

# Institute for Global Environmental Strategies

## Japan 2050 Low Carbon Navigator

Japanese version of the UK 2050 Pathways Calculator



JAPAN 2050  
Low Carbon  
Navigator

10 February 2015

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Institute for Global Environmental Strategies (IGES)*

INTERNATIONAL CONFERENCE ON 2050 CALCULATOR  
TAIPEI, TAIWAN  
FEBRUARY 2015

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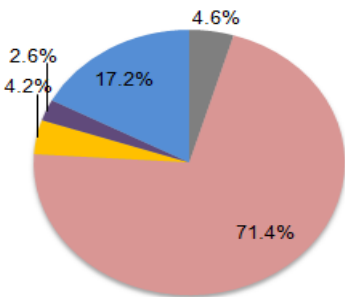
# Outline

- ❖ 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.

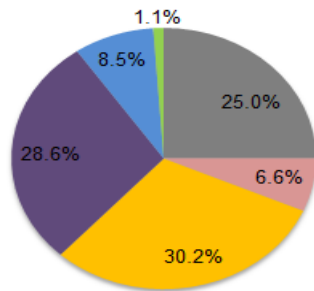


# Background: Energy situation

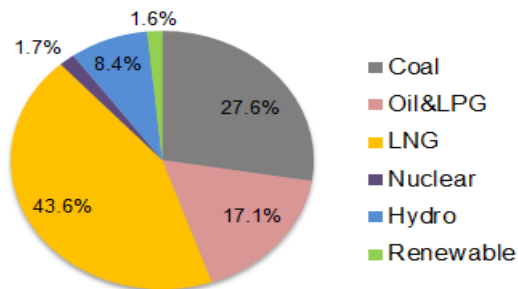
FY1973 (Oil crisis, 76%)



FY2010 (Before the Great Earthquake, 61%)



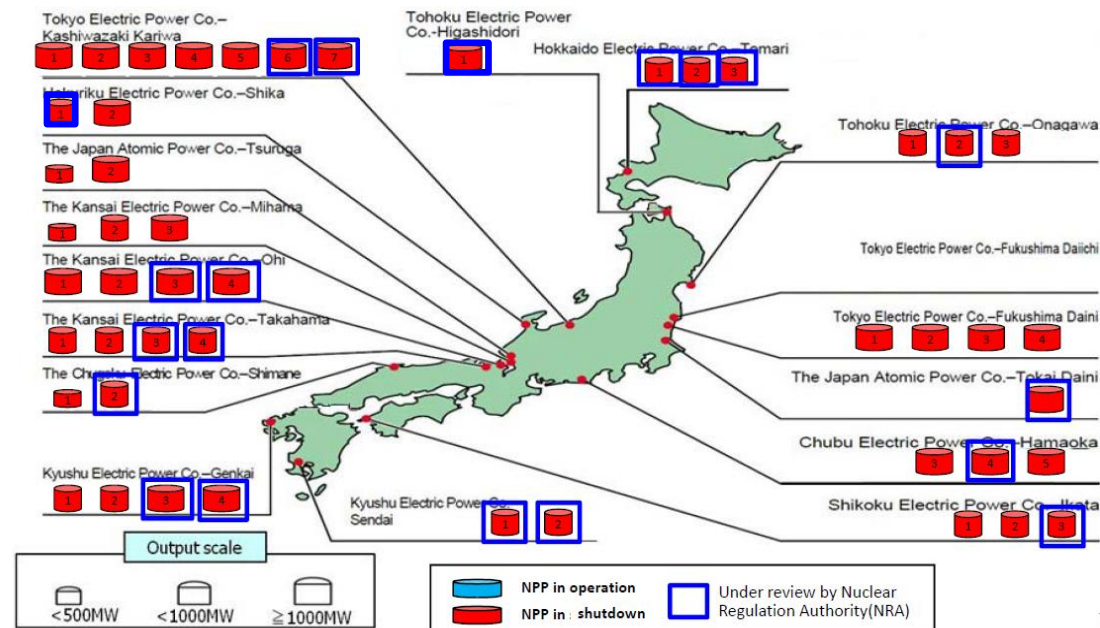
FY2012 (Latest available data, 88%)



