Climate Change and Energy [Transition] Policy in Japan

Aug. 17, 2018@Foresight Forum-Toward Sustainability
Transition Driven by Climate Change

Koichi HASEGAWA

Tohoku University, Sendai, Japan
k-hase@m.tohoku.ac.jp
Research Questions

• Why no transition of climate change and energy policy in Japan?
• Outlines of climate change policy
• Outlines and the debate of nuclear energy policy
• What are strategies, tactics and effective political routes to shift the government climate change and energy policy?
<table>
<thead>
<tr>
<th>Country</th>
<th>2008</th>
<th>2013</th>
<th>2020〜</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>6% ↓ (1990)</td>
<td>not ratified</td>
<td>3.8% ↓ (2005)</td>
</tr>
<tr>
<td></td>
<td>(base year)</td>
<td></td>
<td>26% [18%] ↓ (2013 [1990])</td>
</tr>
<tr>
<td>EU</td>
<td>8% ↓ (1990)</td>
<td>20% ↓ (1990)</td>
<td>40% (1990) ↓</td>
</tr>
<tr>
<td>US</td>
<td>not ratified</td>
<td></td>
<td>17% ↓ (2005)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2025 ↓ 26〜28% (2005)</td>
</tr>
<tr>
<td>China</td>
<td>no target as non-Annex I parties</td>
<td></td>
<td>40〜45% ↓ (2005: per GDP)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>60〜65% ↓ (2005: per GDP)</td>
</tr>
</tbody>
</table>
CO₂ emissions by countries, MoE data

主な国別エネルギー起源CO₂排出量の推移

<table>
<thead>
<tr>
<th>国家</th>
<th>1990</th>
<th>2012</th>
<th>変化率</th>
</tr>
</thead>
<tbody>
<tr>
<td>中国</td>
<td>22.8</td>
<td>82.5</td>
<td>+262%</td>
</tr>
<tr>
<td>アメリカ</td>
<td>48.7</td>
<td>50.7</td>
<td>+4%</td>
</tr>
<tr>
<td>EU28ヶ国</td>
<td>40.7</td>
<td>35.0</td>
<td>-14%</td>
</tr>
<tr>
<td>インド</td>
<td>5.8</td>
<td>19.5</td>
<td>+237%</td>
</tr>
<tr>
<td>ロシア</td>
<td>21.8</td>
<td>16.6</td>
<td>-24%</td>
</tr>
<tr>
<td>日本</td>
<td>10.6</td>
<td>12.2</td>
<td>+16%</td>
</tr>
<tr>
<td>オーストラリア</td>
<td>4.3</td>
<td>5.3</td>
<td>+25%</td>
</tr>
<tr>
<td>イギリス*</td>
<td>5.5</td>
<td>4.6</td>
<td>-17%</td>
</tr>
<tr>
<td>ブラジル</td>
<td>1.9</td>
<td>4.4</td>
<td>+129%</td>
</tr>
<tr>
<td>イタリア*</td>
<td>4.0</td>
<td>3.7</td>
<td>-6%</td>
</tr>
<tr>
<td>フランス*</td>
<td>3.5</td>
<td>3.3</td>
<td>-5%</td>
</tr>
<tr>
<td>スペイン*</td>
<td>2.1</td>
<td>2.7</td>
<td>+30%</td>
</tr>
</tbody>
</table>

※ EU28ヶ国に含まれる。

出典：IEA「CO₂ EMISSIONS FROM FUEL COMBUSTION」2014 EDITIONを元に環境省作成
GHG emissions in Japan: MoE data
Decoupling of economic growth and GHG emissions started
GHG emission target in 2030 and 2050

