

# Coal Strategy of Japan: A Personal View

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

Taishi Sugiyama

The Canon Institute for Global Studies

September 9<sup>th</sup>

Japan Coal Energy Center, Japan



# Contents

1. Coal for Energy Security
2. Coal for Sustainable Development
3. Coal for big CO2 cut

# 1 Coal for Energy Security



100 million kWh

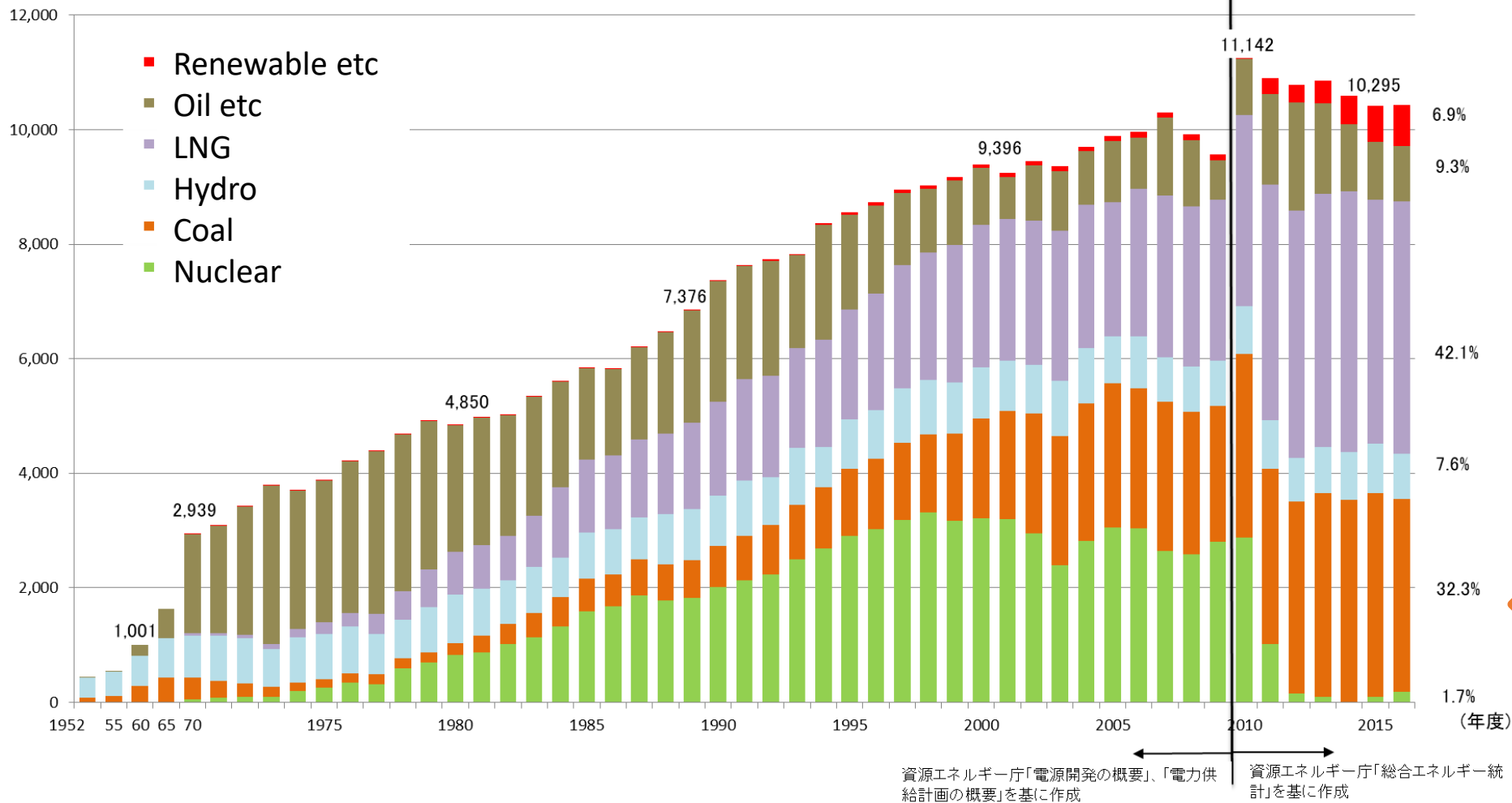
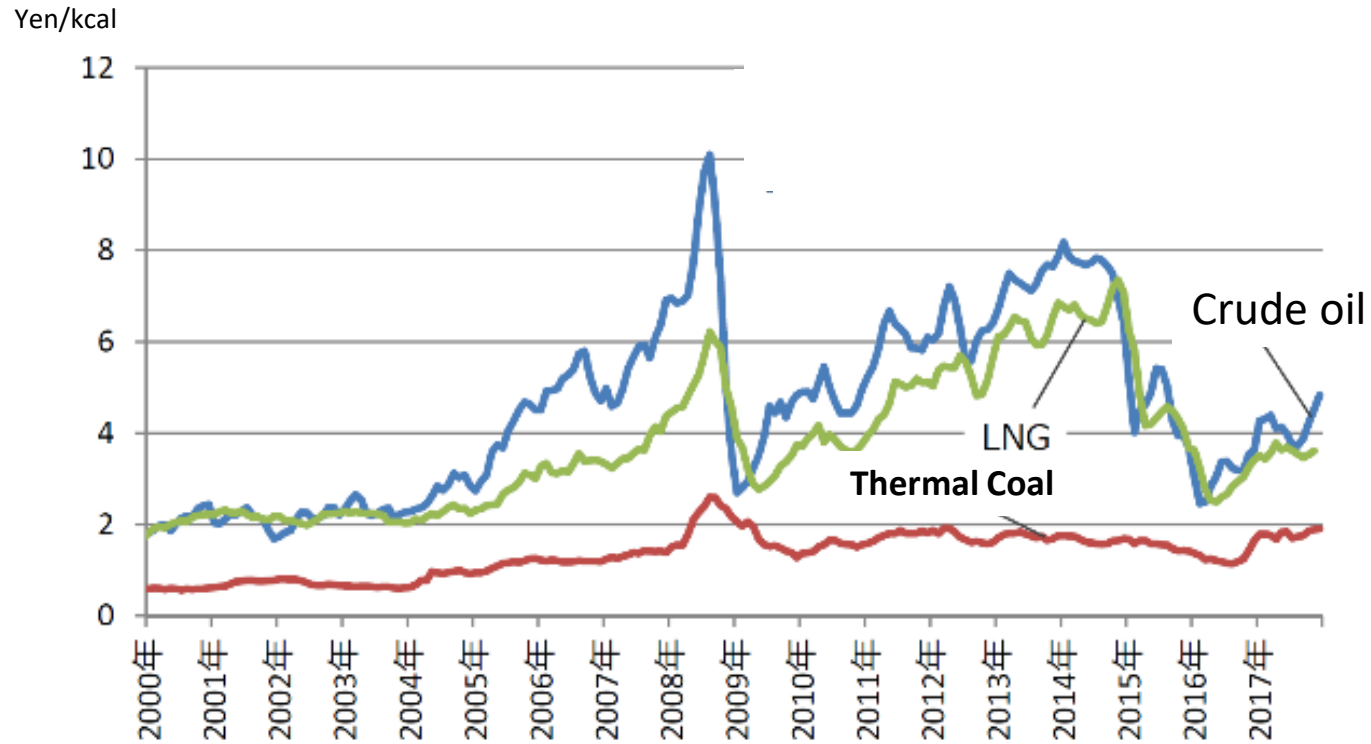


