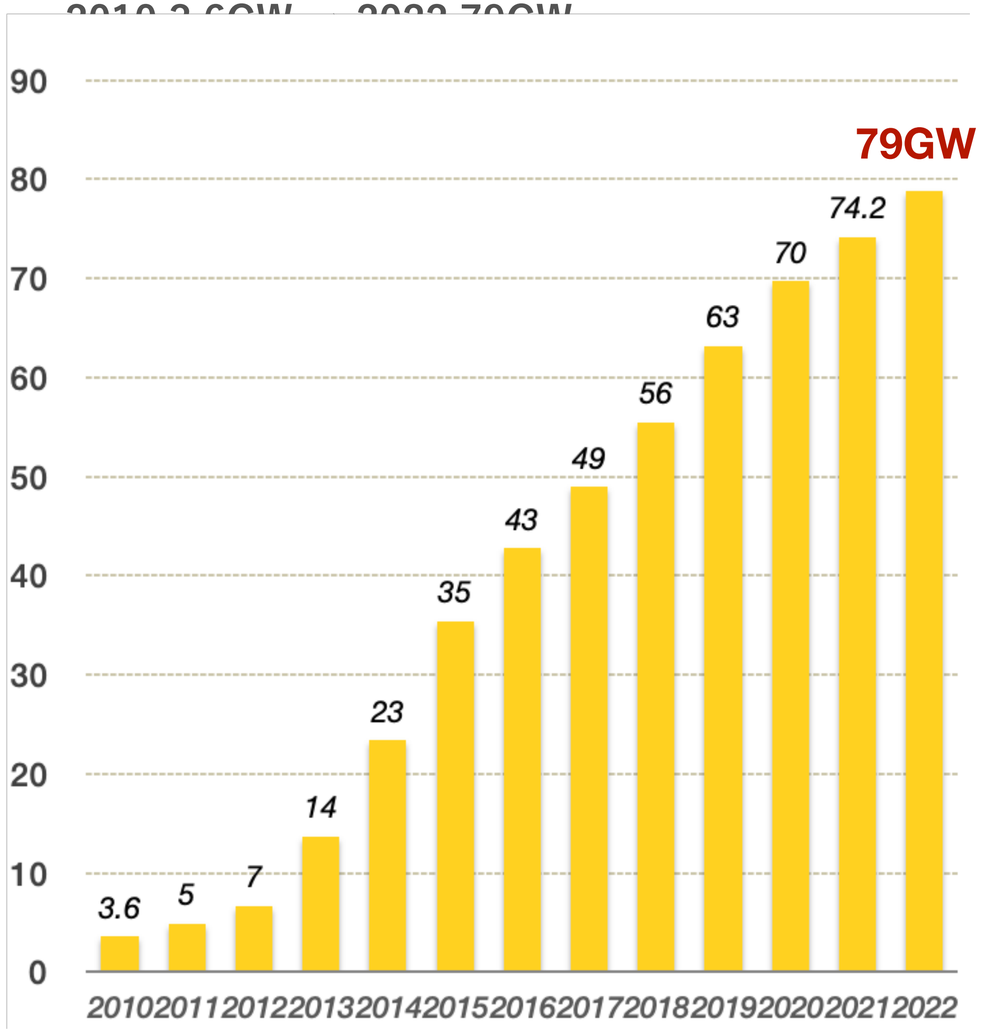
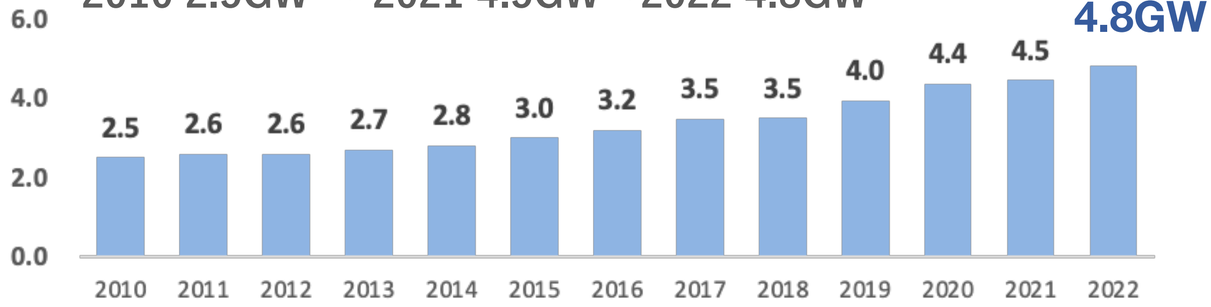
PV Solar