日本の温暖化ガス排出量の推移と目標

1990年 12.66億トン
2005年 13.93億トン
2013年度 14.05億トン
2015年度（速報値） 13.21億トン

2030年度 13年度比 26％減（10.42億トン）

Data: MoE
Moderate policy target in climate change

- Stressing voluntary action plan by each industry sector
- No carbon pricing system and no nationwide cap-and-trade program, weak carbon tax=289 Yen/CO2 ton=100 Yen/per month, household
- Negative estimation of the Kyoto Protocol by industry, especially Keidanren (Japan Business Federation)
  - The base year 1990 advantaged Germany and other EU countries and disadvantaged Japan.
  - In Kyoto, as the host country, Japan made concessions too much.
- Japan departed from the second period of the Kyoto Protocol.
- No effective framing of the target goals in 2030 and 2050
- Weak political leadership on climate issues
Electricity Supply in Japan by energy source:
The peak was in FY2007, then decoupling of economic growth and electricity supply
Three options of the Japanese nuclear energy policy

1) **Immediately shutting down** of the whole nuclear reactors. A former PM Koizumi recommends.

2) **Reopening** the nuclear reactors which can meet the new standard by the new regulatory agency, admitting but strictly limiting 40-year operation of each reactor and rejecting constructing new reactor, so finally aiming at **denuclearization by the end of the 2030s**.

   The former DPJ cabinet set this policy but current Abe cabinet abandoned this policy.

   The majority of public opinion supports 1) or 2).

3) **Reopening** the nuclear reactors which can meet to the new standard by the new regulatory agency and aiming at **construct new reactors and replace old reactors**.

   Abe cabinet supports this policy and wants to **keep the certain level of electricity produced by nuclear, around 22% of the electricity supply**.
Very few policy change after the Fukushima accident

The new law to promote renewable energy with FIT was enacted from July 2012.

New strict and independent regulatory system of nuclear energy started from Sept. 2012, but LDP and pro-nuclear side are currently giving strong political pressure to admit reopening of nuclear reactor one by one.

DPJ’s new energy policy, appeared in September 2012, was abandoned by the LDP-Komei government after the general election in Dec. 2012. The LDP-Komei government revised the Strategic Energy Plan in July, 2018 following the revised plan in 2014 and admitted the basic role of nuclear reactors and coal-fired plants.
After the temporal nuclear-free society for 23 months from Sept. 2013 to Oct. 2015, now eight reactors are operating.

After Sept. 15, 2013, all nuclear reactors were temporally closing due to the legal requirement and especially in the Eastern part of Japan (Kanto and Tohoku area) except Hokkaido area all reactors have been temporally closing more than seven years since the Fukushima accident.

Why Japan cannot change even after the Fukushima accident?

The Fukushima nuclear disaster drastically changed the situation. People suddenly forced to face real nuclear risks and radiation exposure. Even now still around 50,000 people have to evacuate and can not return their own home in Fukushima area. People got strongly angry at, distrust of and disappointed at the national government, TEPCO, media and nuclear experts. After FIT was introduced in July 2012, the installed capability of solar PV increased six times but wind turbines still slowly increased. Japanese government, heavy industrial companies, and power companies prefer nuclear energy and still have been reluctant to promote renewable energy. We are facing the question why Japan cannot change even after the Fukushima accident.
Long-term Energy Supply and Demand Outlook in July 2015, METI:

**Electric power demand**

- **FY2013 (Actual value)**: 966.6 billion kWh
- **FY2030**: 980.8 billion kWh

**Power source mix**

- **Total power generation**: 1,278 billion kWh
  - Power conservation: 17%
  - Renewable energy: 19 to 20%
  - Nuclear power: 17 to 18%
  - LNG: 22%
  - Coal: 22%
  - Oil: 2%

- **Total power generation**: 1,065 billion kWh
  - Renewable energy: 22 to 24%
  - Nuclear power: 20 to 22%
  - LNG: 27%
  - Coal: 26%
  - Oil: 3%

**Thorough energy efficiency and conservation**

- 196.1 billion kWh
- 17% lower than before the implementation of the energy conservation measures

**Economic growth**

- 1.7% per year
Long-term Energy Supply and Demand Outlook in July 2015, METI: What is the secret?

21.8% increase of electricity demand in depopulated society with 6.5〜10.9% decreasing?