図 1 Power Generation Mix of Japan (kWh) Source: GOJ

<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/rai0-2av152ef.png>

**Coal price stable; Oil and gas price unstable & correlated**

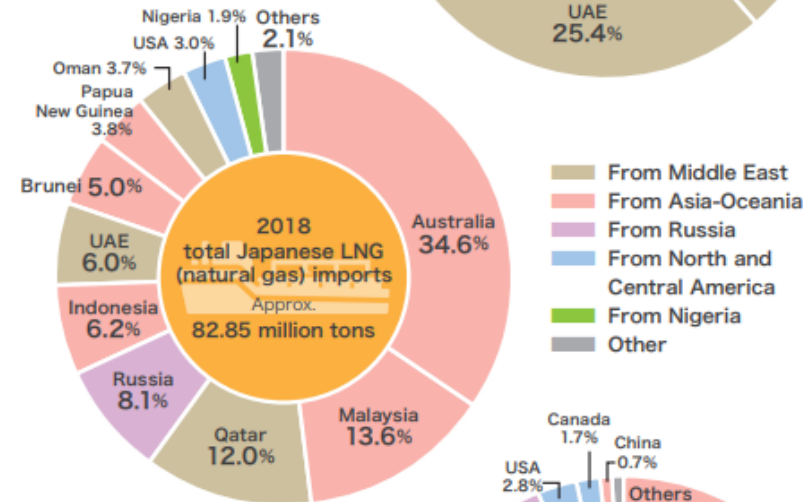
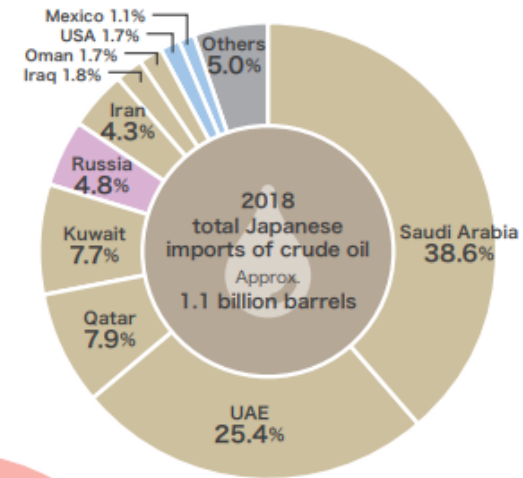
# 90% of oil & 20% of gas depends on middle east

Sources of Japanese fossil fuel imports (2018)

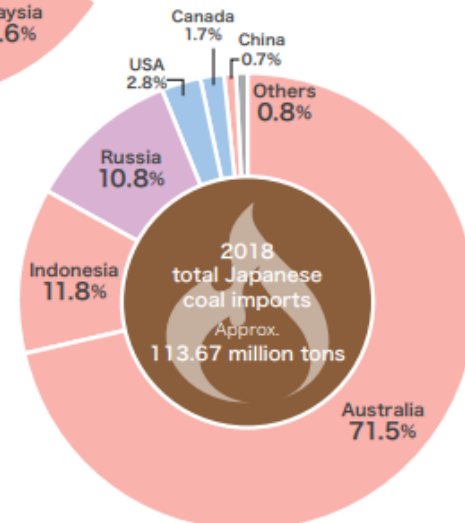
Dependence on imported fossil fuels

Coal	99.7%
LNG (natural gas)	97.5%
Crude oil	99.3%

Source: Comprehensive energy statistics



- From Middle East
- From Asia-Oceania
- From Russia
- From North and Central America
- From Nigeria
- Other



In order to secure a stable supply of resources, Japan is endeavoring to strengthen relations with oil-producing countries in the Middle East that are its main sources of crude oil. It is also diversifying its supply sources, working for further acquisition of resource rights and interests, and pursuing more active LNG transactions.

Source: Trade statistics

Source GOJ

<https://www.enecho.meti.go.jp/about/special/johoteikyo/sekitanyakuwari.html>



The Canon Institute for Global Studies



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

# Hormuz Strait

<https://ja.wikipedia.org/wiki/2019%E5%B9%B4%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>