source）IRENA (2023)

Wind Power

2010 2.5GW → 2021 4.5GW→2022 4.8GW



source）JWPA（2023)

Solar PV expanded after the introduction of FiT in 2012, wind power development suffered from grid connection difficulties and unstable policies.

2000：Long term purchase agreement by ulitities

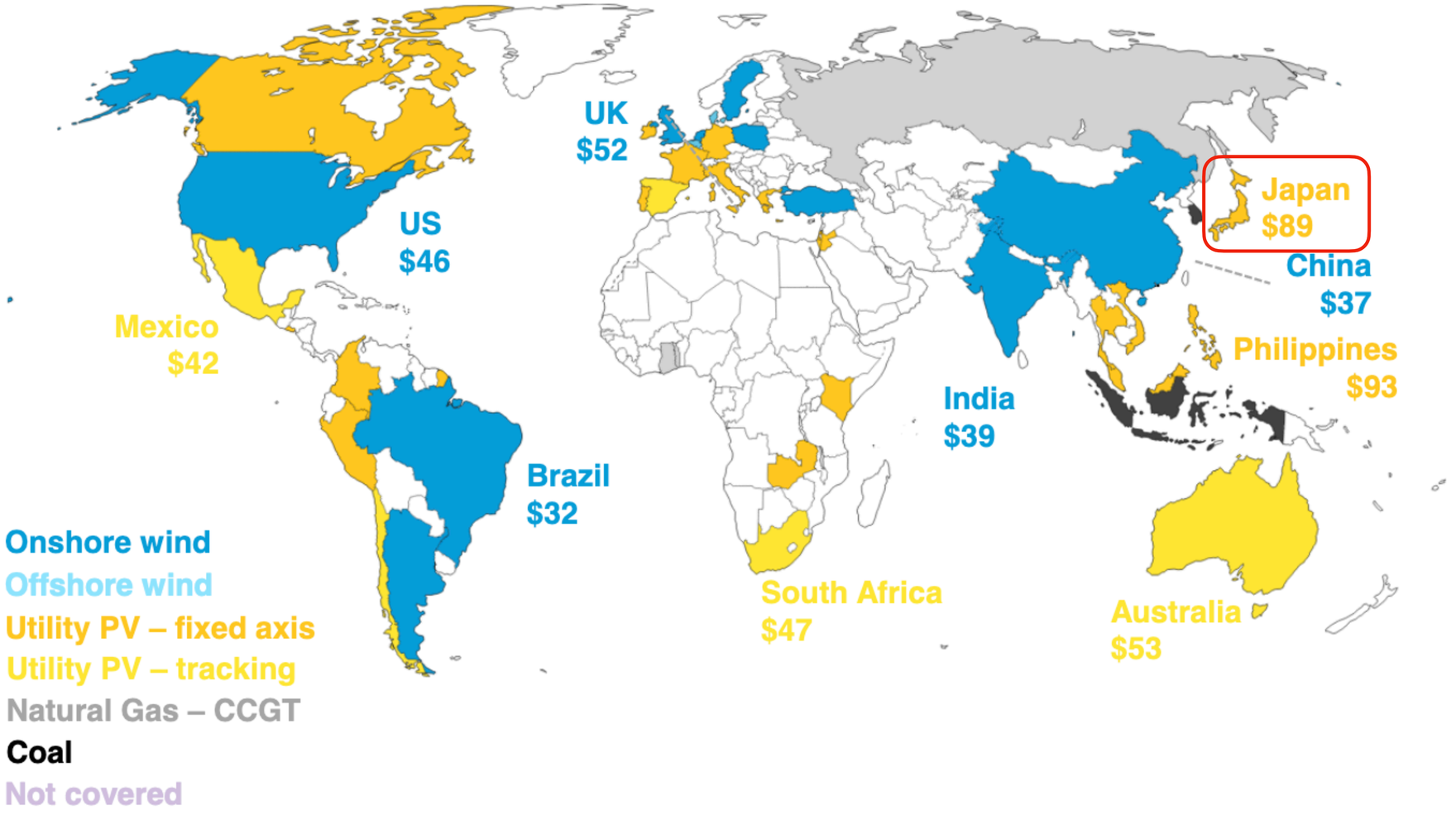
2003：RPS implementation with 1.34%

2007：the building standards law or wind power 「建築基準法」

2009：end of subsidies for wind power implementation

Cheapest source of bulk generation, 2H 2022
New-build solar, wind, coal and gas

source: Bloomberg NEF, 19 DEC 2022



In Japan, due to the high fuel prices, renewables have become the most competitive power source even versus existing coal and gas.

Source: BloombergNEF. Note: The map shows the technology with the lowest LCOE (or auction bid for recent delivery) for new-build plants in each country where BNEF has data. The dollar numbers denote the per-MWh benchmark levelized cost of the cheapest technology. All LCOEs are in nominal terms. Calculations exclude subsidies, tax-credit or grid connection costs. Our LCOEs include a carbon price where applicable.

What are the most important immediate, mid and long-term issues/ elements related to transformation your country needs to solve to accelerate its clean energy transition?

immediate issues/elements;

