METI
Ministry of Economy, Trade and Industry

Report from Japan

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Nuclear Energy in Japan's Strategic Energy Plan

Towards 2030 : Achievement of Optimal Energy-Mix Target

Nuclear is Important Baseload Power Source

- Safety is First Priority. Only when approved by NRA's strict review, NPPs restart.
- With principle of minimizing nuclear dependence, achieving 20-22% nuclear by 2030.

	2010	2013	2017	2030
Nuclear	25%	1%	3%	22-20%
Renewable	9%	11%	16%	22-24%
Thermal	65%	88%	81%	56%

Towards 2050 : Challenge for Energy Transition

Nuclear is One Option for Energy De-carbonization

- Safety is First Priority. Minimizing dependence on nuclear while trying to expand Renewable.
- Need to strengthen human resources, technologies and infrastructure
- Pursuing reactors with excellence in safety, economic efficiency, and flexibility; the develop

Pursue every possible energy sources

Nuclear Power Plants in Japan

As of 24th, June, 2019

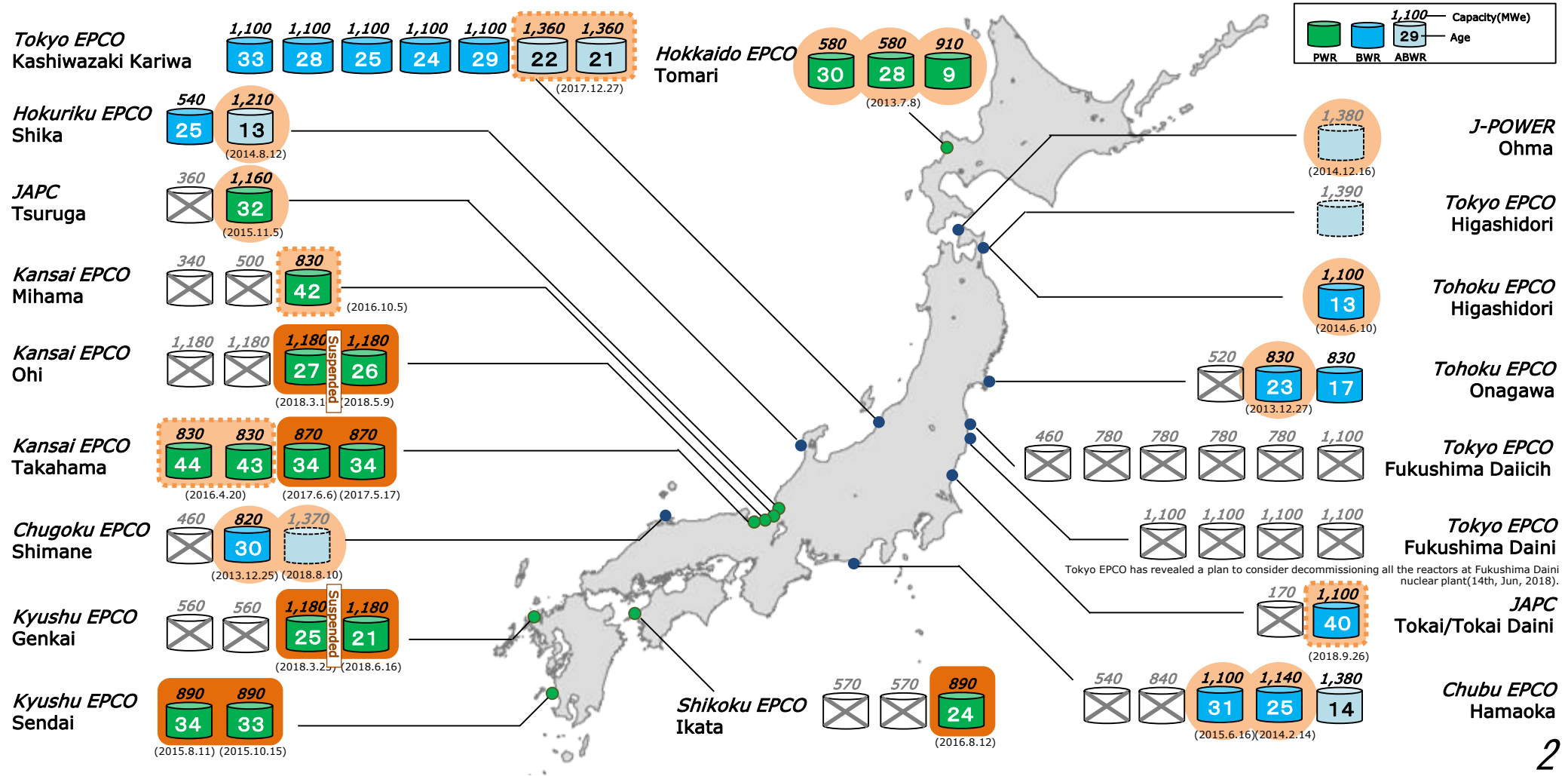
Restarted 9 reactors
In Operation : 7 reactors
Suspended : 2 reactors
(Date of Restart)