■ Coal  
■ Oil&LPG  
■ LNG  
■ Nuclear  
■ Hydro  
■ Renewable

High dependency on overseas fossil fuels for power supply

## Nuclear power plants in Japan



Source: METI, 2014



# Background: Energy policy

## The 4<sup>th</sup> Strategic Energy Plan (April 11<sup>th</sup>, 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 (4<sup>th</sup> BEP)*

## ✚ Policy measures

- ✚ *FIT for renewable energy;*
- ✚ *Carbon tax;*
- ✚ *Tokyo emissions trading system*

## ✚ Building Low Carbon Society



Visions of Low Carbon Society 2050

Source: MOEJ

# How was the tool developed: Initiation



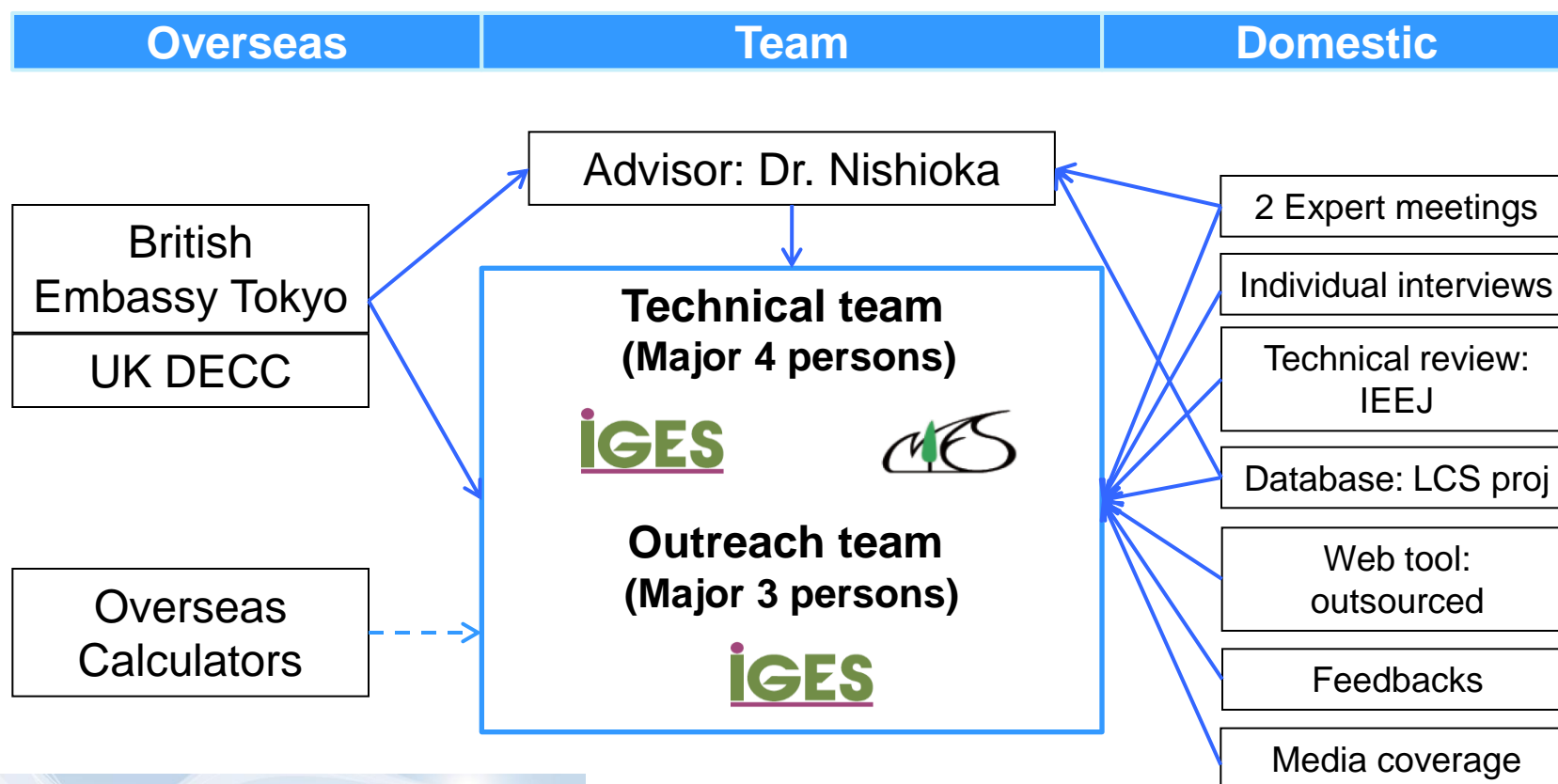
JAPAN 2050  
Low Carbon  
Navigator

- ✦ 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





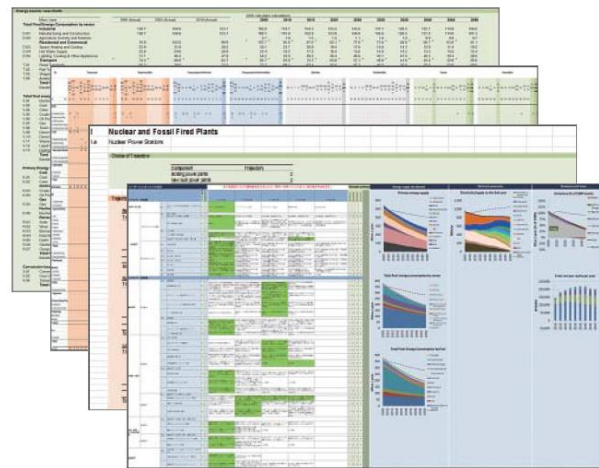
# Japan Low Carbon Navigator

Two versions: the Excel model and the Web Tool.

Excel model: <http://www.2050-low-carbon-navi.jp/web/en/> (English version)

Web Tool: <http://www.2050-low-carbon-navi.jp/> (Japanese version)

<http://www.en-2050-low-carbon-navi.jp/> (English version)



