NDC and Long-term GHG reduction target of Japan

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AIM ASIA-PACIFIC INTEGRATED MODEL **Asia-Pacific Integrated Model**
http://www-iam.nies.go.jp/aim/index.html

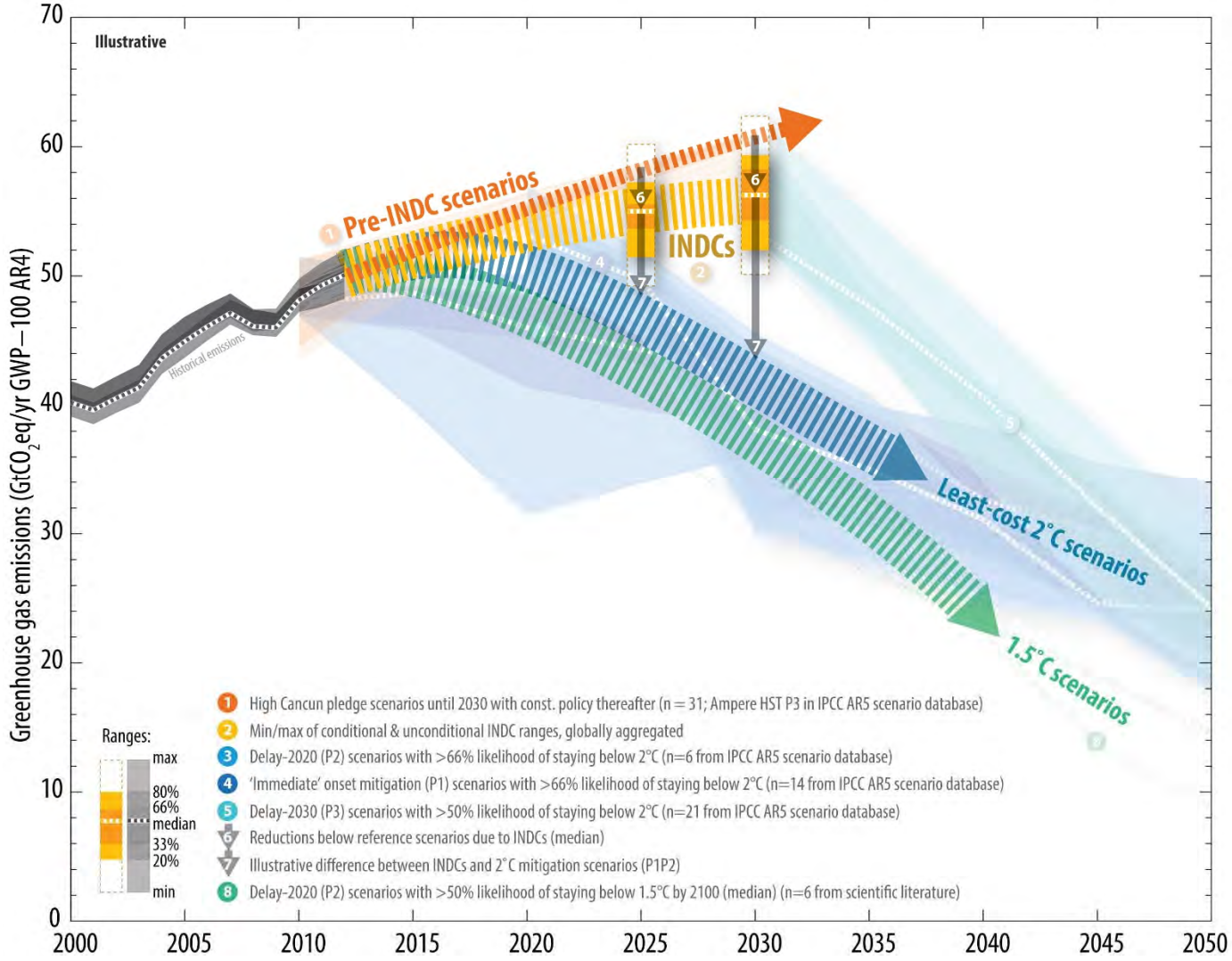
NIES JAPAN

Some Asian countries' NDCs

- Bhutan: To remain carbon neutral.
- Cambodia: 27% reduction in the year 2030 compared to the baseline.
- China: To reduce carbon intensity by 60% to 65% by 2030 below 2005 levels;
- India: To lower the emissions intensity of GDP by 33% to 35% by 2030 below 2005 levels.
- Indonesia: An unconditional 2030 GHG emissions reduction target of 29% below BAU including LULUCF emissions and a conditional 41% reduction below BAU by 2030 (with sufficient international support)
- Japan: To reduce emissions by 26% below 2013 emission levels by 2030.
- Korea: To reduce greenhouse gas emissions by 37% below BAU by 2030.
- Malaysia: To reduce GHG emissions intensity of GDP by 45% by 2030 relative to the emissions intensity of GDP in 2005.
- Nepal: 50% reduction in dependency to fossil fuels by 2050.
- Thailand: An unconditional 20% reduction in emissions by 2030, compared to BaU levels. This could increase to 25%, conditional upon the provision of international support.
- Vietnam: An 8% reduction in emissions by 2030, compared to BaU. This could be increased to 25% conditional upon international support.