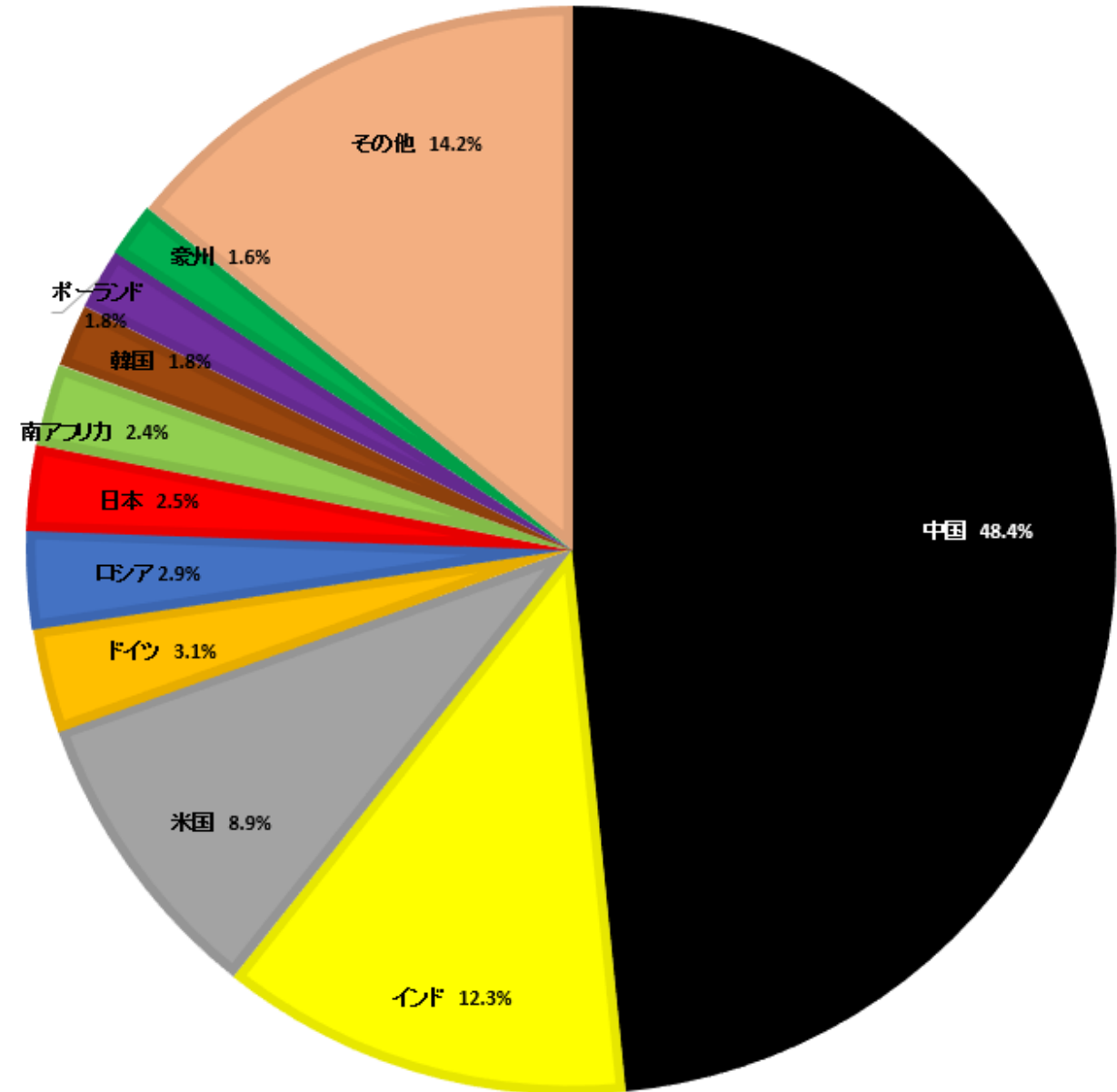
# 2 Coal for Sustainable Development





**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

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

## Asia

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

<b>Asia Pacific</b>	<b>60%</b>
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

<b>Philippines</b>	<b>45%</b>
Indonesia	56%
Vietnam	30%
Myanmar	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



