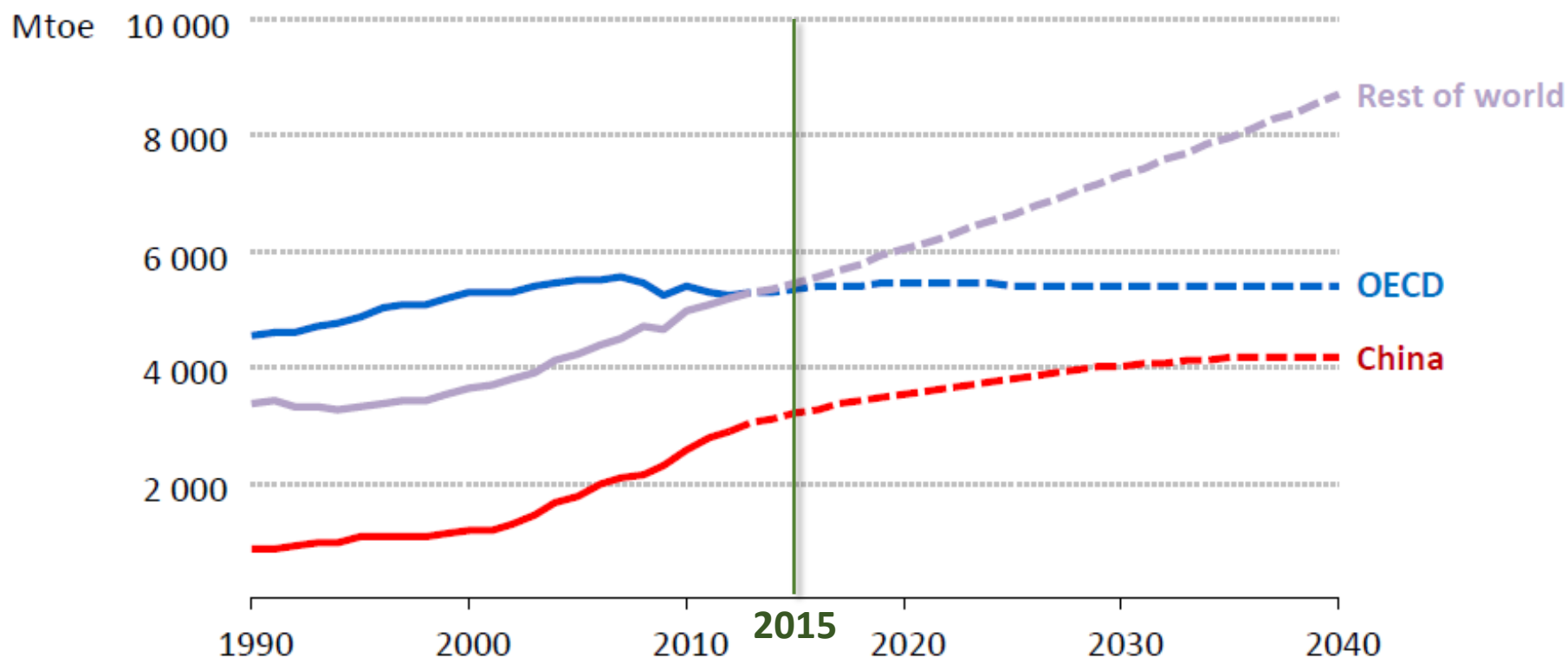


Japan, the United States and the Future of Nuclear Energy

Growth of Energy Demand of the World

- China and non-OECD countries increase the energy demand

Energy demand by region

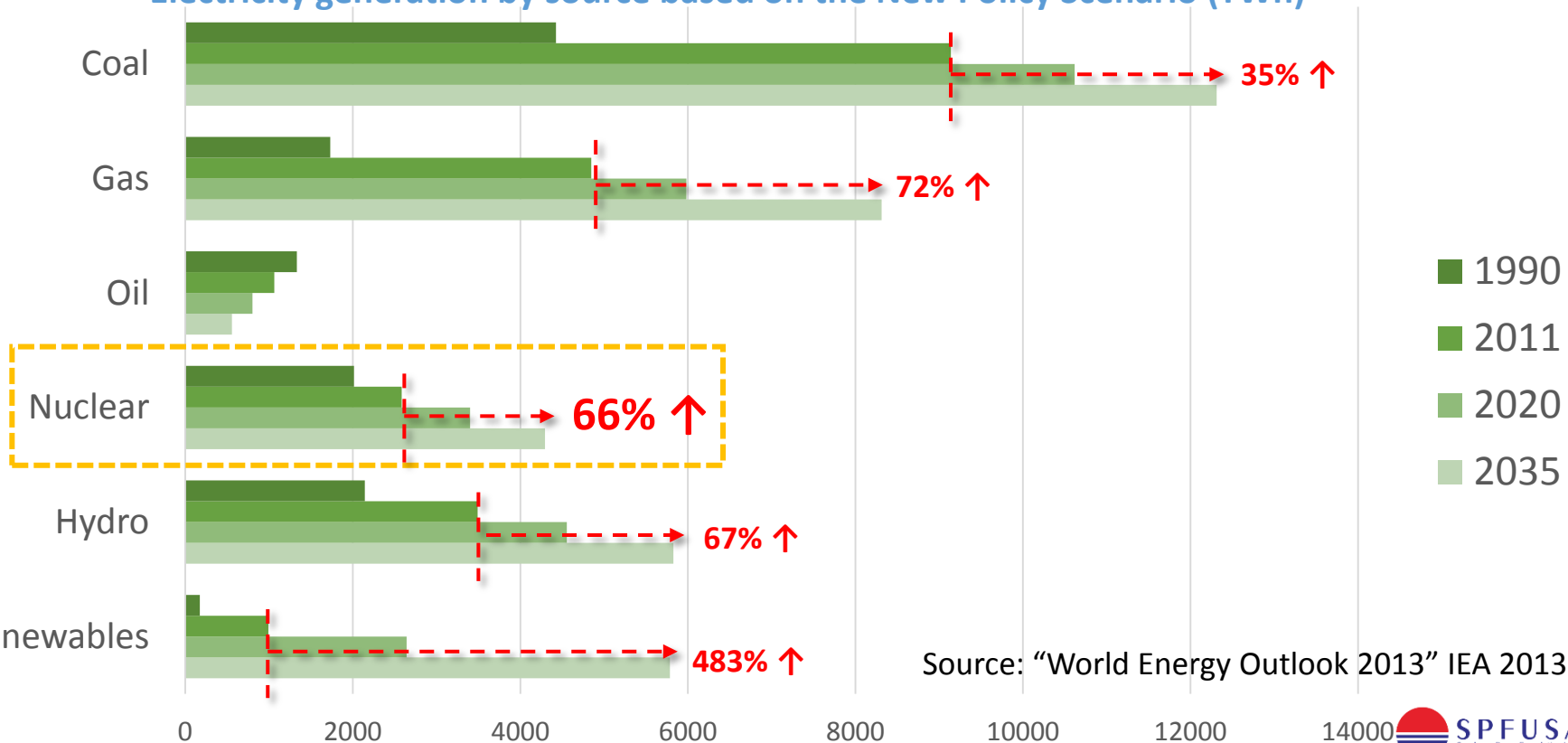


Source: "World Energy Outlook 2014" IEA 2014

Nuclear Energy expected to be one of the fastest-growing sources

- Nuclear energy generating capacity is expected to increase by about 70% in the coming two decades.