- USA: To reduce economy wide emissions by 26% to 28% below 2005 domestically.
- EU: To reduce greenhouse gases emissions by at least 40% domestic below 1990 by 2030.

NDC can achieve the 2 degree target?



Source: http://unfccc.int/resource/docs/2016/cop22/eng/02.pdf

Long-term low GHG emission development strategy

- Following countries have already submitted the long-term strategies to UNFCCC.

Country	Date submitted	GHG reduction target
USA	Nov. 16, 2016	80% reduction of GHG in 2050 compared to 2005 level
Mexico	Nov. 16, 2016	50% reduction of GHG in 2050 compared to 2000 level
Canada	Nov. 17, 2016	80% reduction of GHG in 2050 compared to 2005 level
Germany	Nov. 17, 2016	80-95% reduction of GHG in 2050 compared to 1990 level
Benin	Dec. 12, 2016	
France	Dec. 28, 2016	75% reduction of GHG in 2050 compared to 1990 level

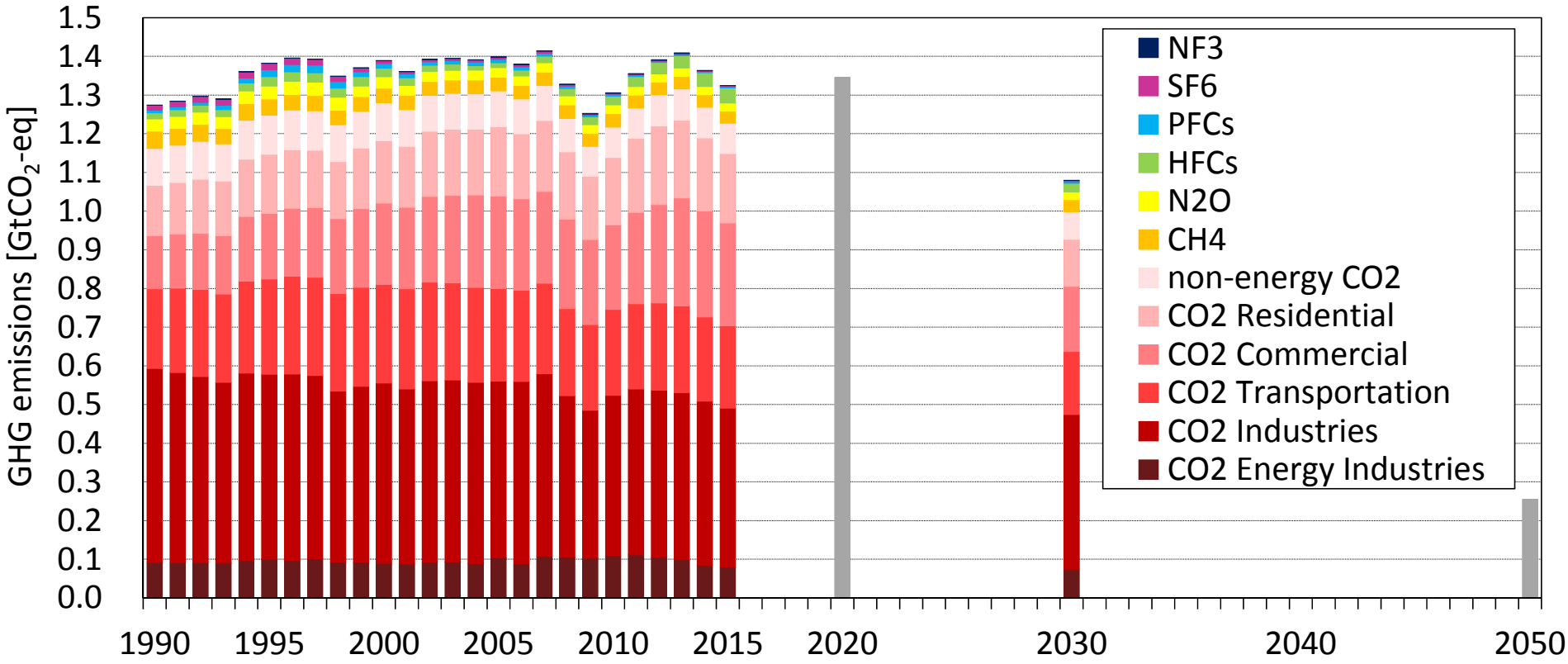
- Other countries are requested to submit their long-term strategy by 2020.