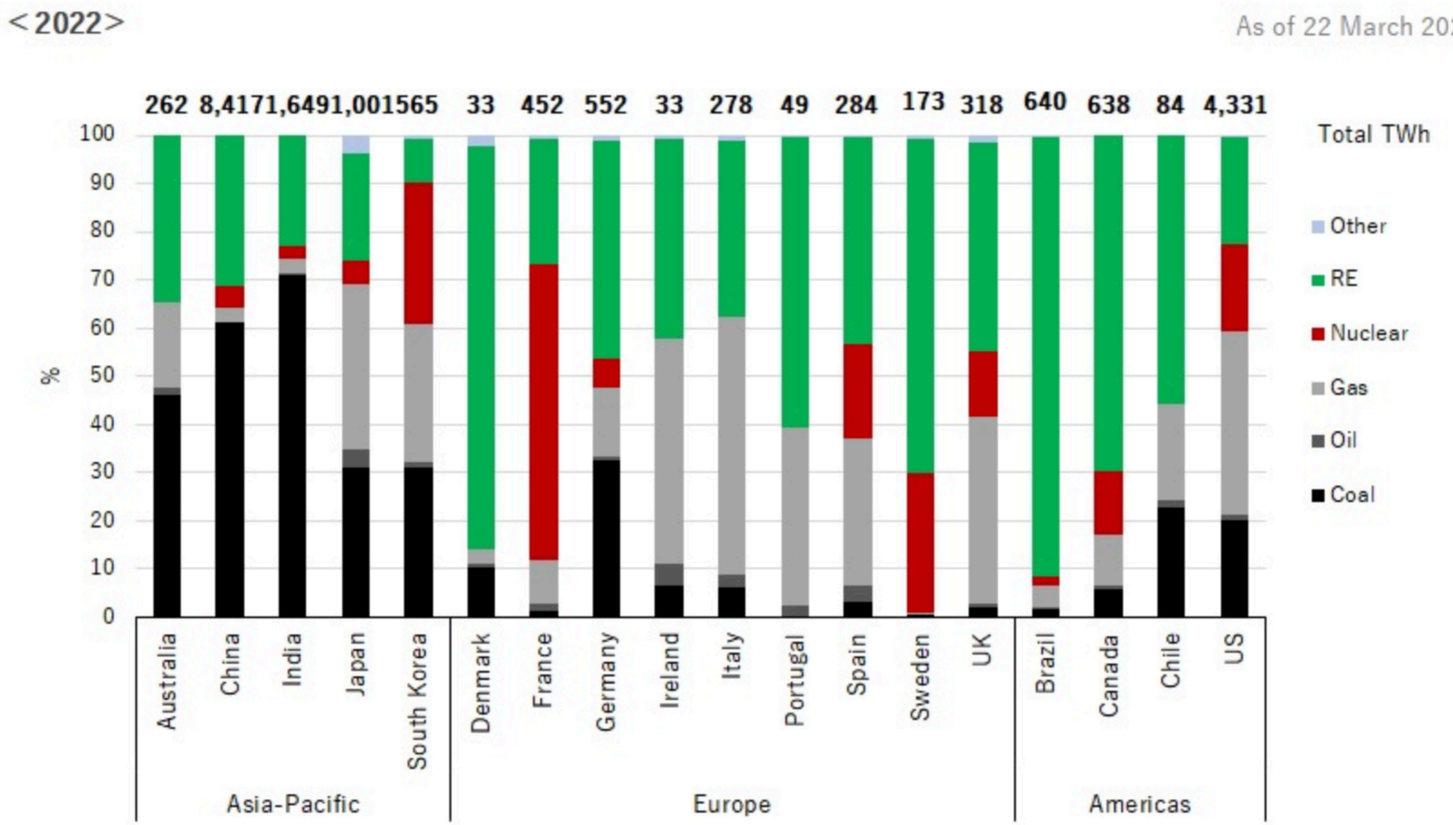
Stop funding fossil fuel - domestically/internationally

Japan’s power market has a system to support conventional energies;

- capacity market mechanism
- priority dispatch for nuclear and “last reserve” coal
- non-fossil fuel credit trading

