Coal Strategy of Japan: A Personal View

(excerpt from the paper in Japanese http://ieei.or.jp/2019/06/sugiyama190620/)

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September 9th

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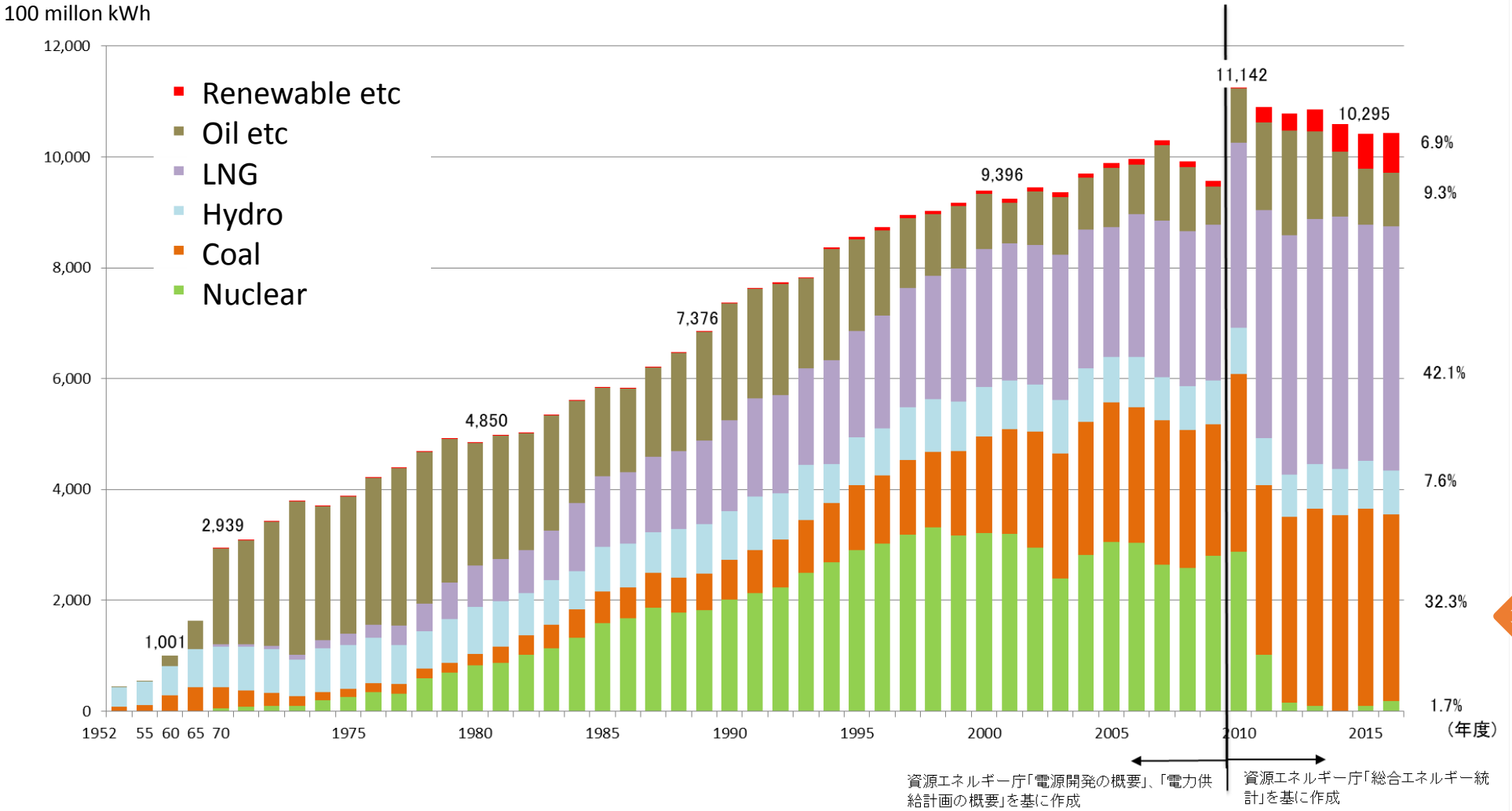
1 Coal for Energy Security