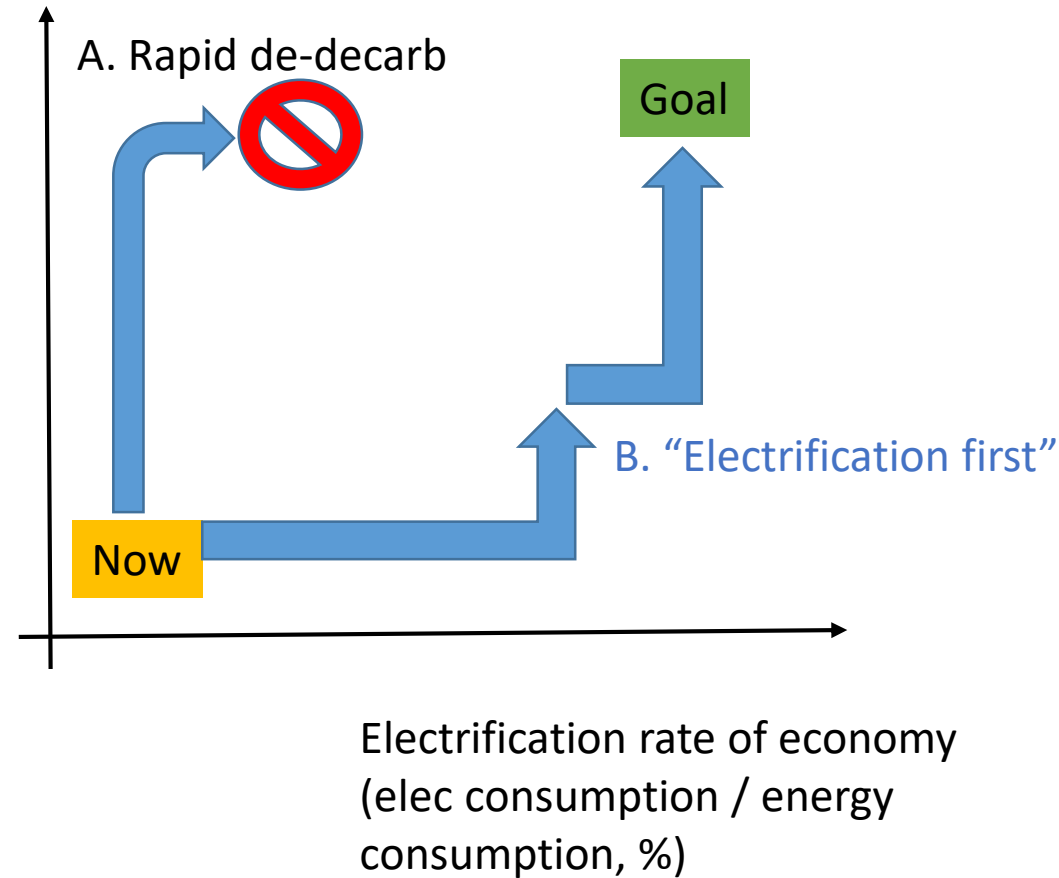
Personal trip to Myanmar, 2016 –

- 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.