Serious carbon pricing scheme introduction

comparison with selected countries

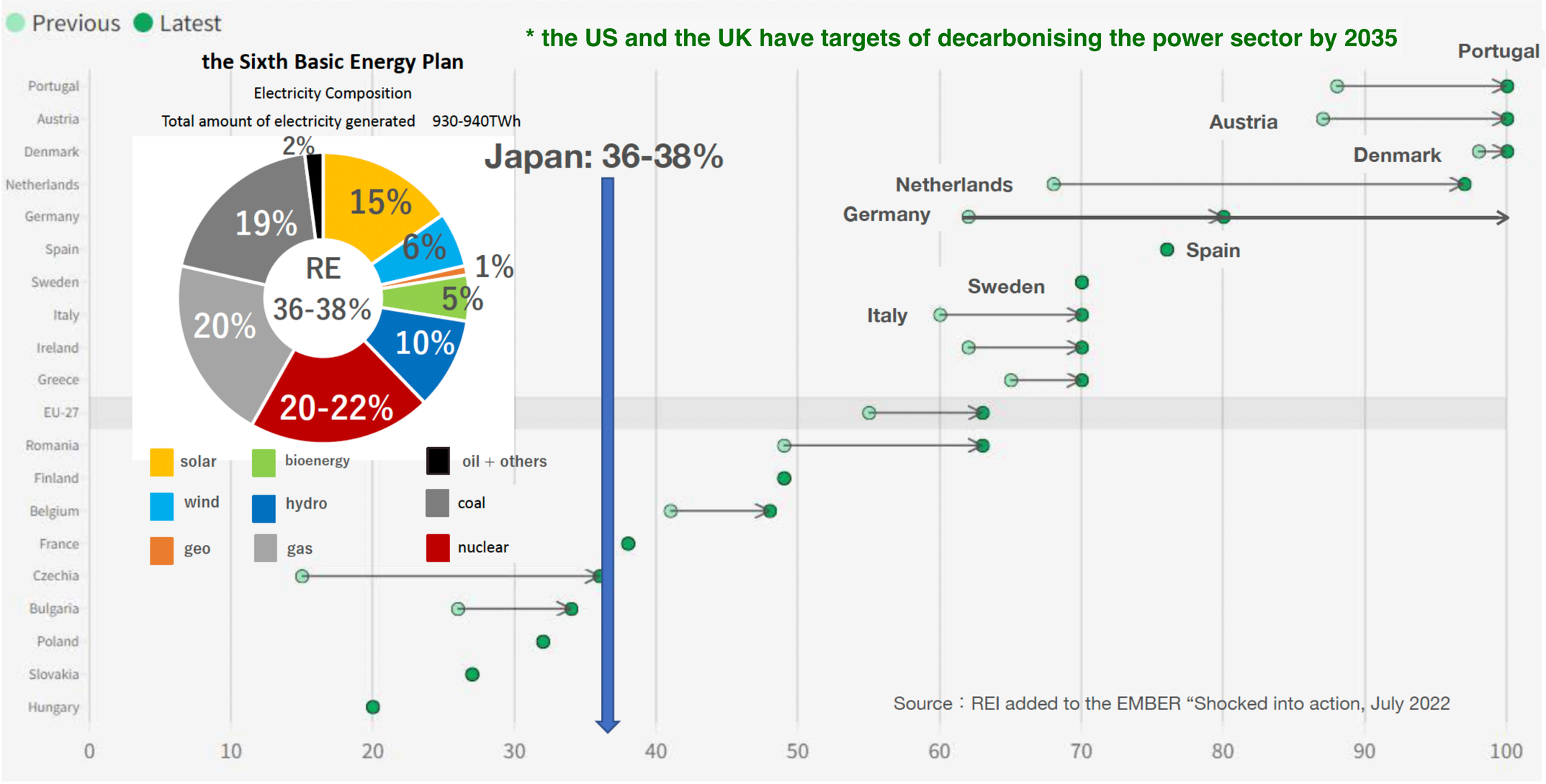


What are the most important immediate, mid and long-term issues/ elements related to transformation your country needs to solve to accelerate its clean energy transition?

immediate and mid-term issues/ elements;

ambitious targets!!