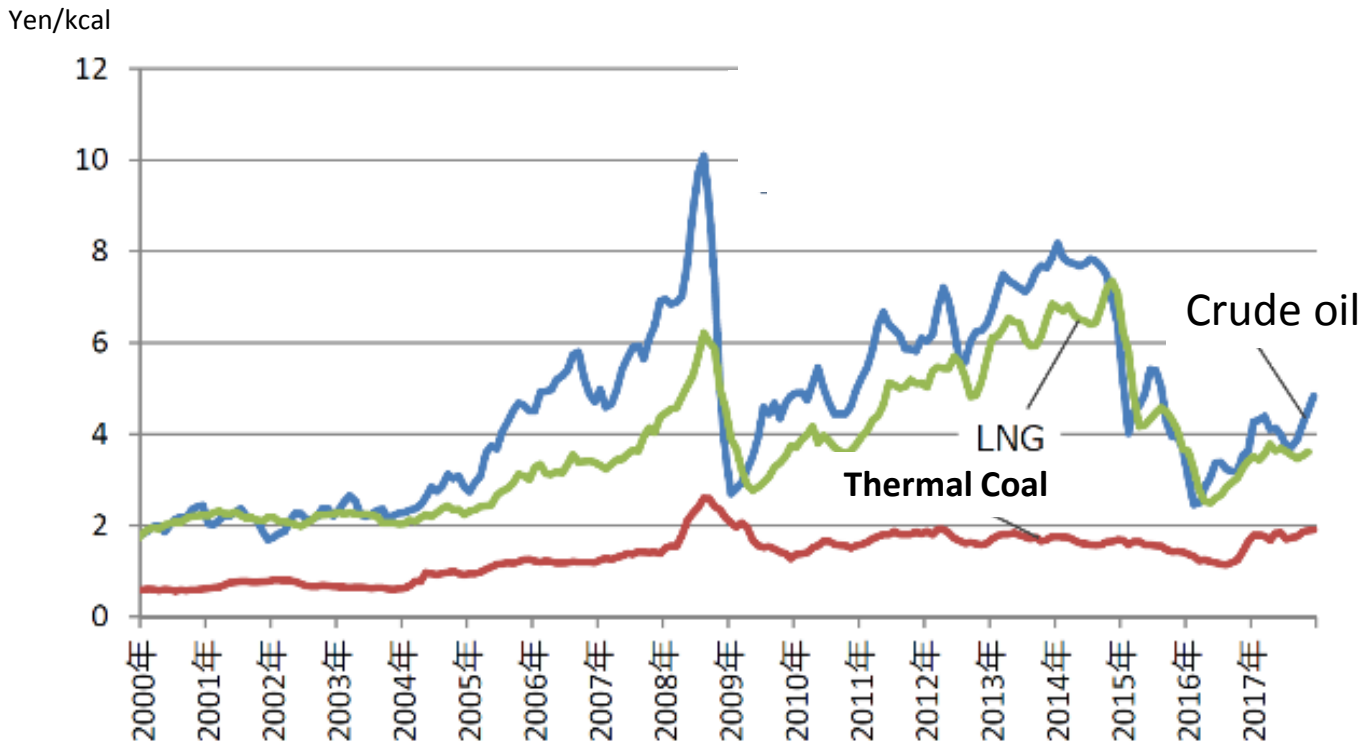


←Coal

図 1　Power Generation Mix of Japan (kWh) Soucce: GOJ
https://www.enecho.meti.go.jp/about/whitepaper/2018html/2-1-4.html