Passed NRA Review for the Permission for Changes in Reactor Installation 6 reactors
(Date of Approval)

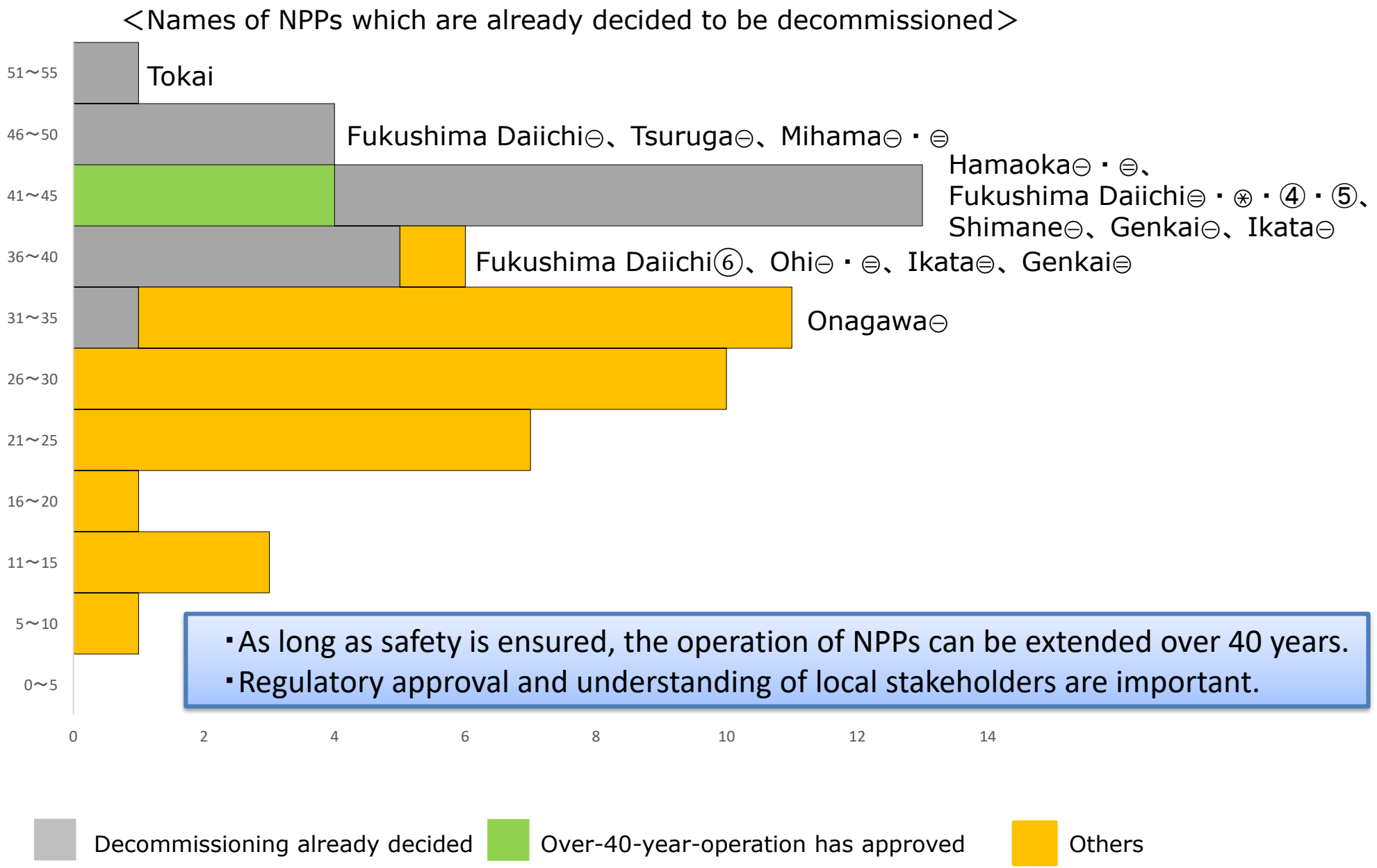
Under NRA Review 12 reactors
(Date of Application)