Activities in Japan

- INDC (Intended Nationally Determined Contributions; Cabinet approval on July 17, 2015): In 2030, 26% reduction of GHG emissions compared to 2013 level.
  http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Japan/1/20150717_Japan's%20INDC.pdf

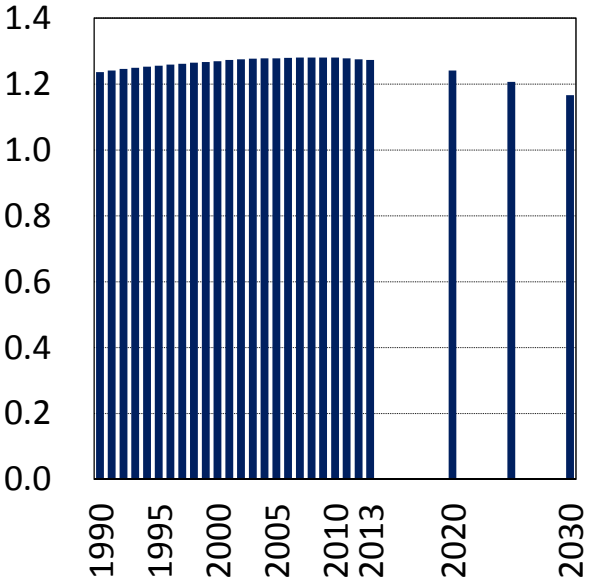
- Climate Action Plan (Cabinet approval on May 13, 2016): In 2050, 80% reduction of GHG in Japan.
  http://www.kantei.go.jp/jp/singi/ondanka/kaisai/dai35/pdf/honbun.pdf
  (in Japanese)

GHG emissions in Japan; trend and future target

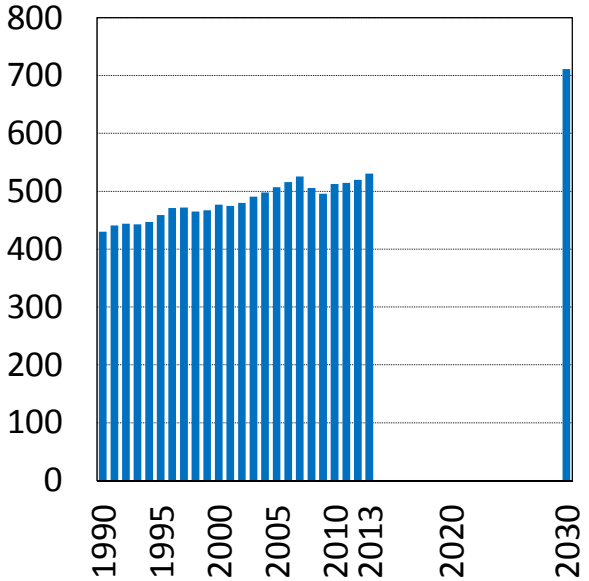


Source: GIO, NIES http://www-gio.nies.go.jp/aboutghg/nir/nir-j.html

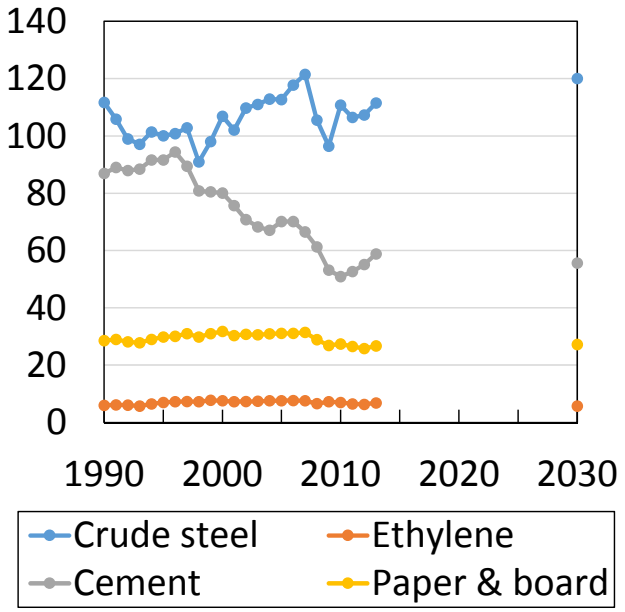
Macro-economic assumptions for Japan's INDC



Population
[100 mil. people]