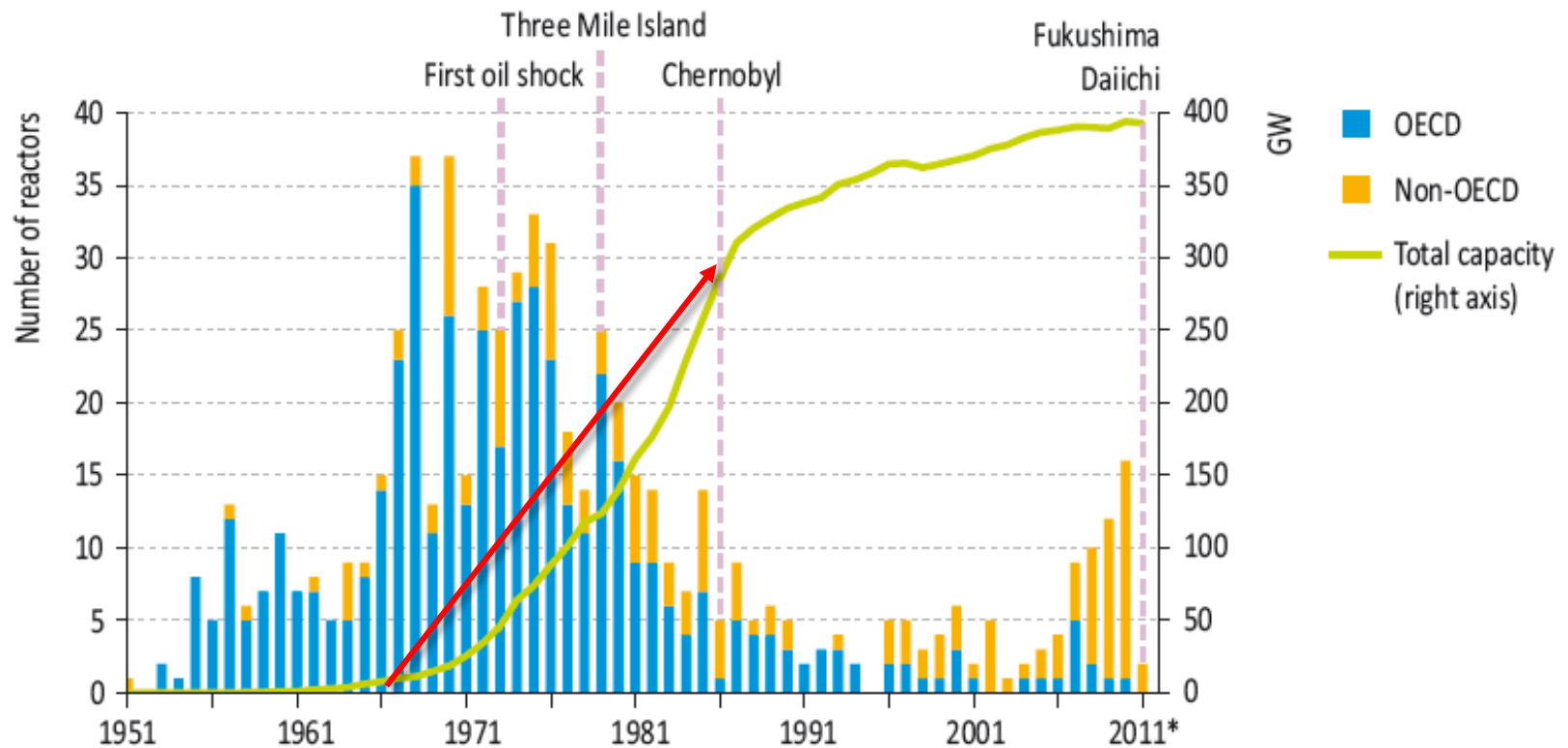
Electricity generation by source based on the New Policy Scenario (TWh)