Japan increased coal power after oil shocks

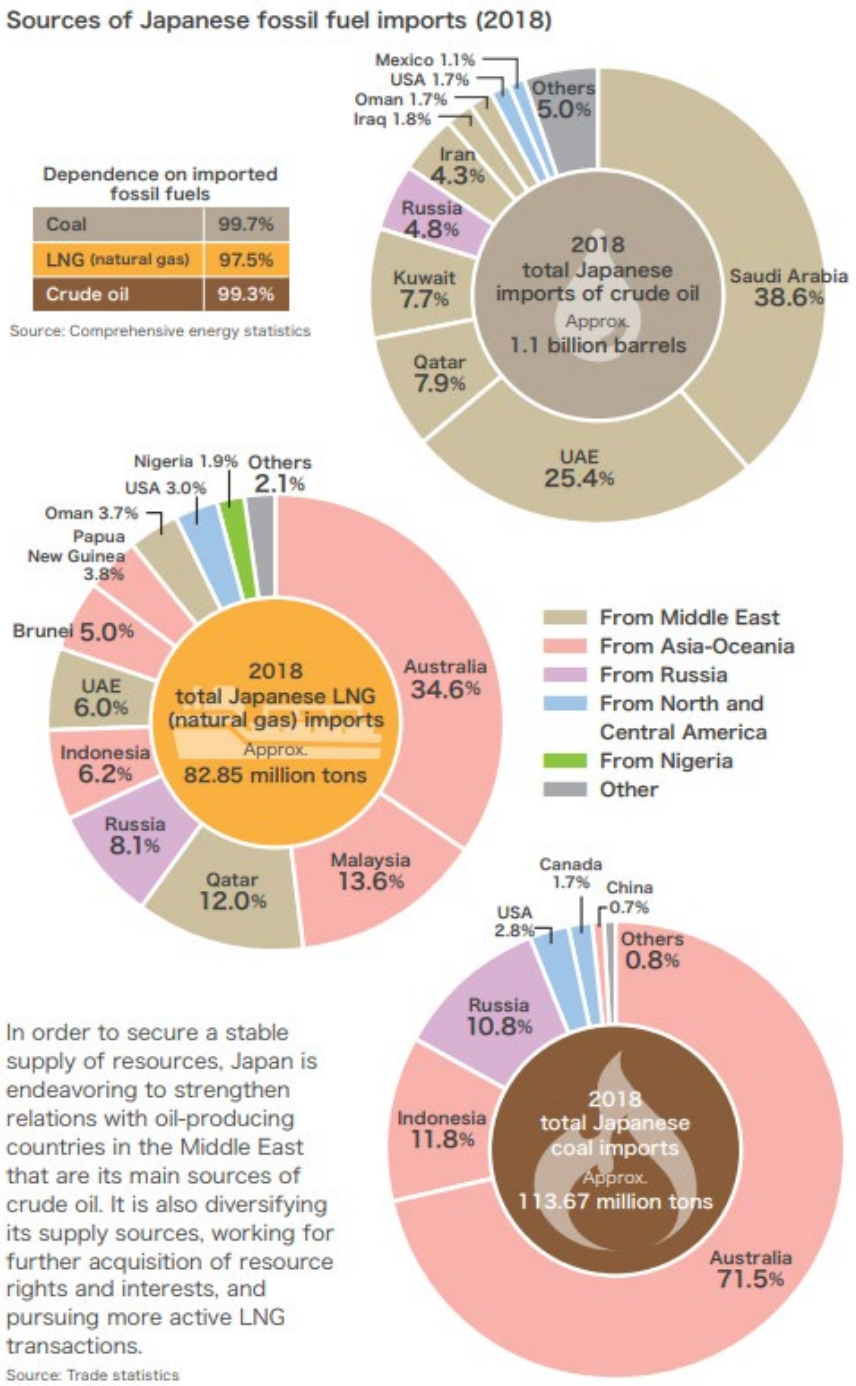
Fuel Price (CIF)



Source; GOJ
https://www.enecho.meti.go.jp/about/special/shared/img/rai0-2avl52ef.png

Coal price stable; Oil and gas price unstable & correlated

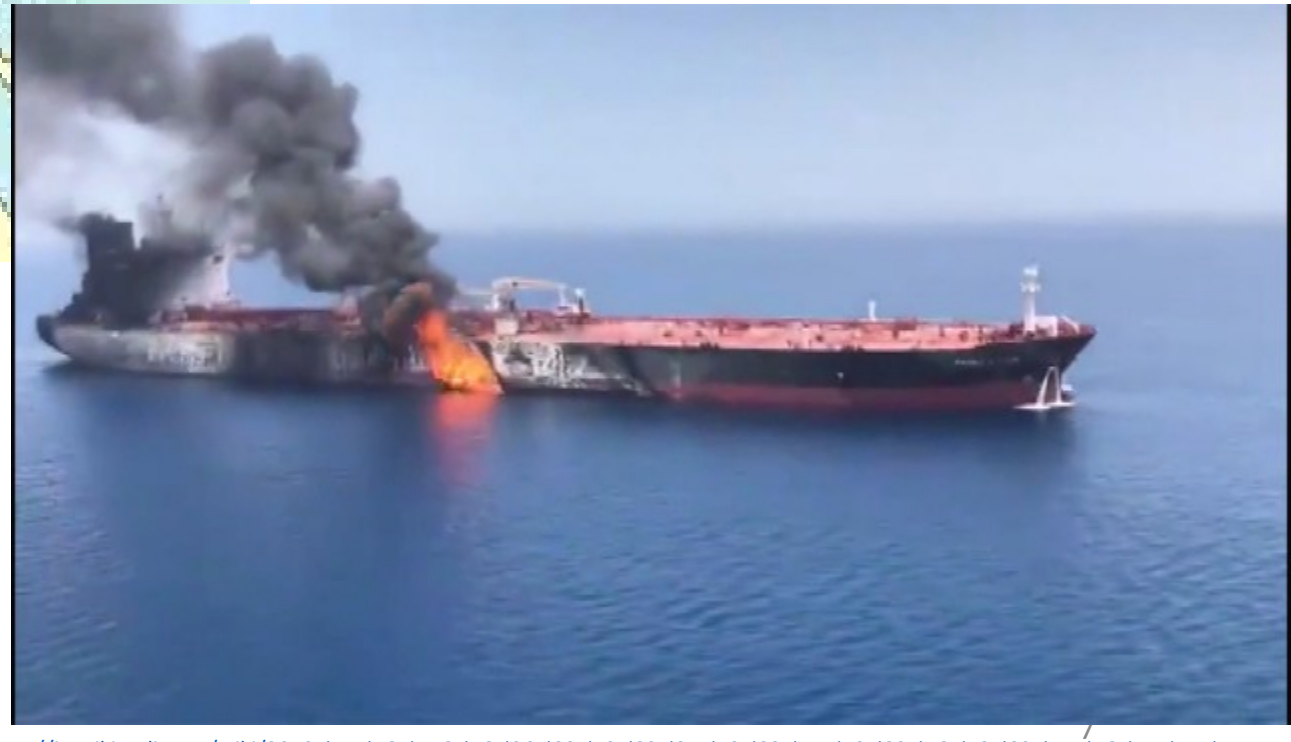
90% of oil & 20% of gas depends on middle east