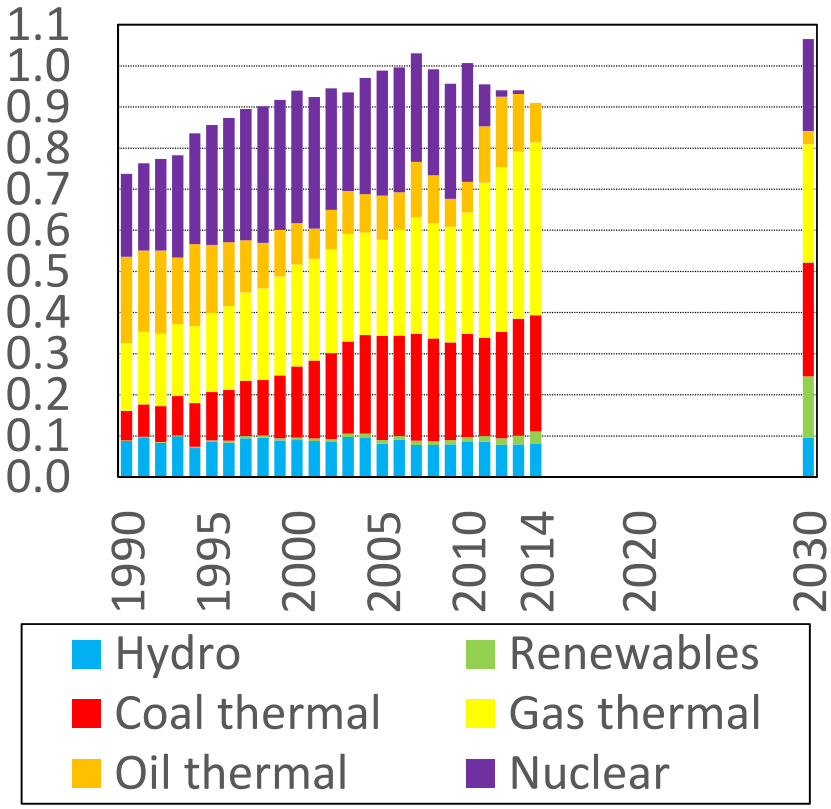


GDP
[tri. JPY at 2005 price]

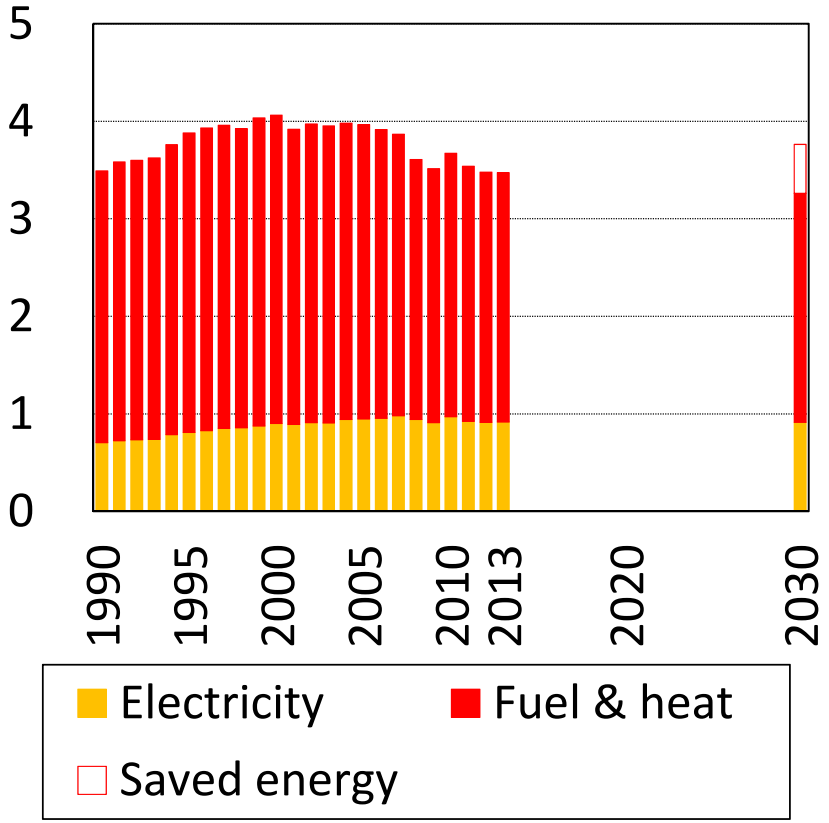


Material production
[mil. ton]

Macro-economic assumptions for Japan's INDC



Power supply [bil. kWh]



Final energy demand
[100 mil. kl-oil eq]

In 2030,

Renewables: 22-24%

PV: 7.0%, Wind: 1.7%, Biomass: 3.7-4.6%

Hydro: 8.8-9.2%, Geothermal: 1.0-1.1%

Gas thermal: 27% Oil thermal: 3%

Coal thermal: 26% Nuclear: 22-20%

How to achieve long-term drastic GHG reduction?