Source: "World Energy Outlook 2013" IEA 2013

Sixty Years of Nuclear Power

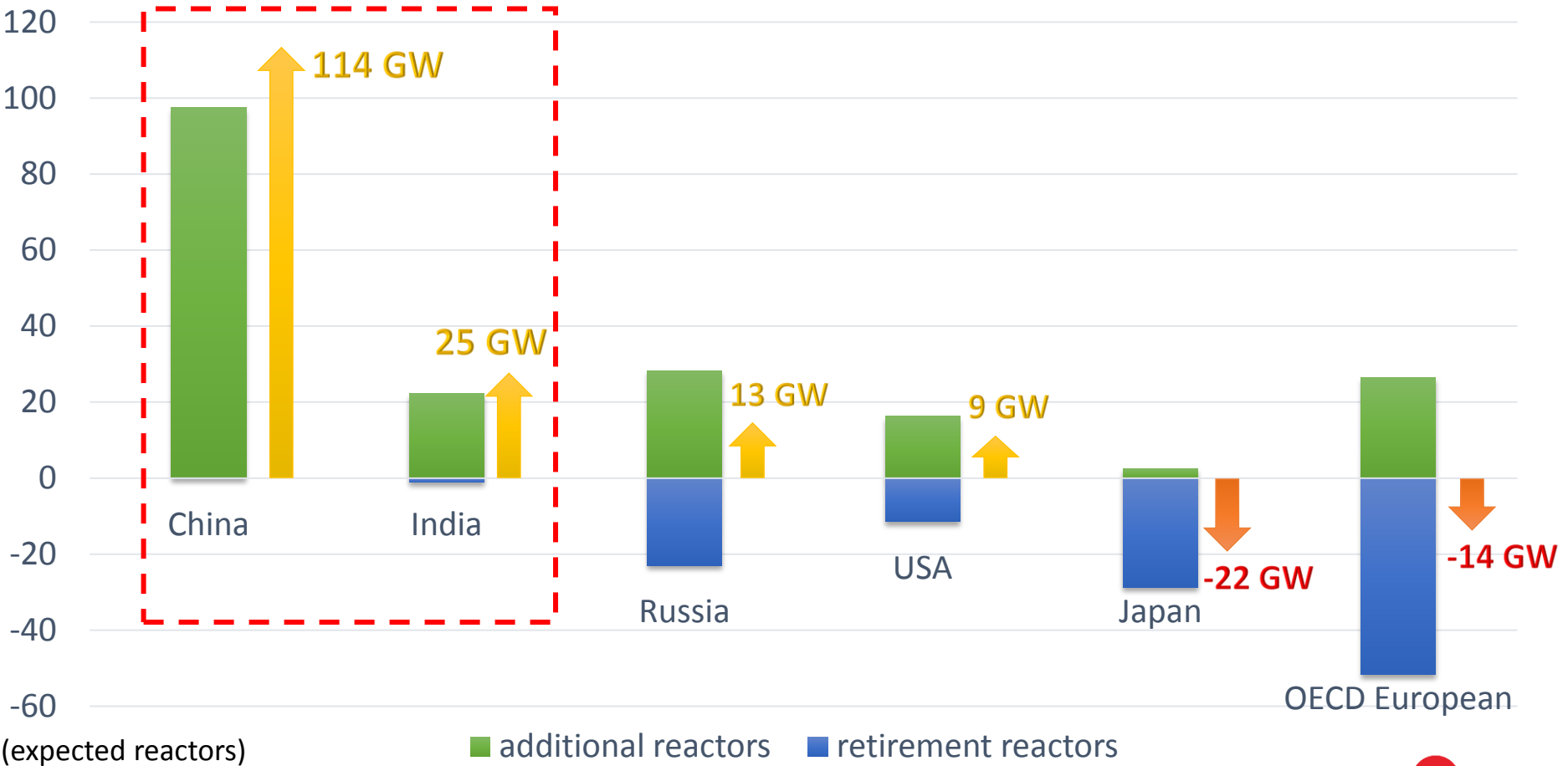
Worldwide Nuclear Electricity Generation and Nuclear reactor construction starts, 1951 – 2011



'World Energy Outlook 2011', IEA

China dominates future nuclear energy demand

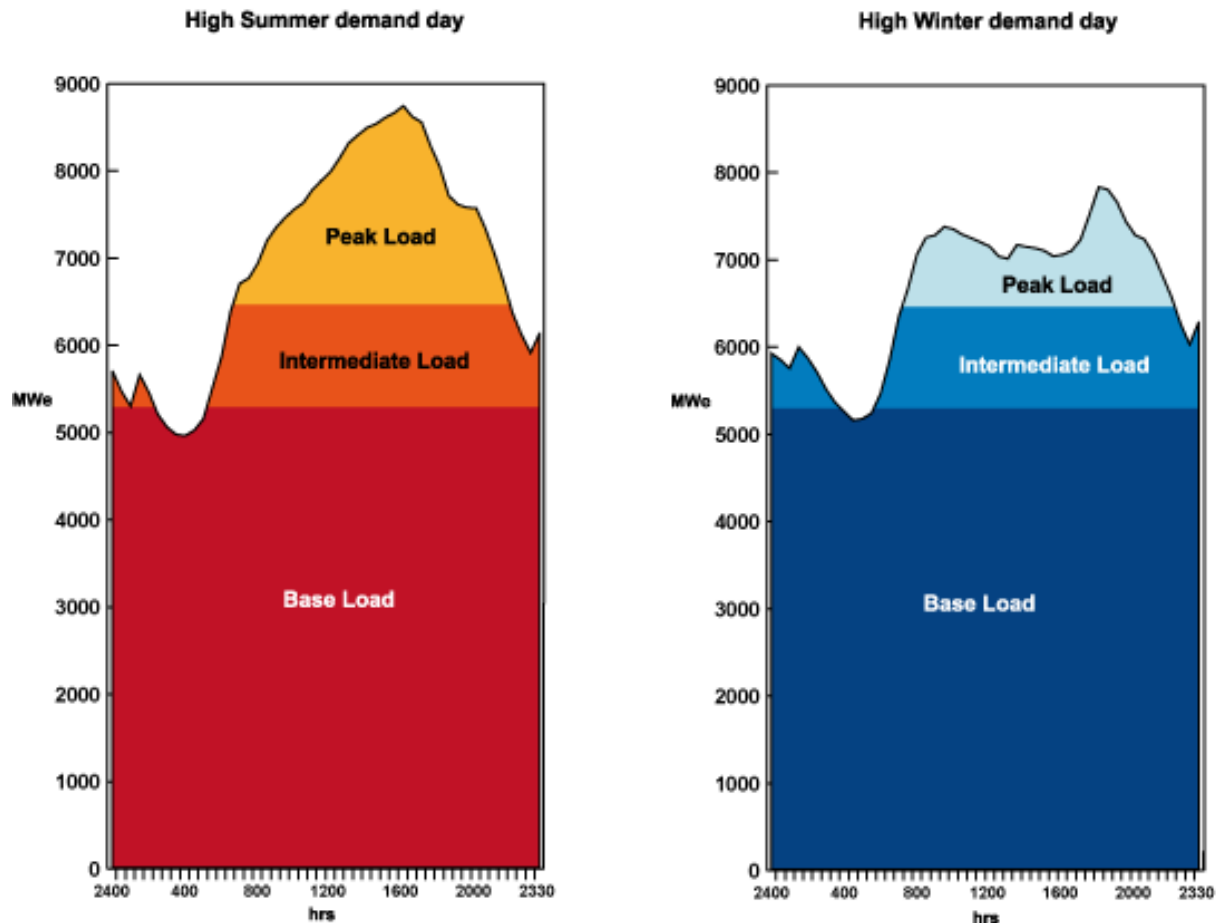
Net Capacity(GW) and Reactors Change in key regions, 2013-2035