Not yet Applied 9 reactors

already decided/predicted to **Decommission** 24 reactors

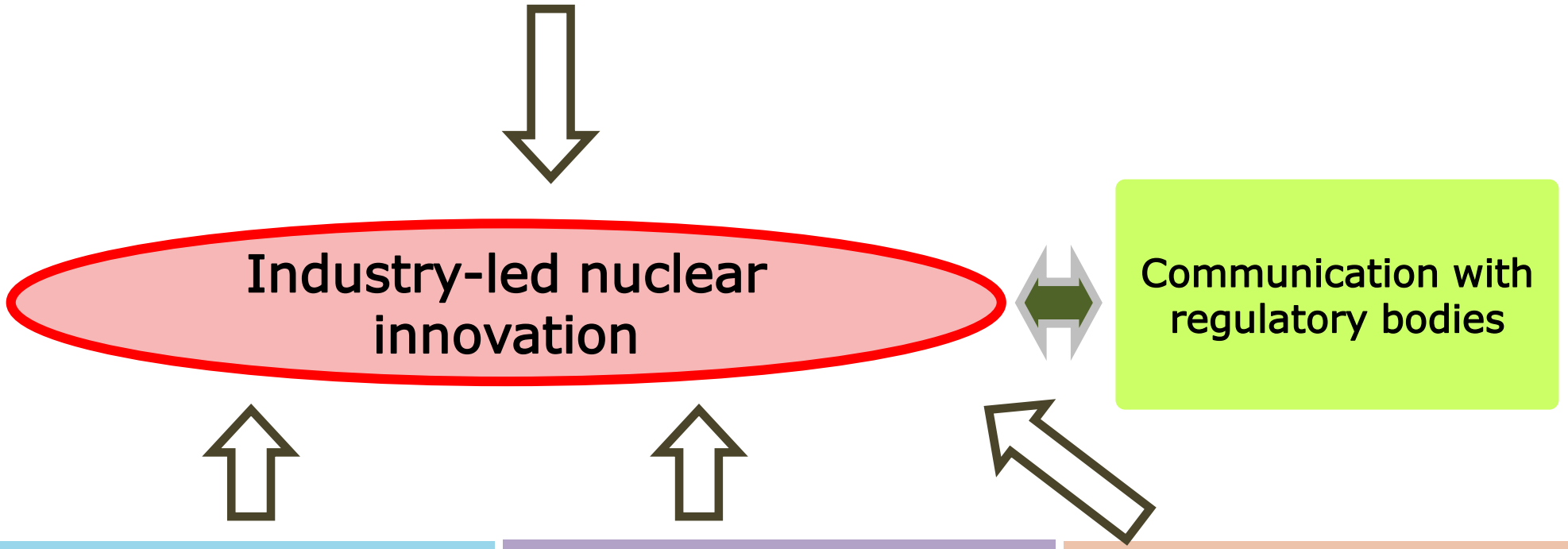


How many years have passed after each of Japan's NPPs started its operation



Key Elements for Nuclear Innovation

Sharing the direction of technology development, communication among stakeholders