Souce GOJ
https://www.enecho.meti.go.jp/about/special/johoteikyo/sekitanyakuwari.html

https://www.meti.go.jp/committee/materials/downloadfiles/g60926d18j.pdf

Hormuz Strait

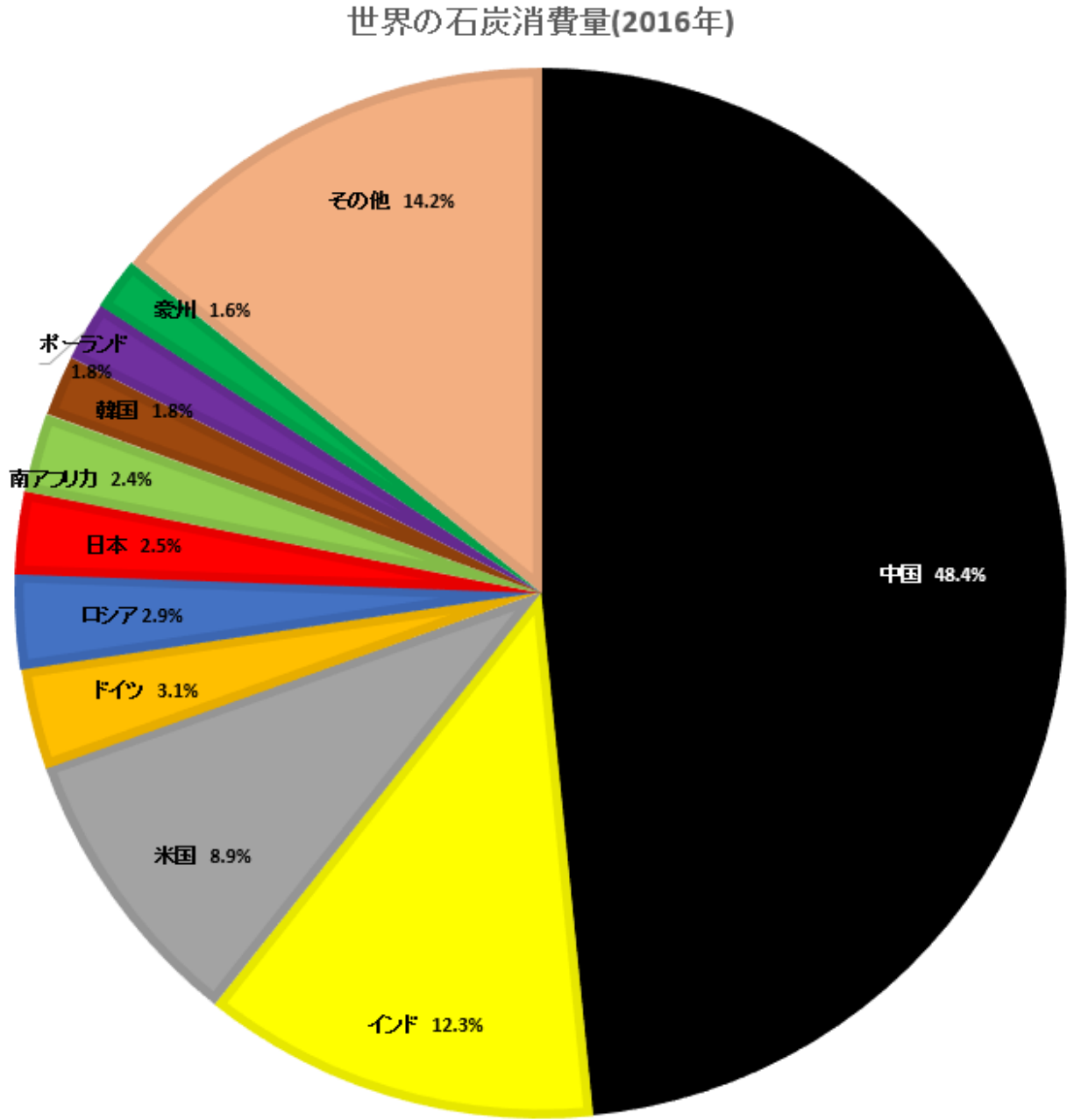


https://ja.wikipedia.org/wiki/2019%E5%B9%B46%E6%9C%88%E3%83%9B%E3%83%AB%E3%83%A0%E3%82%BA%E6%B5%B7%E5%B3%A1%E3%82%BF%E3%83%B3%E3%82%AB%E3%83%BC%E6%94%BB%E6%92%83%E4%BA%8B%E4%BB%B6

2 Coal for Sustainable Development

Most coal is consumed in Asia

Only small consumers have declared “coal free” (except Germany)



http://ieei.or.jp/2019/05/sugiyama190520/?type=print

データは資源エネルギー庁による
https://www.enecho.meti.go.jp/about/whitepaper/2018html/2-2-2.html

Countries with coal power dependency >30%

Non-Asia

Germany	37%
Poland	79%
Check	52%
Ukraine	32%
Turkey	33%
South Africa	88%
USA	31%

Asia

Japan	37%
China	79%
Korea	52%