Source: "World Energy Outlook 2013" IEA 2013

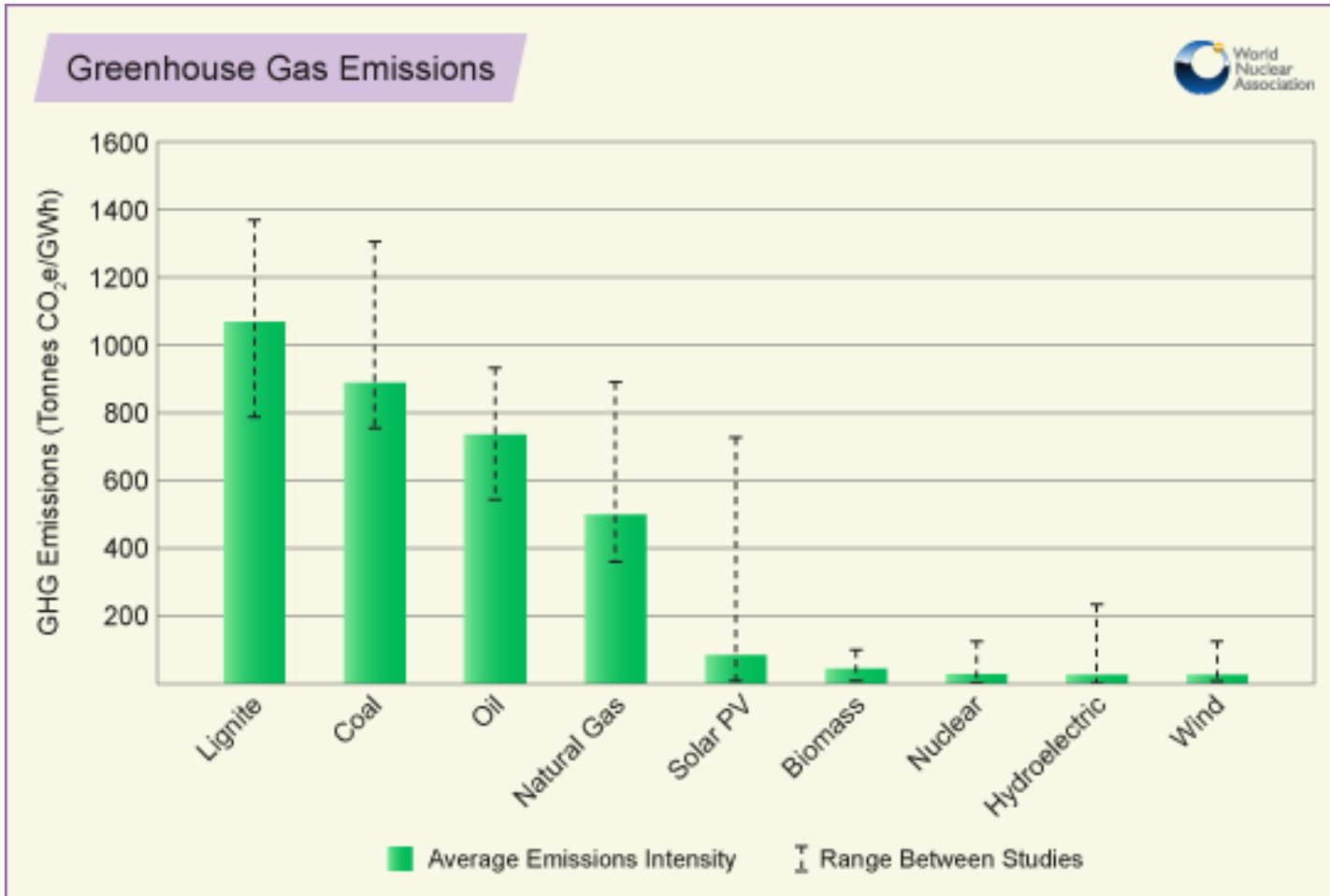
Nuclear energy is the best base-load energy source

Load curves for Typical electricity grid



(source: World Nuclear Association Information Librar)

CO2 Emissions



Source: World Nuclear Association Website

The safety risk of energy sources

Severe accidents from 1969-2000 in fossil fuel, hydro, nuclear energy chains (5 or more fatalities)

Energy chain	OECD member states		Non-OECD member states	
	No. of accidents	Fatalities (persons)	No. of accidents	Fatalities (persons)
Coal	75	2259	1044	18017
Oil	165	3713	232	16505
Natural gas	90	1043	45	1000
LPG	59	1905	46	2016
Hydro	1	14	10	29924
Nuclear	0	0	1	31 ^{*1}

*1: Fatalities immediately after the accident only.

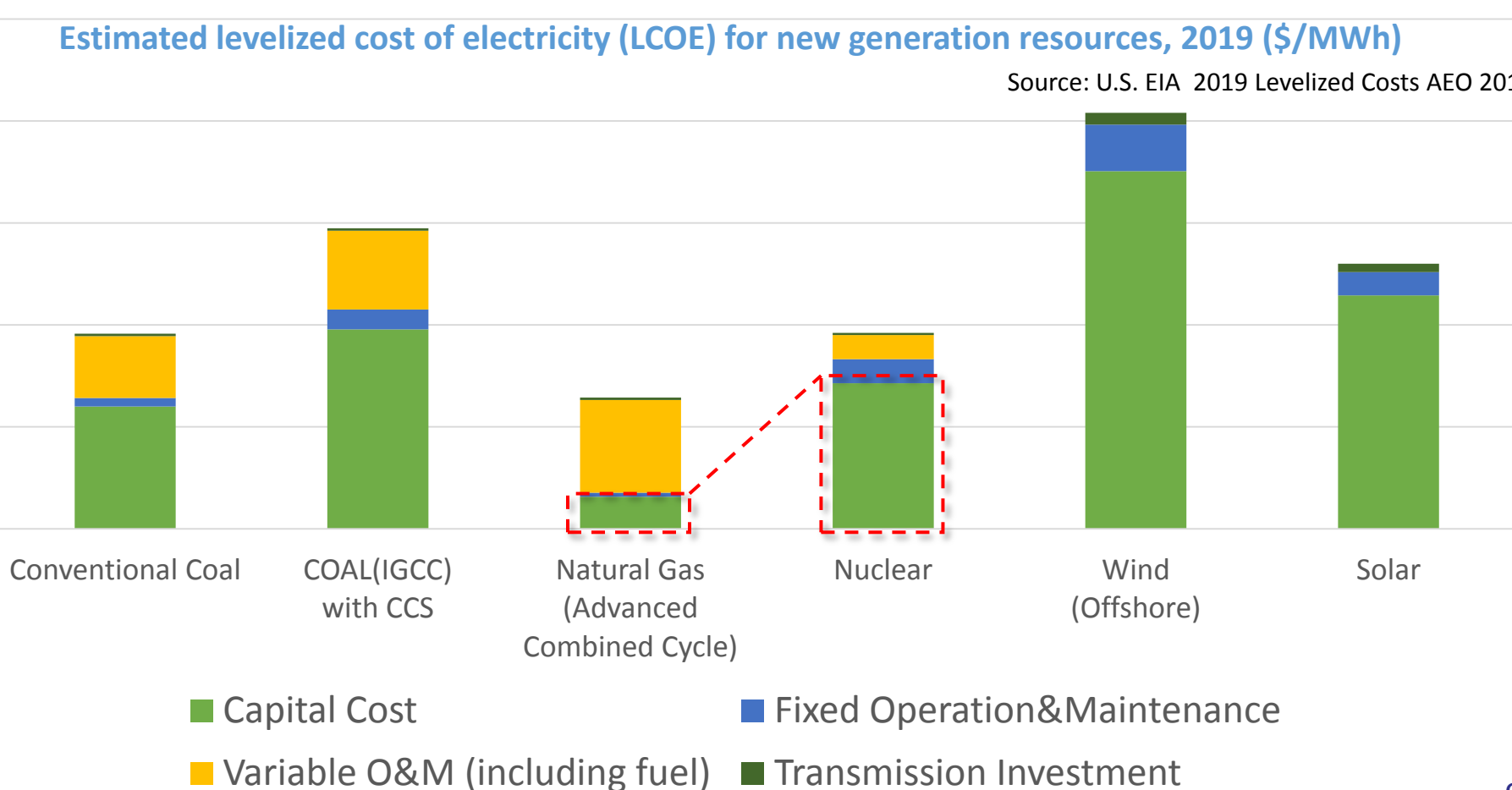
Source: OECD2010 NEA No.6861 "Comparing Nuclear Accident Risks with Those from Other Energy Sources"