Excel Spreadsheet



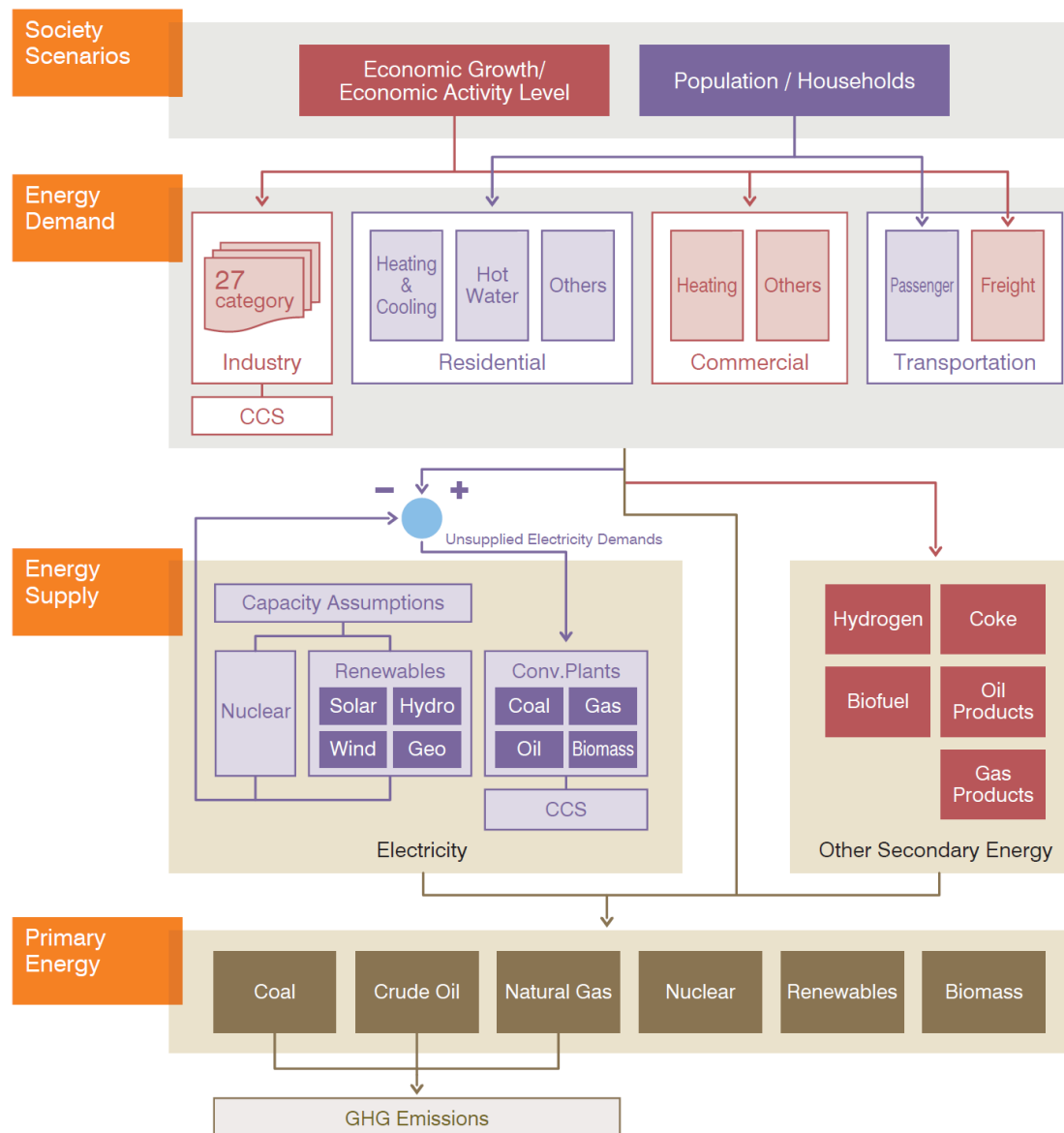
Web Tool



# Model Framework



JAPAN 2050  
Low Carbon  
Navigator



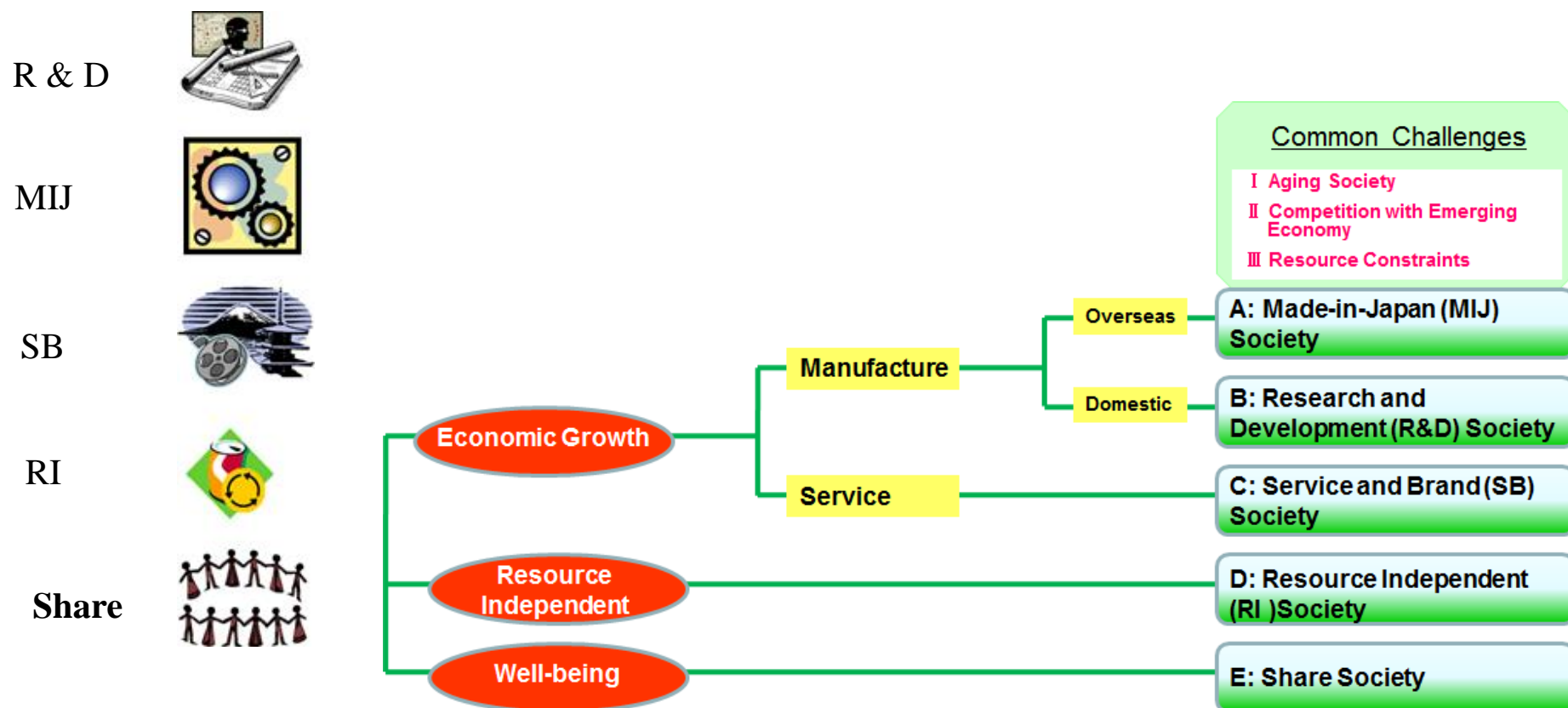