India	32%
Australia	33%
Indonesia	88%
Malaysia	31%
Vietnam	39%

Asia Pacific	60%
World	38%

(in 2017. source: GOJ)

Asians plan more coal power

- List of Non-OECD countries plan to increase coal power capacity. Numbers: current coal dependency of power

Philipines	45%
Indonesia	56%
Vietnam	30%
Myanmer	2%
Thailand	19%
Cambosia	48%
India	75%
China	70%

(source: GOJ. numbers in 2015.)

Coal for SDGs

- Stable and cheap power is the key to achieve *all* SDGs
- Technological solution exists & affordable for air, water and waste

Personal trip to Myanmar, 2016 –

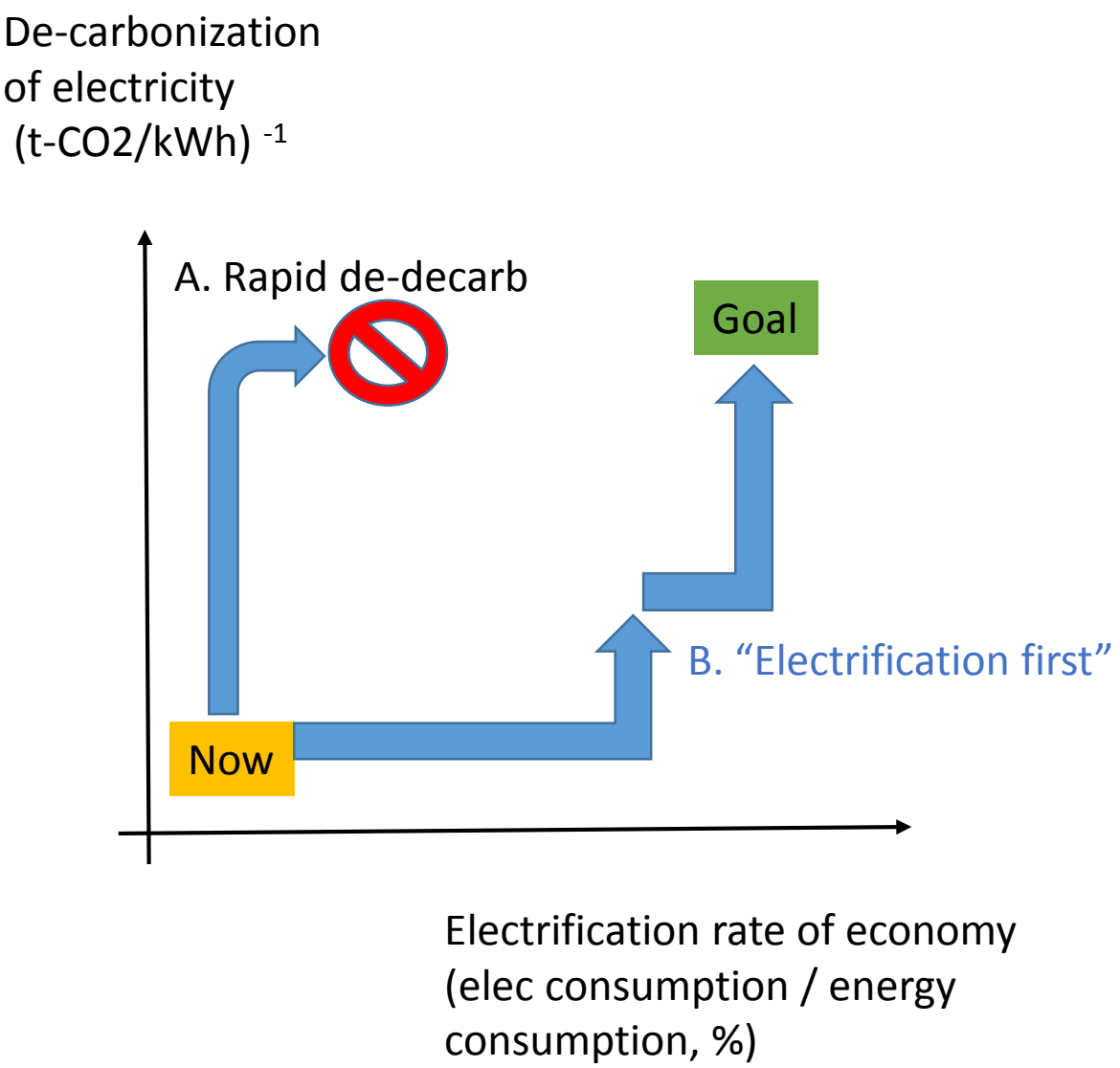
- Poor power supply (dark workplace, frequent black out) undermined health and productivity.
- Timber exported to China for processing. Poor power supply hindered to build a timber processing factory despite poor hard workers.