Cost competitiveness of nuclear energy

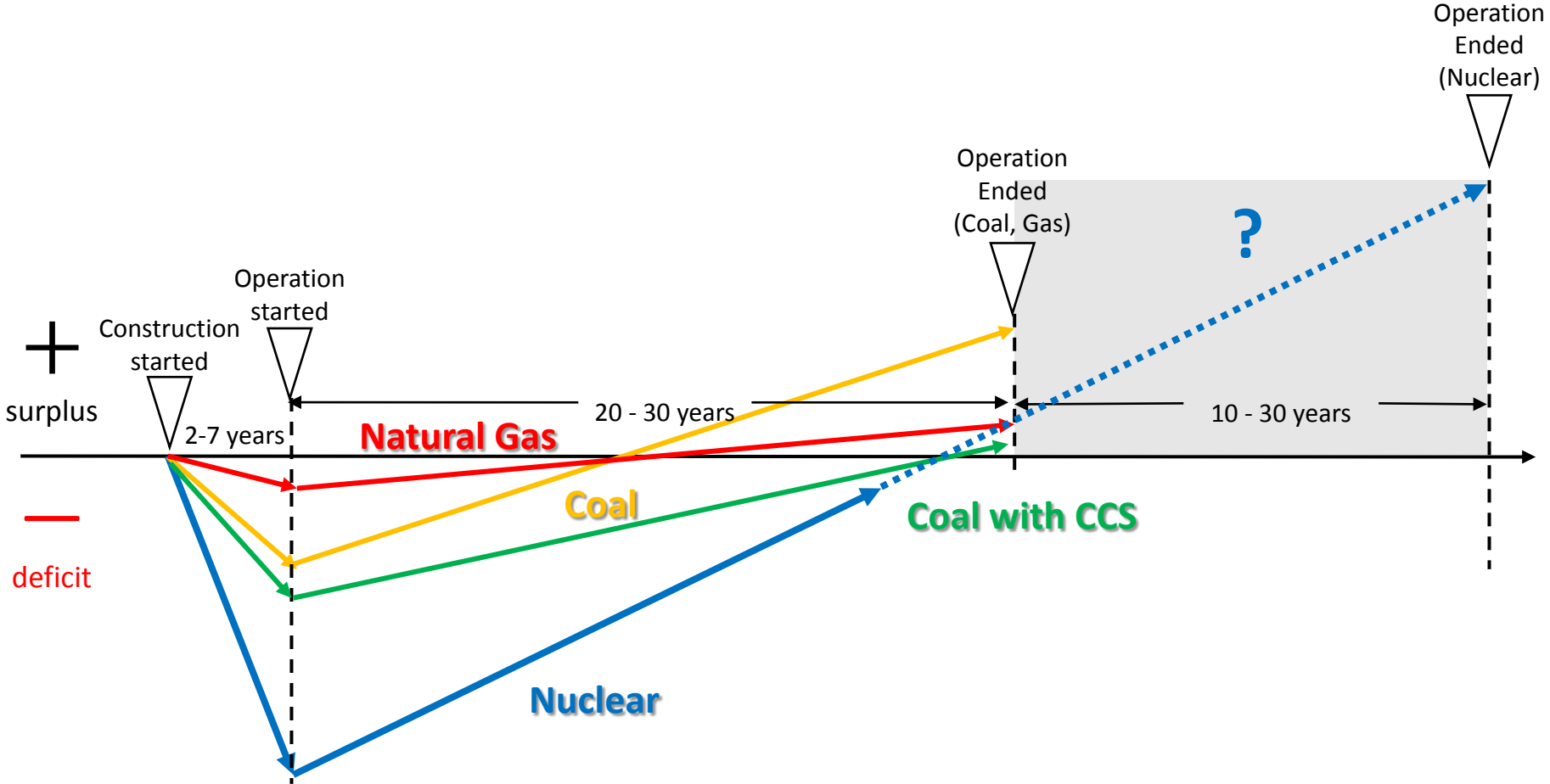
- Nuclear energy is competitive, but initial capital cost is high.

Estimated levelized cost of electricity (LCOE) for new generation resources, 2019 (\$/MWh)