## *Data sources*

- ✦ 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.)



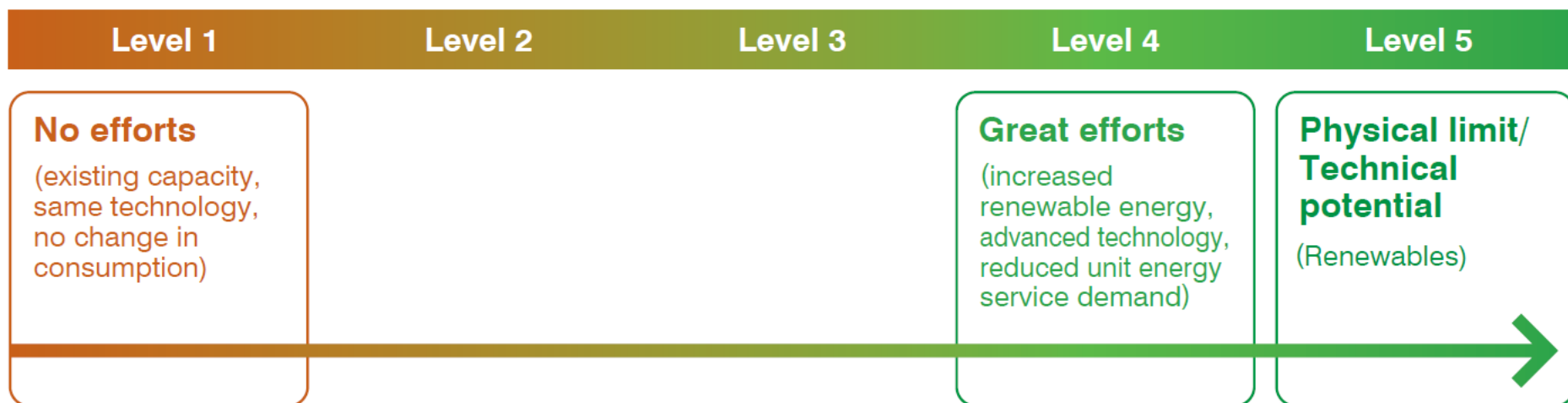
# Scenario setting: Five society scenario