3 Coal for big CO2 cut

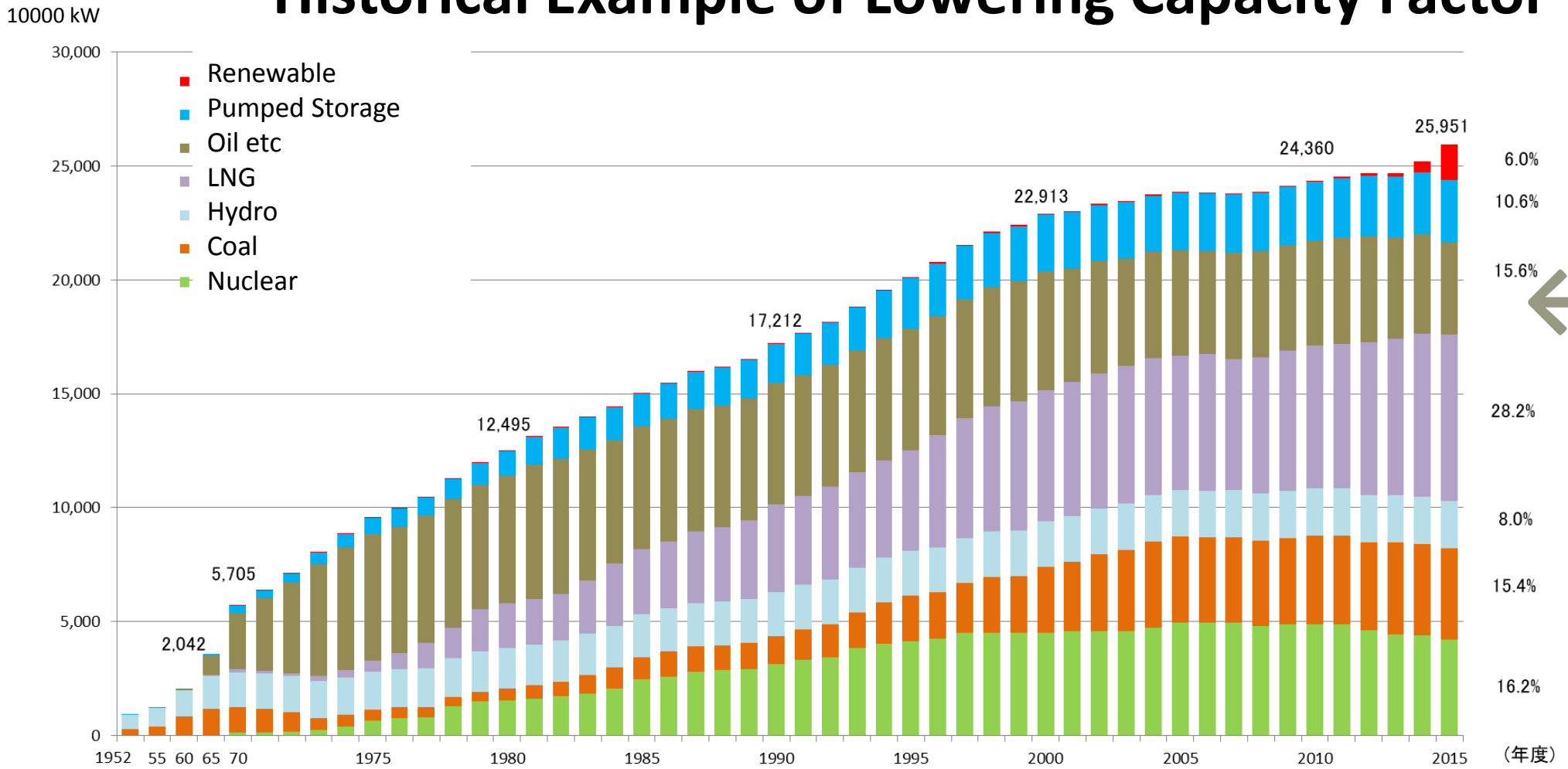
- For big CO2 cut, de-carbonization of electricity & electrification of economy is a must.
- Two strategies:

➢A. Rapid de-decarbonization with high electricity tariff hinders electrification – it does not work.

➢B. “Electrification first” with stable and cheap electric costs, then decarbonize – coal play a key role



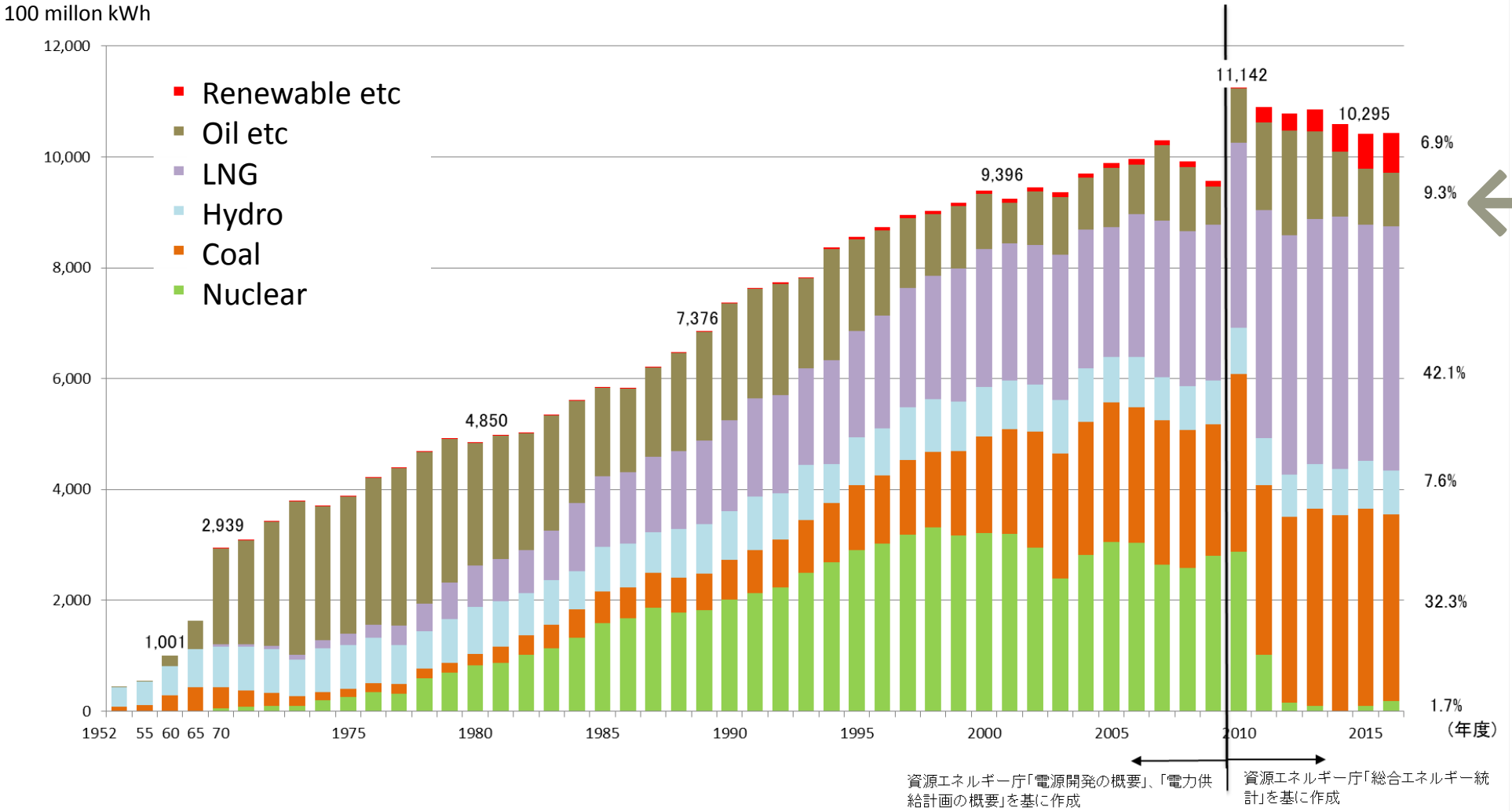
Historical Example of Lowering Capacity Factor