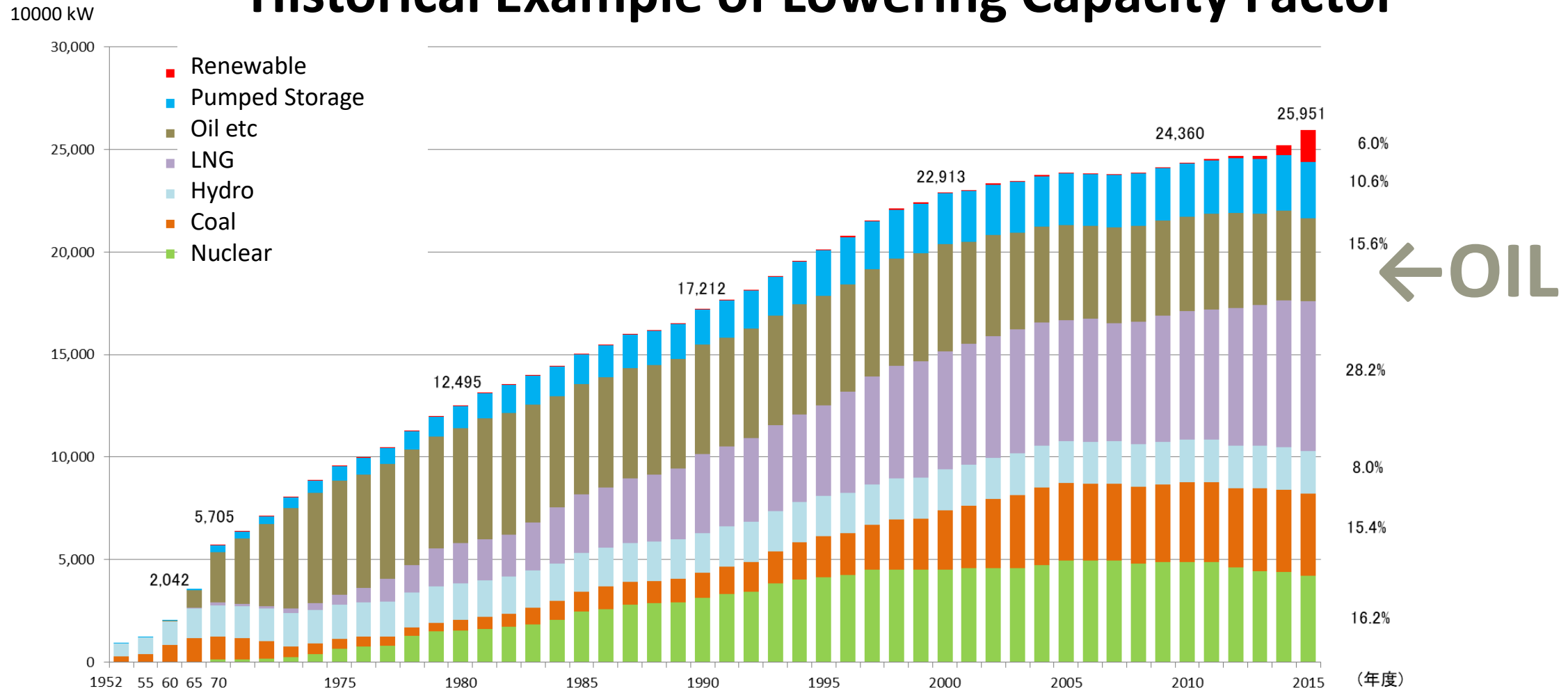
# 3 Coal for big CO2 cut

- 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

De-carbonization of electricity  
(t-CO2/kWh)<sup>-1</sup>



# Historical Example of Lowering Capacity Factor

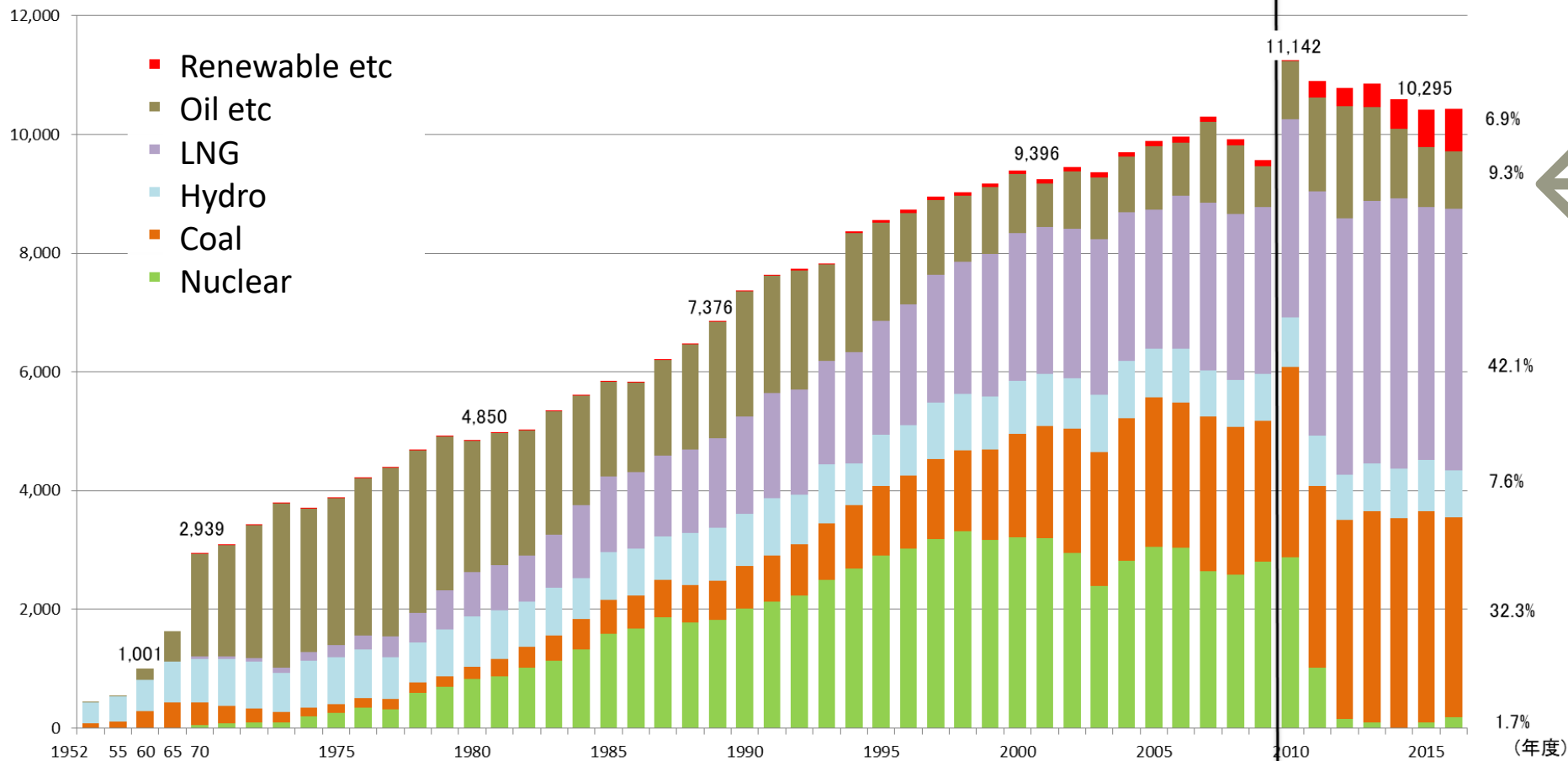


Source: GOJ

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

## While Japan keeps large OIL power capacity, ...

100 million kWh



資源エネルギー庁「電源開発の概要」、「電力供給計画の概要」を基に作成  
資源エネルギー庁「総合エネルギー統計」を基に作成