# Scenarios setting: Level of efforts

The Low Carbon Navigator sets out four or five (renewable energy and nuclear power) trajectories reflecting the whole range of potential future scenarios.





# 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.



# Launch events

## 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.





## 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.

温暖化ガス  
**排出予測ツール開発**  
環境研など 対策レベルごとに

国立環境研究所と地球環境戦略研究機関は12日、2050年までの5年ごとの温室効果ガス排出量や1次エネルギー供給量などを対策レベルごとに予測できる分析ツール「日本版2050パスウェイ」を開発したと発表。同研究所と同機関は「気候安定化に向けた議論に幅広く利用されることを期待する」と説明している。

2010年に英国「ゼロ」で発表された「2050パスウェイ・カリキュレーター」をベースに開発した。日本のエネルギー状況や社会・経済の将来動向、低炭素技術の導入ペースシナリオなどの情報を加え

公益財団法人  
地球環境戦略研究機関 上席研究員  
田村 堅太郎さん 42

**温室効果ガスの削減計算**

ナリを用いて、すでに温暖化防止の対策が実施されている。エネルギーの削減やコスト削減、エネルギーの効率化など、削減効果の大きい分野を優先的に削減していく。削減効果の大きい分野を優先的に削減していく。削減効果の大きい分野を優先的に削減していく。

田村 堅太郎さん 42

国立環境研究所と地球環境戦略研究機関は12日、2050年までの5年ごとの温室効果ガス排出量や1次エネルギー供給量などを対策レベルごとに予測できる分析ツール「日本版2050パスウェイ」を開発したと発表。同研究所と同機関は「気候安定化に向けた議論に幅広く利用されることを期待する」と説明している。

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環境人材育成コンソーシアム (EcoLead)  
Environmental Consortium for Leadership Development

Google カスタム検索



日本が2050年までに温室効果ガスの排出量をどう削減するかを考えるため、自分で項目を選択すると排出量などが算出されるソフトを、地球環境戦略研究機関と国立環境研究所が作り、ウェブ上に公開した。

日本が目指す社会として、ものづくりを進める競争社会

や、ものを共有する分かち合い社会などを選択。原発や太陽光発電などの導入の程度、業務用ビルや住宅の断熱性能などを選択すると、50年までの排出量の推移がグラフ化される。その場合に国民1人当たりが負担する費用など、関連するさまざまな項目の数値も出る。

**温室ガス排出自分で試算**

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活動紹介

環境人材育成支援サイト

入会・問合せ

会員一覧

非公開: 「日本版2050パスウェイ・カリキュレーター」の公開

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「日本版2050パスウェイ・カリキュレーター」の公開  
～ 低炭素社会に向けたエネルギーシナリオを描くツール ～  
地球環境戦略研究機関 (IGES)

この度、地球環境戦略研究機関 (IGES) は国立環境研究所 (NIES) 協力のもと、「日本版2050パスウェイ・カリキュレーター」(2050低炭素ナビ)を開発いたしました。



# 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 *L1s*, 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!*



**JAPAN 2050**  
**Low Carbon**  
**Navigator**

***For information:***

👉 Web Tool: <http://www.en-2050-low-carbon-navi.jp/>

Excel version: <http://www.2050-low-carbon-navi.jp/web/en/>

***Contact us and share your opinions and ideas:***

*E-mail:* [ge-info@iges.or.jp](mailto:ge-info@iges.or.jp)