←OIL

Source: GOJ
https://www.enecho.meti.go.jp/about/whitepaper/2017html/2-1-4.html

While Japan keeps large OIL power capacity, …



←OIL

Souce: GOJ
https://www.enecho.meti.go.jp/about/whitepaper/2018html/2-1-4.html

Power (kWh) by OIL decreased by lowering capacity factor

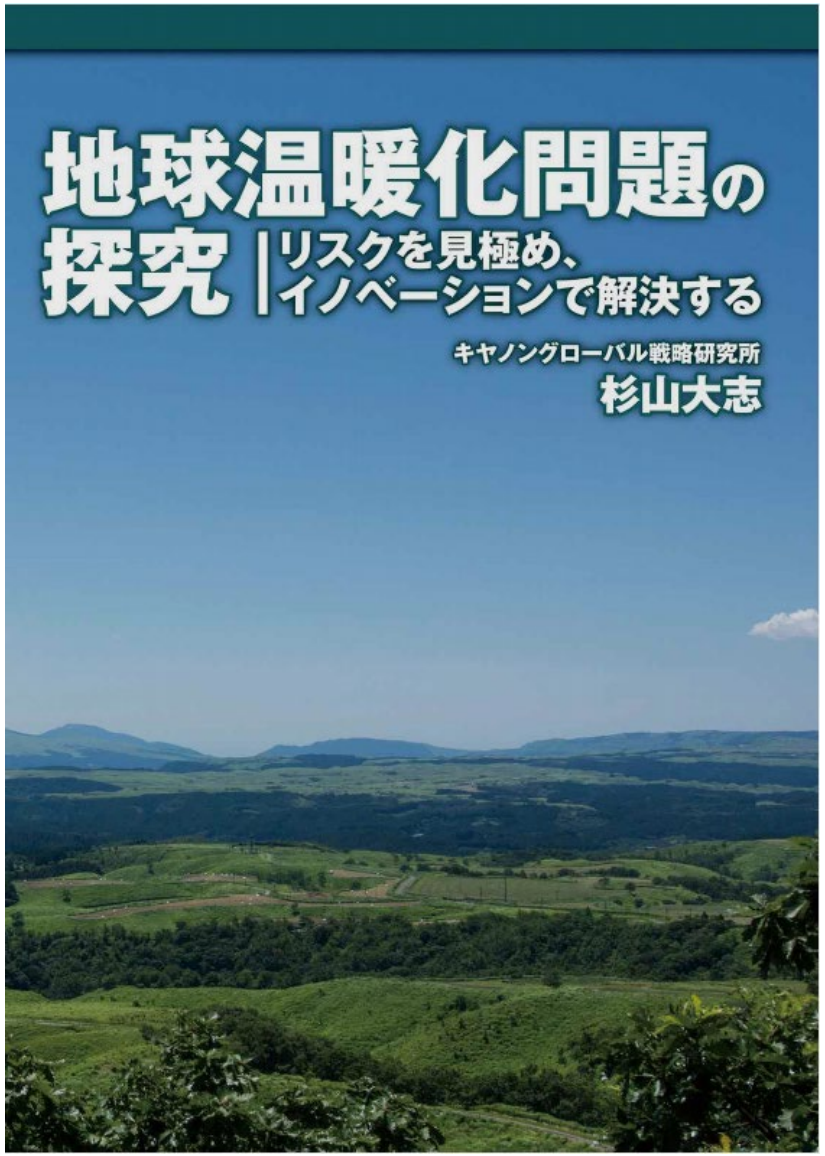
De-carbonization strategy

- Japan must depend on coal for energy security as of now.
- “Electrification first” – coal play key role for stable & cheap power supply
- De-carbonization by lowering capacity factor if situation changes.
- Potential situation changes by 2050:

1. Shale gas tech improves and international gas market matures, providing stable and cheap LNG
2. Nuclear play major role
3. Renewable and battery technologies improve, providing stable and cheap power
4. Geopolitically stable Middle East, stable and cheap oil supply.

- The strategy would be applicable to other coal dependent countries too.

PR



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