- In Paris Agreement, "to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century"

- Each country has its own socio-economic circumstances;
  - economic growth
  - technology
  - renewable energy potential
  - demographic condition
  - ...

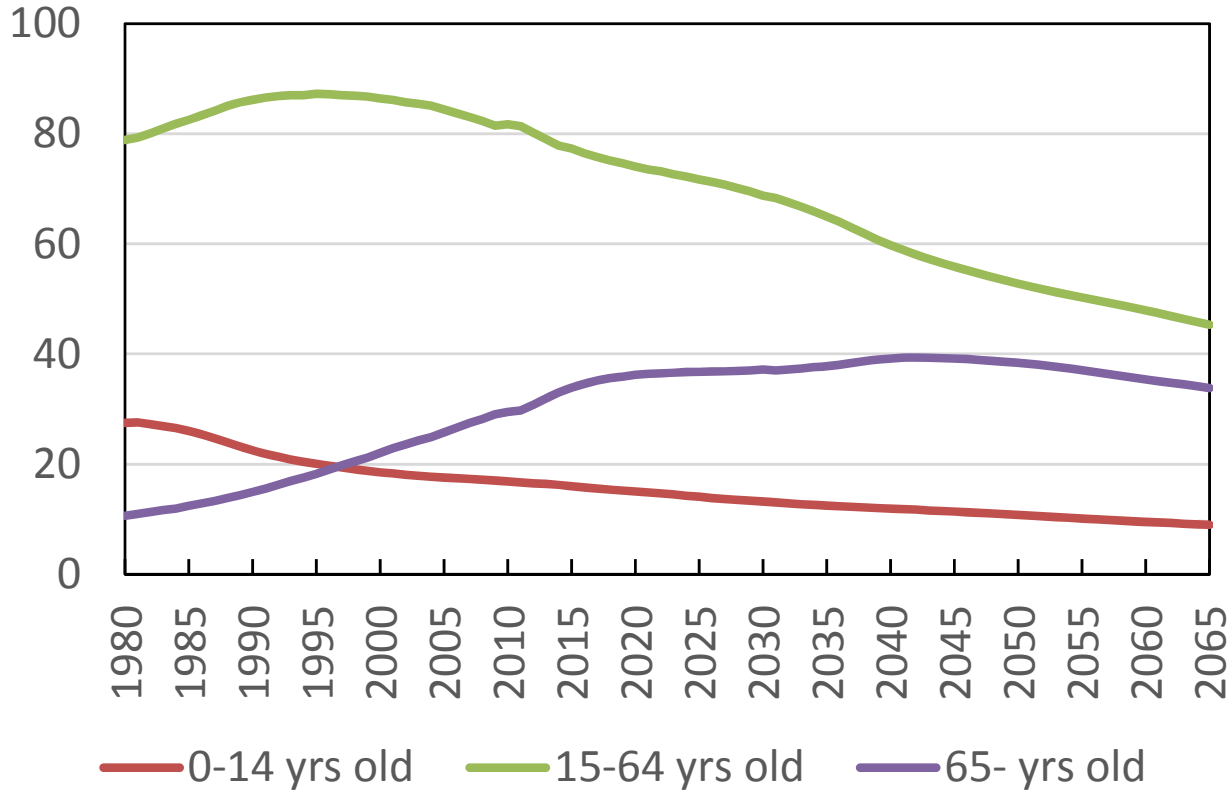
Sustainable Development Goals

How to show pathways to realize Sustainable Development:

Not only environment but also economic and social development is needed.

Socio-economic Issues in Japan related to SDGs (1)