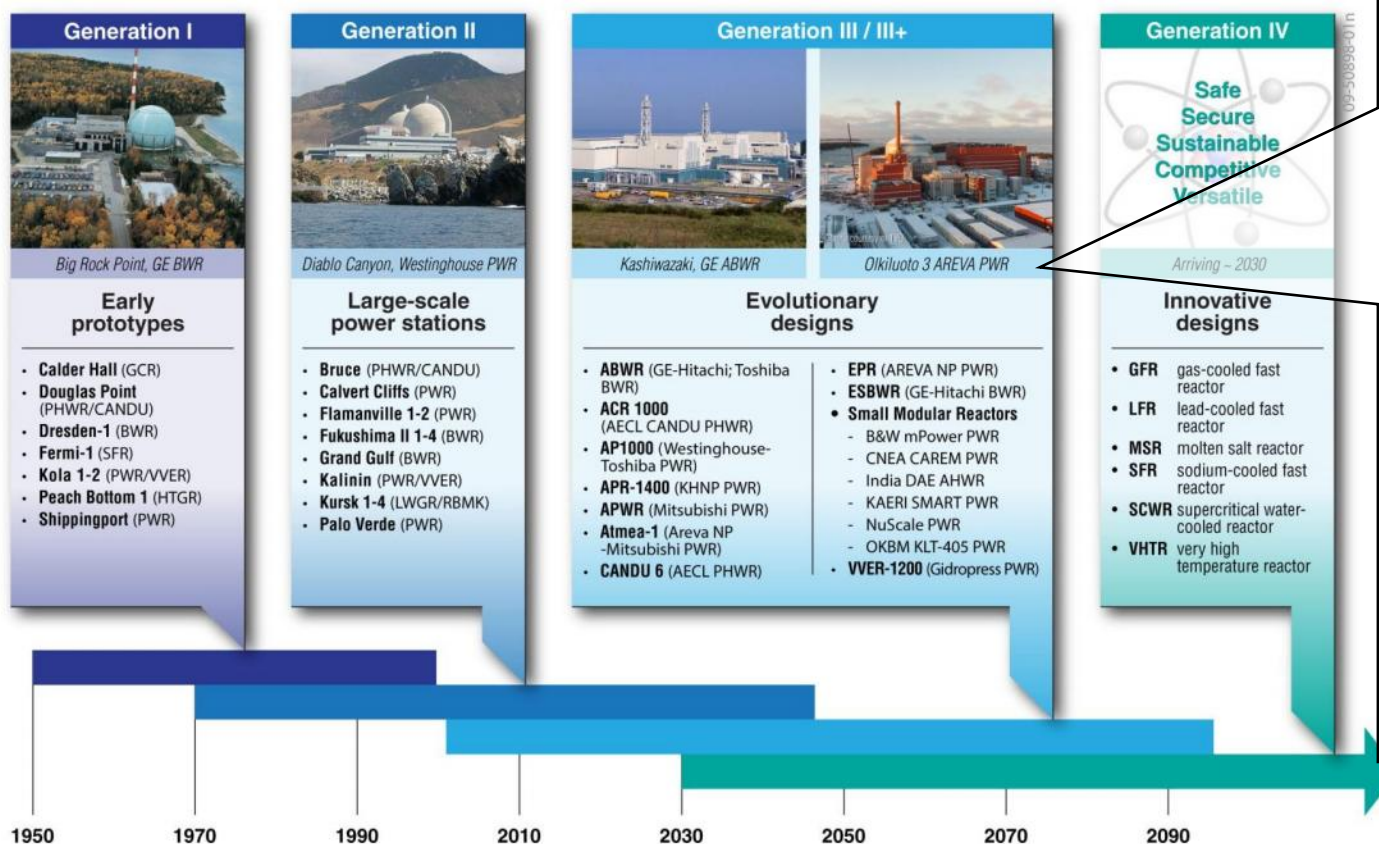
Source: U.S. EIA 2019 Levelized Costs AEO 2014



Power Plant Lifetime Costs



Nuclear plant technology progress



ABWR (GE-Hitachi; Toshiba BWR)
The first Generation III/III+ reactor to be fully built

APWR (Mitsubishi PWR)
Combination of passive and active systems

AP1000 (Westinghouse-Toshiba PWR)
Improved use of passive nuclear safety

Small Modular Reactors
Flexible, cost-effective energy alternative

Source: Generation IV International Forum (https://www.gen-4.org/gif/jcms/c_9260/public)

US/Japan Nuclear Power Cooperation



SPFUSA
Sasakawa Peace Foundation USA

Many years of official cooperation

- 1953 “Atoms For Peace” address in the U.N. assembly
- 1955 Agreement for Cooperation the US and Japan
Concerning Peaceful Uses of Nuclear Energy
(1957 JPR-1 went first critical)
(1969 Tsuruga Power Station went first critical)
- 1968 Conclusion of Treaty on the Non-Proliferation of Nuclear Weapons
- 1988 Revision of Agreement for Cooperation the US and Japan
Concerning Peaceful Uses of Nuclear Energy