Economic growth between 2010 and 2015 was 0.7%/year.
Electricity is enough

• Electricity saving
• Peak-cut in Summer
• Increasing in PV
The summer peak was decreasing after FY2001
Denuclearization is possible

Below is a bar chart showing the energy generation for different sources over the years 2016 to 2026. The sources include:
- Coal-fired
- Oil-fired
- Nuclear
- LNG-fired
- Hydro
- Pumped-storage hydro
- Renewable Energy (RE)

The chart indicates that the use of coal and oil is decreasing, while nuclear and renewable energy sources are increasing. The specific data for each year and source is not detailed in the chart.
Solar PV: Japan 34GW is the third after China 44GW and Germany 40 GW. Six times increase since 2012 when FIT introduced.

Source: ISEP, Renewables 2016 Japan Status Report
Opinion poll

1. Before the Fukushima accident, more than half supported increasing the number of nuclear reactors.

2. Recently, around 70% supports decreasing the number of nuclear reactors.

3. Right after the accident and June in 2011 was the turning point of the public opinion.

Figure Opinion on nuclear power generation 1978 to 2015

Opinion poll on nuclear energy by Iwai and Shishido (2015)
High risk in a quake-prone archipelago

World Seismicity: 1975~1994, $M \geq 4.0$, depth $\leq 100$ km

Data from International Seismological Center

Japan is one of the present mobile belts with the highest activity on the globe.


Three endemic problems of handling spent nuclear fuel and HLW

• Any suitable sites for final disposal within Japan?
• Surplus plutonium of 48 ton, equivalent to 6,000 atomic bombs (plutonium 8kg for one atomic bomb)
  The zero surplus plutonium policy is dead-locked.
• High cost of reprocessing in Rokkasho village
  construction fee of 2,900 billion Yen
  total back-end costs of 19,000 billion Yen
Financial risk for TEPCO

• TEPCO at the crisis of the bankruptcy
• total 8,000 billion Yen (72 billion dollars), annually 300 billion Yen (2.7 billion dollars) as the fee for decommissioning
• total 3,900 billion Yen (35.1 billion dollars), annually 200 billion Yen (1.8 billion dollars) as the compensation fee to the refugees and sufferers
Toshiba on the brink of collapse

• In Japan before the Fukushima accident, major heavy industrial companies like Toshiba, Hitachi and Mitsubishi have stressed nuclear energy and disregarded renewable energy sources according to the national energy policy.

• Toshiba mired its hands with accounting fraud stemming from the costly buyout of Westinghouse, a well-known nuclear company in 2006, had massive losses of 500 billion yen in 2016 fiscal year and another more than 700 billion yen in 2017 fiscal year. It is on the brink of financial collapse. In 2009, Toshiba announced a goal to get new orders of 39 reactors by 2015. However only 4 reactors in China started to construct and another 2 reactors of 4 under construction in the US were cancelled.
Reasons to keep nuclear power plants for power companies

- Electric power companies are afraid that if they decide to shift to zero nuclear energy, they will suffer an extraordinary loss as they lose asset values in terms of their nuclear power generation plants, equipment and nuclear fuel. If the extraordinary loss exceeds a company’s net asset value, the company technically becomes insolvent and fails. As an extraordinary loss cannot be included in the costs used to calculate electricity rates, the companies cannot cover the loss by way of higher electricity charges. Thus, the electric power companies are against denuclearization due to the fear of corporate failure.
Japan’s position on energy transition is behind Taiwan and South Korea

Why?

Conservative government is lack of social learning from the Fukushima accident

Weakness of civil society organizations which is lack of effective political partners and strategies
What are strategies, tactics and effective political routes to change the government energy policy?

• What are strategies and tactics? *Not clear*

• Political partners? *Not clear*
  
  Opposing party, the former DPJ got split into small parties
  No strong political leader among opposing parties

• Public vote? *No chance at national level*

• Election?
  
  in the general election, Dec. 16, 2012, pro-nuke LDP-Komei won
  in the upper house election, July, 2013 and 2016, LDP-Komei won
  in the general election, Oct. 22, 2017, LDP-Komei won

• Legal action?
What is the enabling condition to break away from nuclear regime to renewable and efficiency regime?