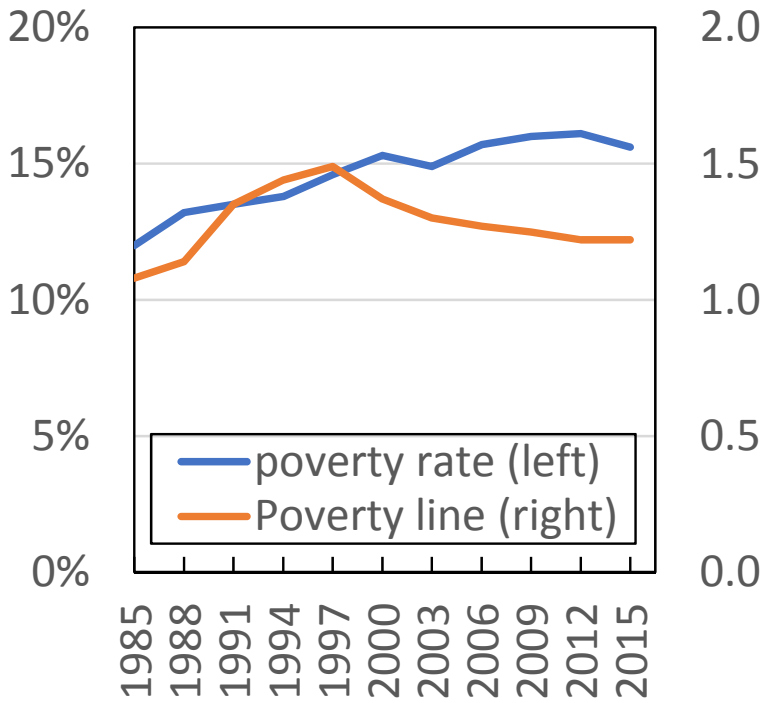
Aging society



Source:
Statistics Bureau, Ministry of Internal Affairs and Communications
Population Estimates of Japan, http://www.stat.go.jp/english/data/jinsui/2.htm
National Institute of Population and Social Security Research (2017)
Population Projection for Japan: 2016-2065 (April 2017)
http://www.ipss.go.jp/pp-zenkoku/e/zenkoku_e2017/pp_zenkoku2017e.asp

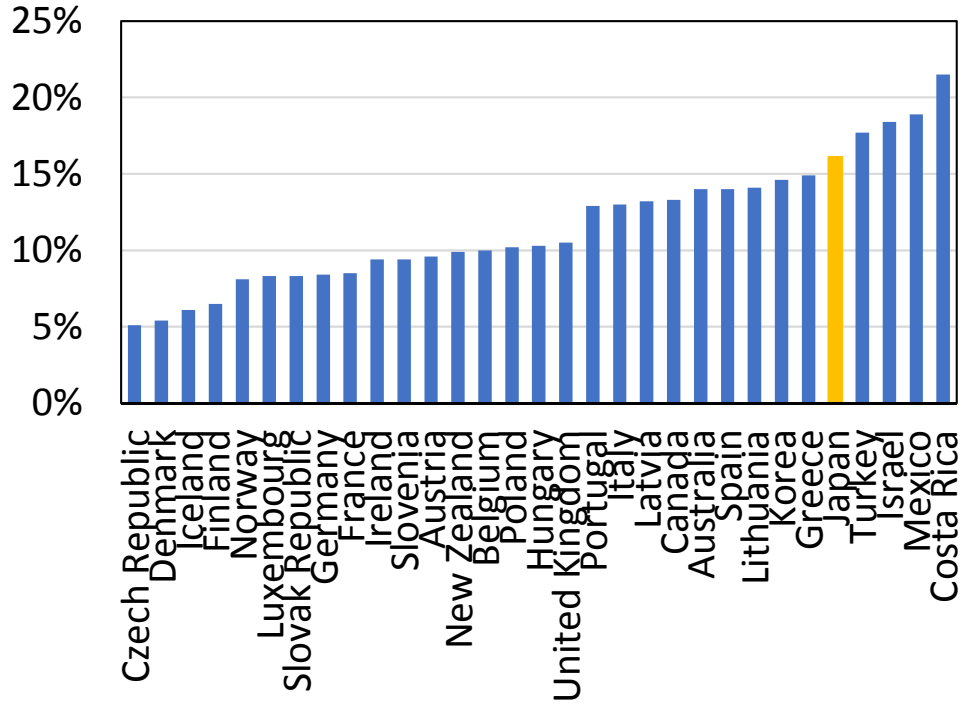
Socio-economic Issues in Japan related to SDGs (2)