comparison of 2030-2035 targets



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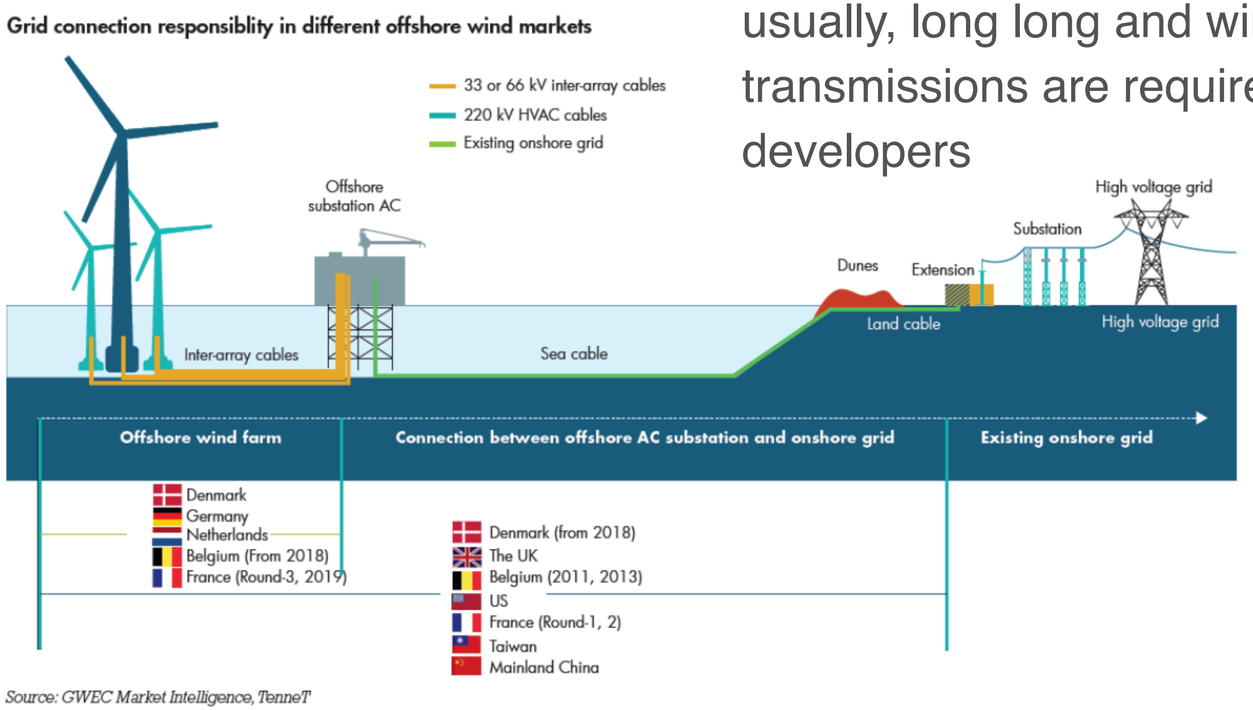
immediate and mid-term issues/elements;

- Securing grid connection
  - ✓Developers -> the government (“centralized” model) from FY2025?
  - ✓Cost: who covers for which part ?

- Rule changes
  - ✓Dispatch rule (market design)
    - * Disclosure of power generation information – a unit of 100 MW and more – expected to start in FY2023
  - ✓Injection charge (G-charge)



usually, long long and winding transmissions are required for developers

Source: GWEC, “Global Offshore Wind Report 2020”