Strong partnership between Japan and US

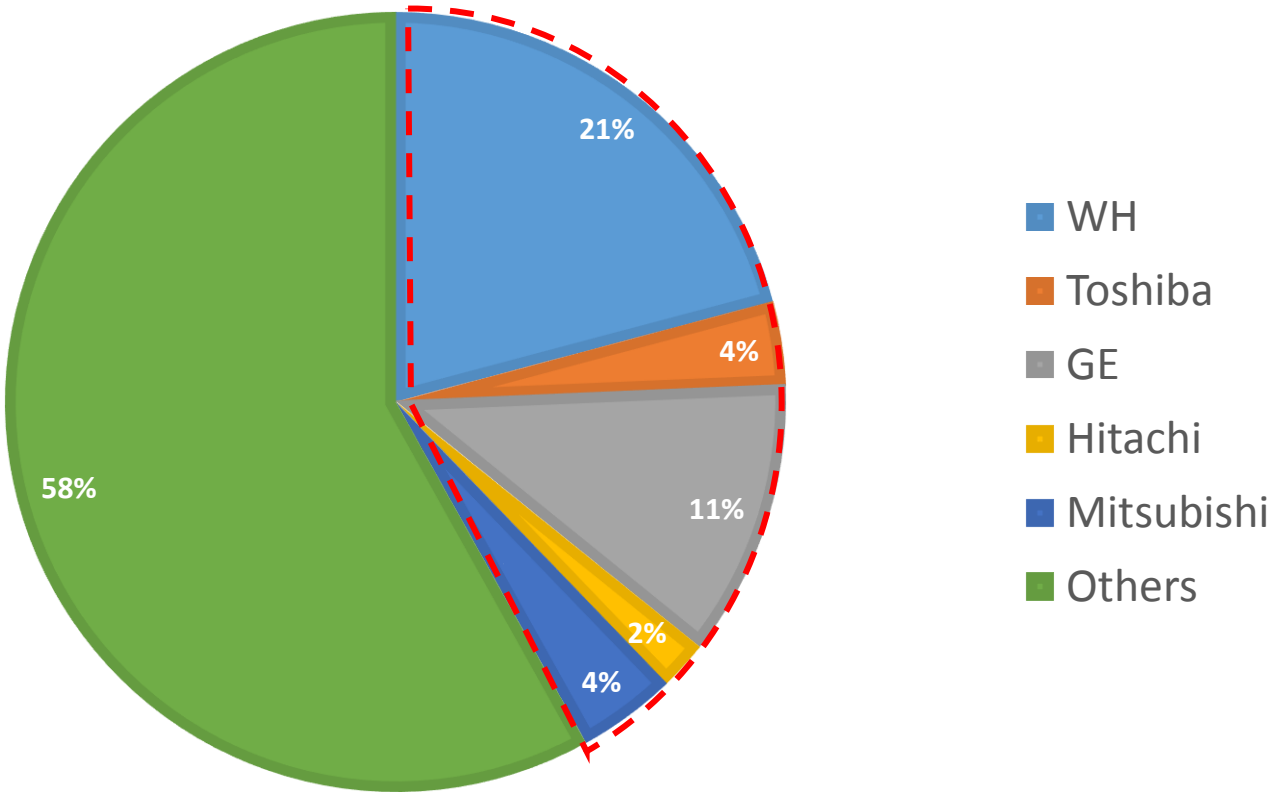


imagination at work

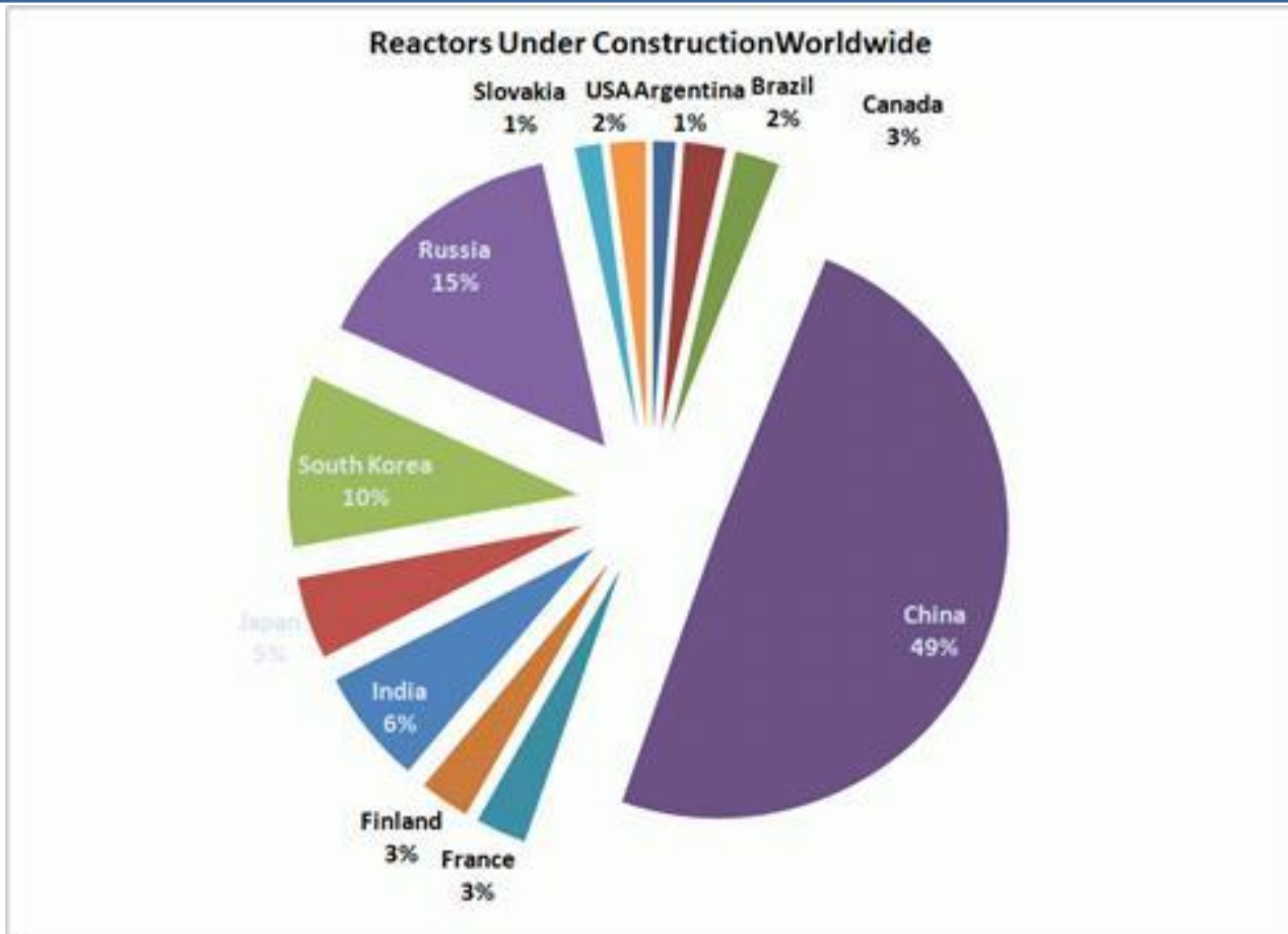


US and Japanese in the World Market

MARKET SHARE OF EXISTING NUCLEAR REACTORS (2005)



Current Nuclear Reactor Construction



The Future of the US and Japan in the international nuclear power market

- If Japan does not restart its reactors, and if the United States does not replace its aging reactors:
 - Will other countries purchase nuclear power plants from the US and Japan?
 - Will the US and Japan have influence on international rules for handling nuclear waste ?
 - Will the United States and Japan be able to maintain nuclear power research and operational human capital ?
 - Will the United States and Japan be able to keep their leadership in the international nonproliferation regime?