Source: GOJ

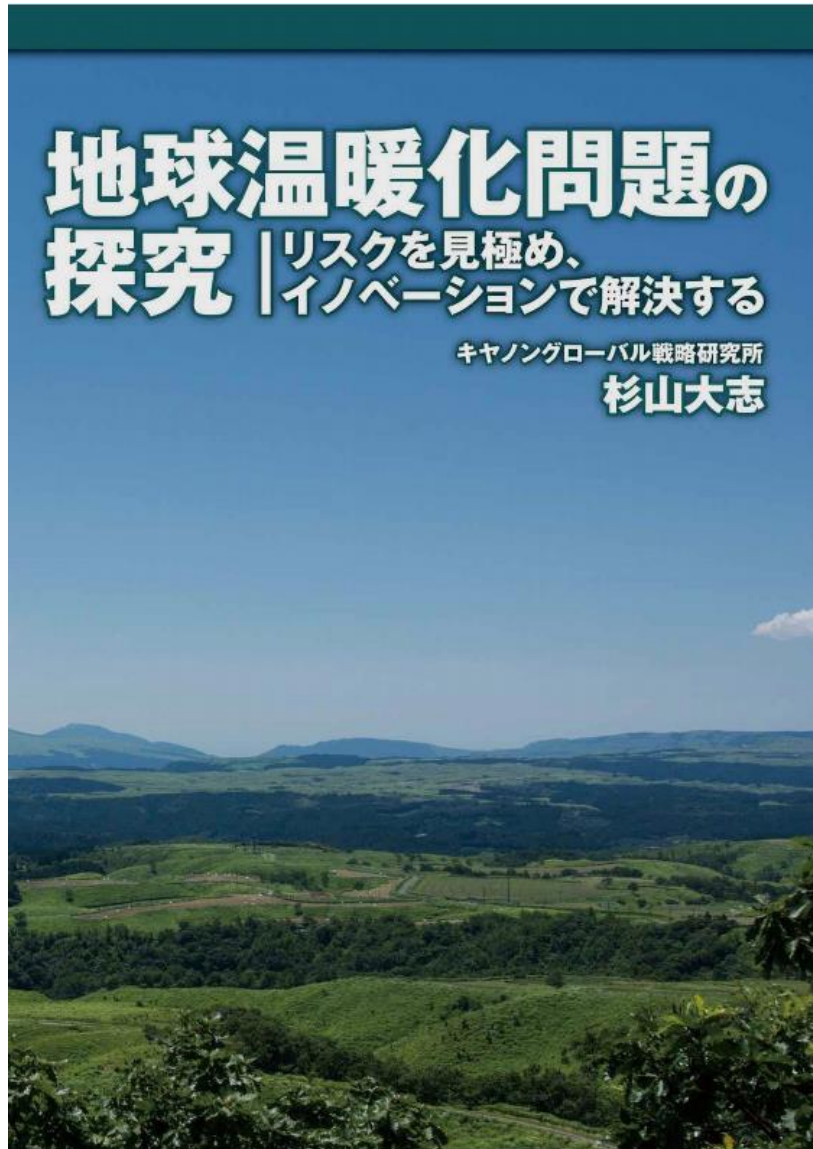
<https://www.enecho.meti.go.jp/about/whitepaper/2018html/2-1-4.html>

# 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.





- 第I部 地球温暖化リスクへの対応戦略  
第II部 イノベーションによる温室効果ガス排出削減シナリオ  
第III部 温暖化対策のイノベーションを促進する為の政策のあり方

出版社 デジタルパブリッシングサービス  
ISBN 9784861433443

1) ペーパーバック 2,510円

[www.amazon.co.jp/dp/B07L3YVHDZ](http://www.amazon.co.jp/dp/B07L3YVHDZ) 他

2) 電子書籍 108円

Amazon、楽天ブックス、Yahoo!ブックストア、honto、BookLive!、eBookJapan 他