The role of strong political leadership supported by civil society might be most critical.
Weak civil society

- Most of civil society organizations prefer renewable energy and have criticized nuclear power before and after the Fukushima accident.
- Citizen's Commission on Nuclear Energy was established in 2013 and published their policy recommendation several times. But their influences to the national government are so limited.
- The power and political influences of civil society organizations have been week and limited with small members, budget and staff.
- For example: WWF Japan: 40,000 members
- Green Peace Japan: 4500 supporters, FoE Japan: 500 members
- There are no strong and large environmental NGOs in Japan like TEPU (Taiwan Environmental Protection Union) in Taiwan and KFEM (Korean Federation of Environmental Movement; FoE) in South Korea.
The State of Affairs and Ongoing Challenges of the Fukushima Nuclear Disaster — a Civil Society Response Towards Recovery

Our Path to a Nuclear-Free Japan
— Policy Outline for a Nuclear Phaseout

Special Edition for WCDRR 2015
Citizen’s Commission on Nuclear Energy
March 2015, Tokyo, Japan

Citizen’s Commission on Nuclear Energy (CCNE)
English site
http://www.ccnejapan.com/?page_id=1416

© K.
Curious political stable after the Fukushima accident

- The accident brought larger political damage to the then ruling party DPJ from September 2009 to December 2012, rather than to the LDP of the long year dominant ruling party which has been strongly responsible for its nuclear promoting policy for more than fifty years.
- Abe cabinet, one of the front runners of the recent ‘We-firstism’ governments, has enjoyed a stable supporting rate since December 2012. However, the rate rapidly declined after March 2017 when Abe’s scandal was revealed.
The approval rate of Abe cabinet as of Aug. 6, 2018 by Jiji
Lawsuits against nuclear facilities after the Fukushima accident, around 40 suits are continuing

- In 3 cases, plaintiffs won.

1) 21 May 2014, Oi Units No.3 and 4 cases at Fukui District Court was handed down an order to stop the operation. The suit is continuing in the higher court by appealing of Kansai EPCO.
2) 14 April 2015, Takahama Units No.3 and 4 cases at Fukui District Court was issued a provisional injunction not to restart. After this injunction was reversed on 24 December 2015, Takahama Units No.3 was restarted but on 9 March 2016 Otsu District Court in Shiga prefecture issued again a provisional injunction not to operate Takahama Units No.3 and 4. However, Osaka High Court admitted reopening of both units in March 2017.
• 3) 12 December 2017, *Ikata Unit No.3* case at Hiroshima High Court was issued a provisional injunction not to restart due to the potential risk of volcanic eruption.
Rush of coal-fired power plants in Japan

• There is a plan of 50 new coal power plants recently opened, under construction or in planning. Seven were cancelled including the second coal-fired plant in Sendai which was decided to convert to a biomass plant due to the citizen’s campaign.

• But another seven have come online including the first plant in Sendai, while totally a further 4.3 GW is under construction and 17.2 GW under planning.
The Japan’s first legal suit against a coal-fired power plant was started by 124 plaintiffs in Sendai. Press conference on Sep. 27th, 2017
The Sendai legal action against the first coal-fired plant.

- The Sendai legal action is being carried out from the grounds of contributions to climate change, adverse impacts on human health, infringement over the basic human right to enjoy a safe atmosphere and climate, negative ecological impacts on an adjacent wetland, and the lack of contribution to post-tsunami development in Sendai. Citizens are afraid that city’s reputation as a "city of trees" enjoyed for the past 100-years is set to become a "city of coal".
Conclusion

1. Even after the Fukushima accident, climate change policy and energy policy are still unchanged.

2. After the accident, decoupling of economic growth and electricity supply, economic growth and GHG emissions happened. Electricity supply is enough without reopening of nuclear power plants.

3. However, Japanese government, heavy industrial companies, and power companies prefer nuclear energy and have been reluctant to promote renewable energy and introduce aggressive climate change policy.

4. The recommended policy goal of denuclearization, promoting renewables and energy efficiency is clear.

5. Nuclear society is moving to the dead-end of the problems of spent nuclear fuel, economic risks and risks of another disaster.
6. Japan’s civil society is also facing the challenge of finding effective political routes to energy shift.

7. Lack of the political will to energy shift in the government side and the industrial side is so critical and serious.
References