Enlarging economic disparity



Changes of poverty rate (%) and poverty line (mil. JPY) in Japan

source: White Paper on National Lifestyle

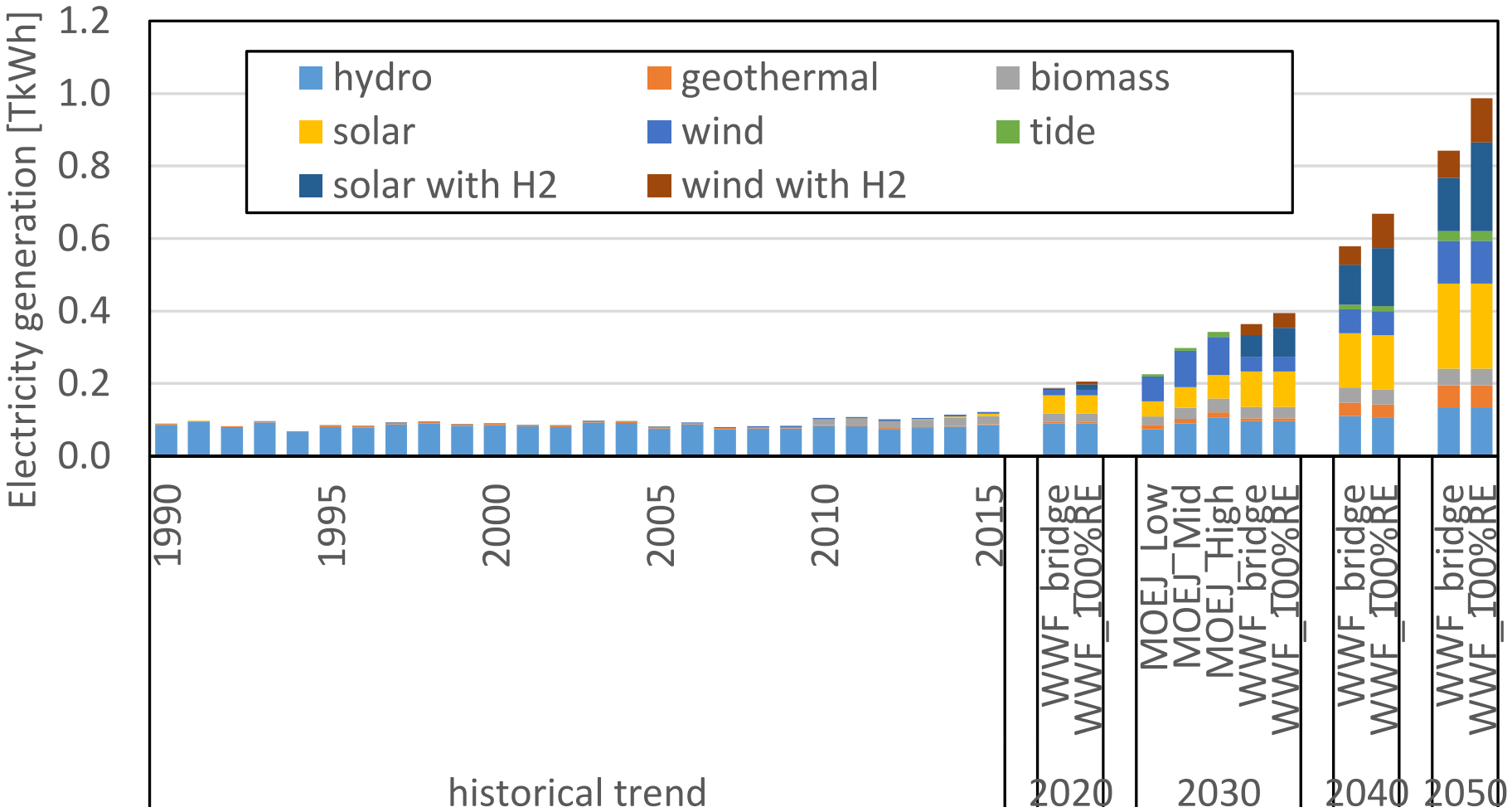


Poverty rate among countries in 2012

source: OECD

Socio-economic Issues in Japan related to SDGs (3)

Renewable energy



Toward decarbonization society, transition of renewable supply is needed.

Discussion toward long-term low carbon strategy in Japan

- Discussion on long-term low carbon development strategy in Japan was started at Sub-committee on Long-term Low-Carbon Vision, Central Environment Council in July 2016.
  In March 2017, The Long-term Low-carbon Vision was reported.
  English summary http://www.env.go.jp/press/103822/713.pdf
  Japanese full report http://www.env.go.jp/press/103822/105478.pdf

