Japan 2050 Low Carbon Navigator
Japanese version of the UK 2050 Pathways Calculator

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Outline

- Background on energy situation and climate policy;
- How was the tool developed;
- Model framework and data;
- Scenarios setting;
- Major differences from the UK 2050 Calculator;
- Launch of Japan 2050 Low Carbon Navigator;
- Application and outreach;
- Major results;
- Challenges and way forward.
Background: Energy situation

High dependency on overseas fossil fuels for power supply

Source: METI, 2014
Background: Energy policy

The 4th Strategic Energy Plan (April 11th, 2014)

- Basic viewpoints of energy policy (3E + S);
- Energy mix will be announced soon
  - Nuclear as an important base-load power source, restart of NPPs;
  - Promotion of high efficient and low-carbon coal power generation;
  - Expansion of renewable energy (13.5% by 2020 and 20% by 2030).

- Electricity System Reform
- Introduction of energy management system for energy conservation
Background: Climate policy

- Mitigation target setting
  - Kyoto target: 8.4% reduction from 1990 achieved against 6% target;
  - 2020 target: -3.8% from 2005 vs. -25% from 1990 (CPH pledge)
  - Post 2020 target: Under discussion
  - 2050 target: 80% reduction from current levels (4th BEP)

- Policy measures
  - FIT for renewable energy;
  - Carbon tax;
  - Tokyo emissions trading system

- Building Low Carbon Society

Source: MOEJ
How was the tool developed: Initiation

- Initiated by IGES through Dr. Nishioka and IGES President Mr. Mori in early 2013;
- Started in May 2013;
- Jointly developed by IGES and NIES;
- Launched in July 2014;
- Facilitation by the British Embassy Tokyo and technical support from the UK DECC;
- Financial support from the Ministry of the Environment of Japan.
How was the tool developed: Team and working mechanism

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Advisor: Dr. Nishioka

Technical review: IEEJ

Web tool: outsourced

Feedbacks

Media coverage
Japan Low Carbon Navigator

Two versions: the Excel model and the Web Tool.


Model Framework

Society Scenarios

Energy Demand

Industry

27 category

27 category

Economic Growth/Economic Activity Level

Population/Households

Residential

Commercial

Transportation

Energy Supply

Capacity Assumptions

Nuclear

Renewables

Solar

Hydro

Wind

Geo

Conv.Plants

Coal

Gas

Oil

Biomass

Electricity

Unsupplied Electricity Demands

Energy Supply

Other Secondary Energy

Hydrogen

Coke

Biofuel

Oil Products

Gas Products

Primary Energy

Coal

Crude Oil

Natural Gas

Nuclear

Renewables

Biomass

GHG Emissions
Data sources

- Japan Low Carbon Society 2050 project;
- Energy Cost Committee Report/Energy and Environment Council;
- Post-2013 Mitigation Policy and Countermeasure Committee (2011-2012)/MOEJ;
- Other organizations (METI, WWF Japan, Kiko Network, etc.)
- Other sources (IEEJ, internet, etc.)
Scenario setting: Five society scenario

- R & D
- MIJ
- SB
- RI
- Share

Common Challenges:
1. Aging Society
2. Competition with Emerging Economy
3. Resource Constraints

A: Made-in-Japan (MIJ) Society
B: Research and Development (R&D) Society
C: Service and Brand (SB) Society
D: Resource Independent (RI) Society
E: Share Society

- Economic Growth
  - Manufacture
    - Overseas
    - Domestic
  - Service
- Resource Independent
- Well-being
The Low Carbon Navigator sets out four or five (renewable energy and nuclear power) trajectories reflecting the whole range of potential future scenarios.

**Scenarios setting: Level of efforts**

**Level 1**: No efforts
- (existing capacity, same technology, no change in consumption)

**Level 2**: Great efforts
- (increased renewable energy, advanced technology, reduced unit energy service demand)

**Level 3**: Physical limit/Technical potential
- (Renewables)
Major differences from the UK 2050 Calculator?

- Initiated by IGES, a public interest corporation type of institute;
- Named as Japan 2050 Low Carbon Navigator;
- Japan’s specific data on scenario setting and technology specifications;
- Uniqueness in setting the five society scenarios for 2050 reflecting future social and economic development;
- Level setting ranging from no efforts to high level of efforts (from L1 - L4) with an additional L5 for physical /technological limits;
- Treatment of energy oversupply compared with demand levels;
- Approach of expert meetings and individual interviews.
Visit of Japan Prime Minister Abe to the UK, 1 May 2014

Joint Statement by the Governments of the United Kingdom and Japan on the occasion of the visit of Prime Minister Abe to the UK on 1 May 2014.

…..Related to the increase in the scope for further cooperation and information sharing on policies, “the deployment of the 2050 Pathways Calculator (which) can be used to engage a range of audiences in discussion on the challenges and opportunities of the future energy system” was included.

Source: British Embassy Tokyo, GOV.UK
Launch events

Pre-launch at the British Embassy Tokyo, 12 May 2014

• VIPs: Mr. Junichi Shiraishi, Vice-Minister for Global Environmental Affairs of MOEJ, Sir David King, UK Foreign Secretary’s Special Representative for Climate and Mr. Richard Oppenheim, Head of Climate Change and Energy at the British Embassy Tokyo.

• 50 participants from governmental organizations, academia, NGOs, business sector, media and foreign embassies in Tokyo.

• Interactive trial workshop.

Source: British Embassy Tokyo, IGES
Launch events

Launch at 2014 International Forum for Sustainable Asia and the Pacific (ISAP), 23 July 2014

- Presentations
- Panel discussions
- Media interviews
- Demonstration corner
- More than 100 participants

Source: United Brain Networks, You Tube.
Application and outreach

- Media coverage;
- University debates on energy and climate change;
- Governmental organizations;
- Distribution through international workshops, academia conference, networks, etc.
- Feedbacks from users.
Key messages

- Many chances exist to achieve the maximum reductions: 87% from 1990 levels under share society scenario;
- CCS technologies: critical to achieve 80% reductions in 2050;
- Without nuclear, 80% reductions can be achieved in 2050 if renewable energy fully expanded together with massive adoption of CCS;
- Renewable energy: more expensive in the short run but not the case if oil price upsurge in the long run;
- Keeping all at $L_1$s, 9% reductions to be achieved due to population downward trend by 2050;
- Shift to different types of society will substantially influence the emission levels, in particular the share society;
- An economy-wide integrated approach is necessary to achieve the 80% long-term target.
Challenges and way forward

Challenges:
- Limited workers with multiple tasks;
- International team and barriers in Japanese communication;
- Weak in outreach.

Way forward:
- Strengthening outreach activities and grasp the chances of domestic INDC target setting;
- Development of the simplified version (My 2050 Calculator);
- City level low carbon navigator.
Join us to explore your own pathways by using the Low Carbon Navigator!

For information:


Contact us and share your opinions and ideas:

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