New Initiative to Accelerate Nuclear Innovation

NEXIP : Nuclear Energy × Innovation Promotion

A new initiative to help accelerate the development of innovative nuclear technologies through funding support, access to R&D facilities and human resource development efforts.

METI Ministry of Economy, Trade and Industry

MEXT Ministry of Education, Culture, Sports, Science and Technology-Japan

JAEA Japan Atomic Energy Agency

Funding Support to R&D (Cost-shared program)

- New reactor design concepts
- Accompanying technologies (e.g. safety, digital technologies, new fuels)

=> Solicitation periods closed in June 2019, and awards will be announced by September.

Access to R&D Facilities

- JAEA research facilities, reactors, and databases
- Collaboration with universities and the international community

Human resource development

A study on Japan's energy demand and supply to achieve 80% reduction of CO_2 emission in 2050 (Report Y19501)

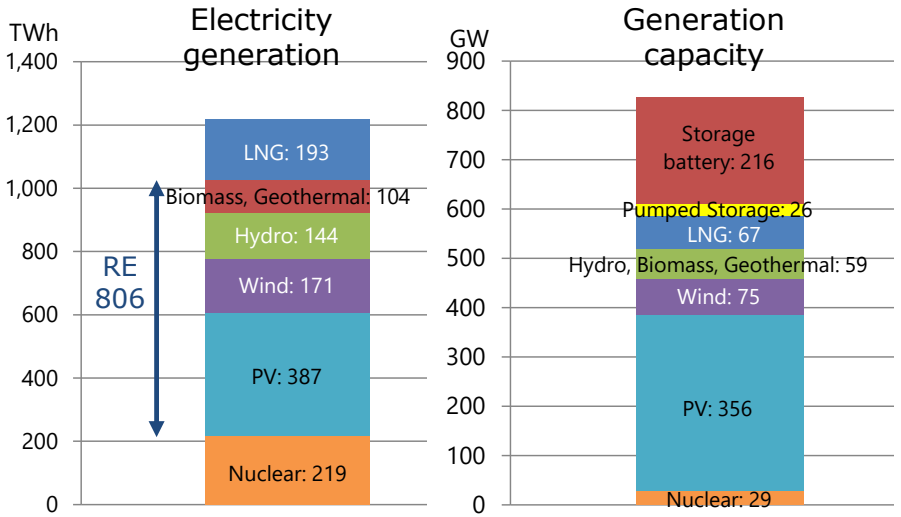
SERC, CRIEPI

Assumptions

Economic growth	~2030: 1.7% per annum 2030~2050: 0.5% per annum
Renewables	- The entire land areas w/o land use conflicts will be exploited in 2050 i.e. Solar PV: 360GW, Wind: 75GW - No curtailment

Result : Electricity supply in 2050

◆Generation capacity of NNP has to reach **29GW** to achieve 80% reduction.



Meaning of 29GW in 2050

Service life of NNP assumed to be 60 years	Capacity in 2050
⊖ Plants running as of Feb. 2019	5.6GW
⊜ ⊖+restart permitted	8.3GW
⊛ ⊜+restart reviewed	16.8GW
④ ⊛+restart not under review	21.8GW
⑤ ④+scheduled new construction	32.0GW

Policy Implication

◆If new NNPs are to be avoided, unproven technology (CCUS, hydrogen) is indispensable.

◆Difficulty beyond 2050 with 60 year service life