Recommendations



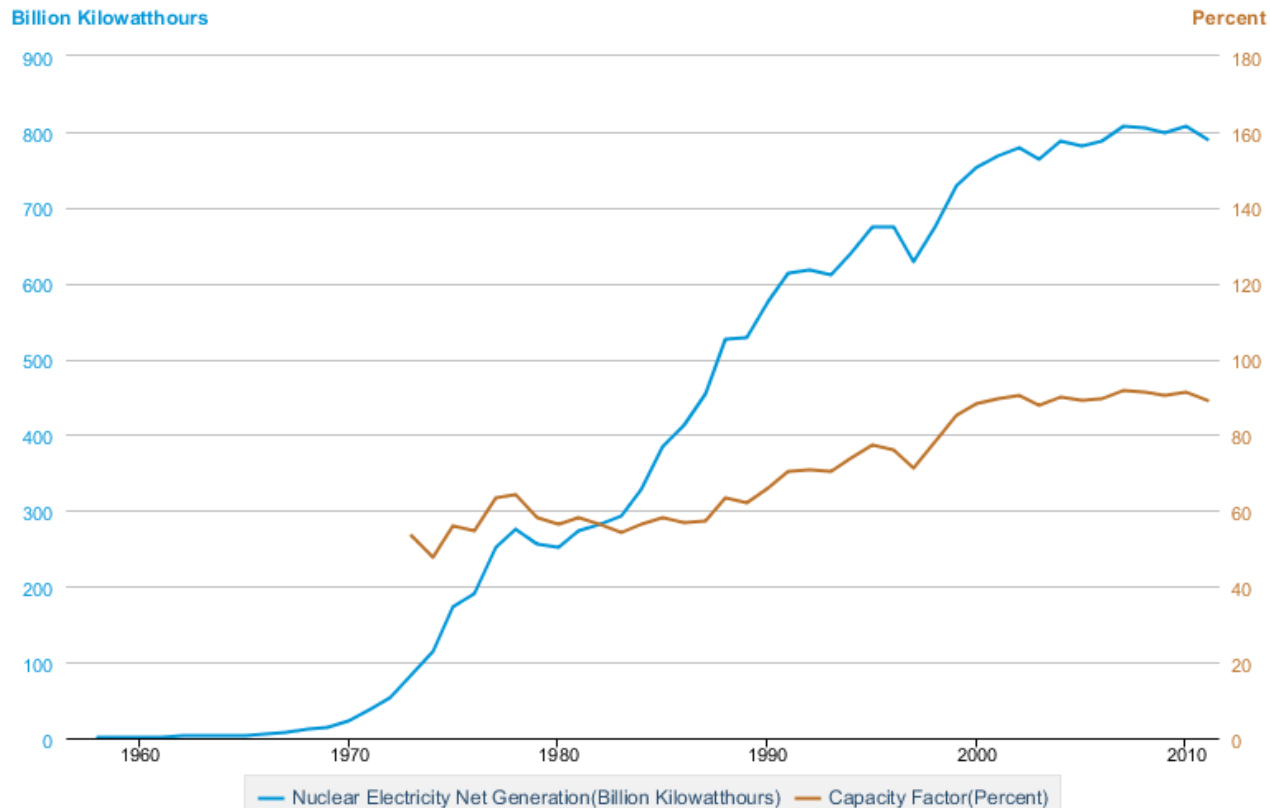
SPFUSA
Sasakawa Peace Foundation USA

Regaining Public Trust in Japan

- Restarting at least a portion of its idle nuclear power plants
- Establishing the independence and competence of the new Nuclear Regulation Authority
- Completing the cleanup of Fukushima and surrounding areas.

Recovery of the public trust in safety

Nuclear Power Plant Operations, 1957-2011



Source: EIA website

The NRA – An effective and reliable regulator

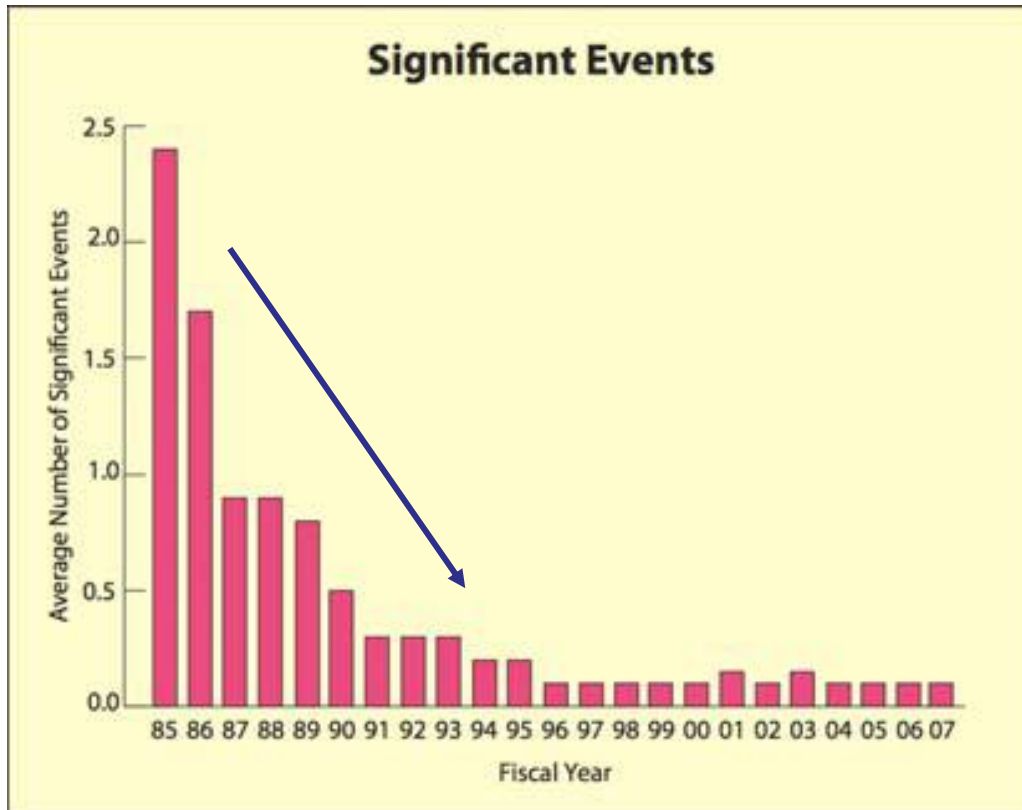
- The independence of the NRA is an important first step.
- Industry expertise and input is important, but standards must be set by the NRA.
- NRA must partner with industry and universities while maintaining its independence
- Train and inspect, then train and inspect again.

Nuclear Industry - Manufacturers and Power Companies

- Nuclear industries must continue to work on new regulations and improve nuclear safety culture.
- Strengthening JANSI, there must be cooperation for greater safety:
 - Sharing best practices
 - Cooperating to fix problems
 - Assisting in case of emergencies

Improvement is possible

- Twenty years of continual improvement in the United States



Source: “Plant Safety Performance After the TMI-2 Accident” U.S. NRC

Managing Nuclear Plant Construction Costs

- Reliability of new design construction costs
- Stability of long-term electrical rates
- Low-carbon preferences in pricing
- Stability of regulatory environment

Nuclear Power and Nuclear Proliferation - Connecting the dots

- Current negotiations with Iran dramatize the relationship between nuclear power and nuclear weapons.
- US and Japanese leadership is essential for a growing world nuclear power sector that does not risk nuclear weapons proliferation.
- US and Japan must develop new power plant designs that are both safer to operate and produce safer nuclear waste

The Nuclear Power Challenge

- Regain Japanese public confidence in nuclear power.
- Build public understanding of the link between a healthy nuclear power industry and a safer world.
- Maintain and reinforce US-Japan cooperation on these issues.