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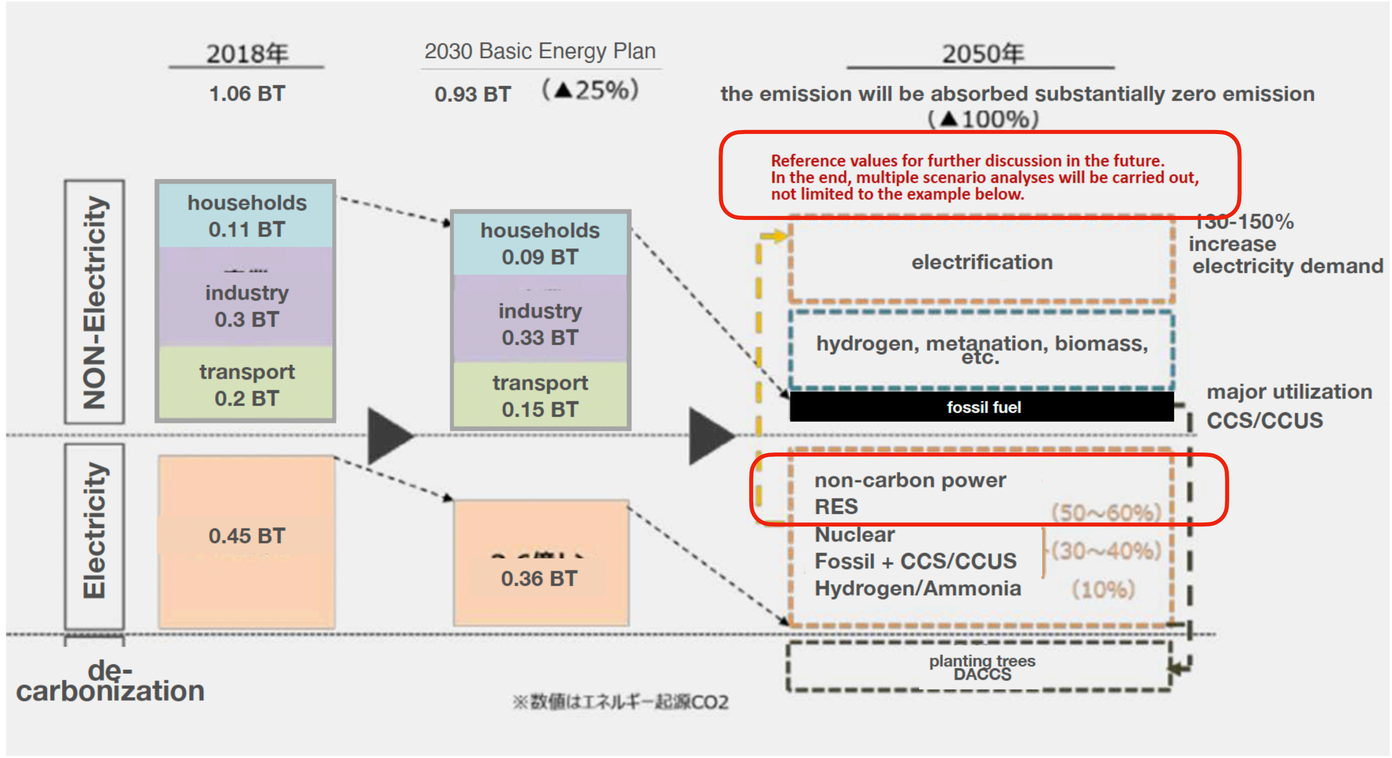
mid and long-term issues/elements;

2050 targets needs to be ambitious

do not include ASA with false solution

'Zero emission thermal power' + nuclear: up to 30-50%, centered on CCS



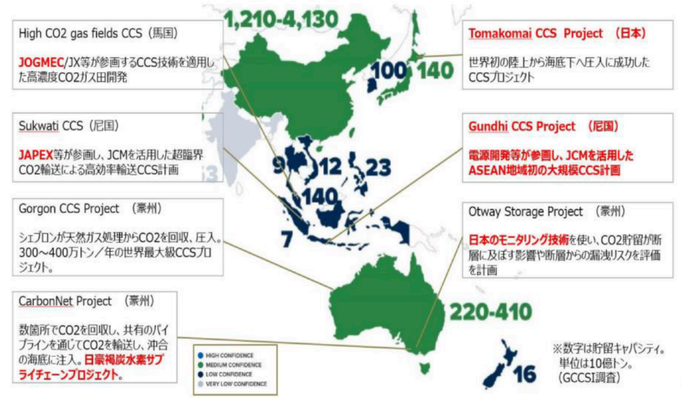
source）METI (2020), Green Growth Strategy for 2050 Carbon Neutralization

（参考）アジアCCUSネットワークについて

2021年2月15日
資源・燃料分科会 石油・天然ガス小委員会（第13回）

- 経済成長著しいアジア地域は化石燃料の利用を選択せざるを得ず、主要な温室効果ガスの排出源である一方で、**大規模なCO2の貯留ポテンシャル**を有する地域。（各国約100億トンの貯留ポテンシャル）
- 2020年11月のEASエネルギー大臣会合において、日本からの発案で、アジア全域でのCCUS活用に向けた環境整備や知見を共有する**「アジアCCUSネットワーク」の構築を提案し、各国から歓迎の意が示された。**

Japanese Government Claims:
Asia's rapid economic growth is forcing it to choose
fossil fuels.
Asia has large CO2 storage capacity.



Paradigm Shift in Energy

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