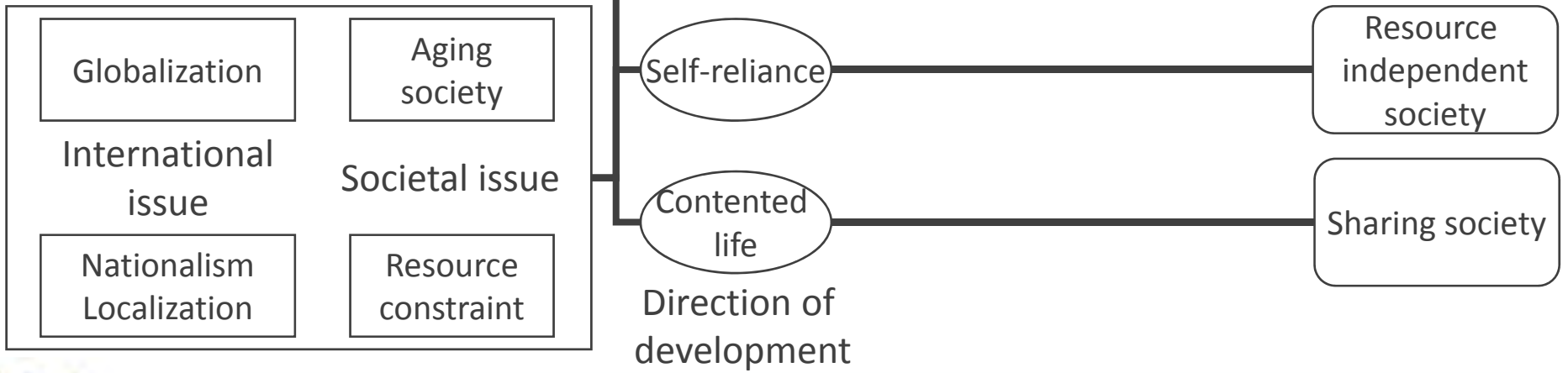
Long-term Low-carbon Vision by MOEJ

- Background: “Simultaneous solution” of economic and social problems such as population decrease and aging issue etc., and climate change
  - Contribution to global reduction as well as domestic reduction
  - Innovation (on technology, socioeconomic system and lifestyle) is the key
- Actions to reduce GHG by 80% by 2050
  - Energy efficiency,
  - Low-carbon energy supply, and
  - Switch to low-carbon energies in end-use
- Taking into account "Carbon budget"
- Avoiding "Lock-in" effects
- Introducing "Carbon Pricing" as a policy to strengthen market competitiveness

Japan's scenarios to discuss mitigation target at MOEJ

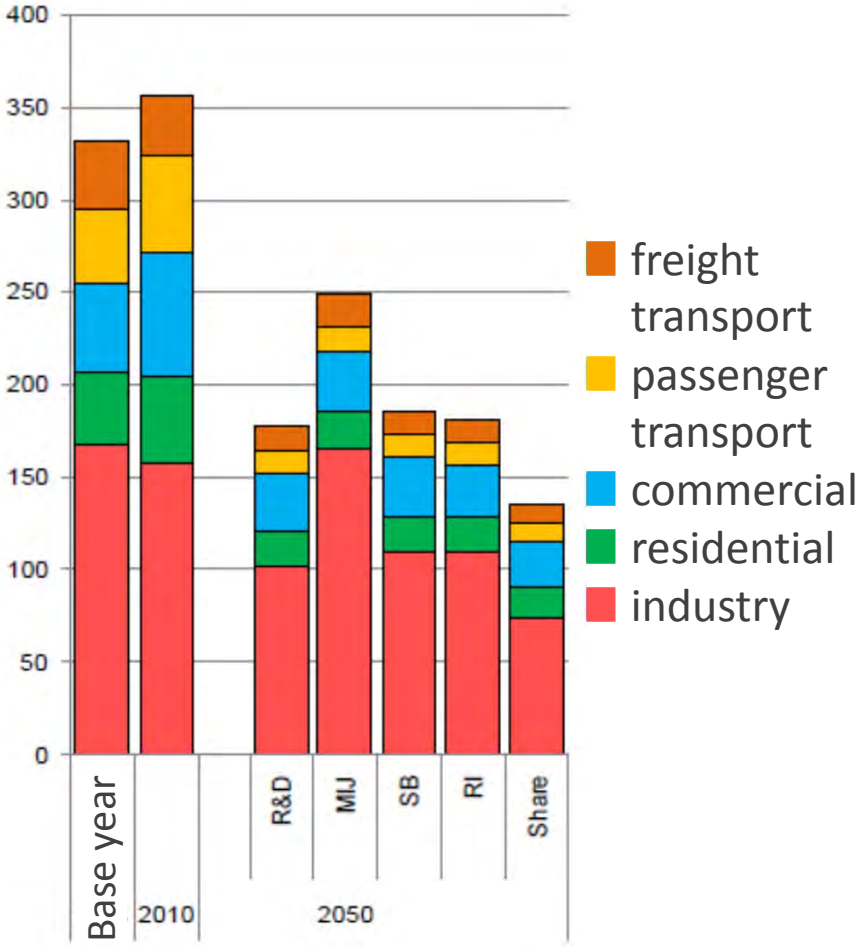
Scenario A: Vivid	Scenario B: Slow
Technology-driven	Nature-oriented
Urban/Personal	Decentralized/Community
Technology breakthrough Centralized production /recycle	Self-sufficient Produce locally, consume locally
Comfortable and Convenient	Social and Cultural Values
2%/yr GDP per capita growth	1%/yr GDP per capita growth

NIES et al. (2008)
http://2050.nies.go.jp/report/file/lcs_japan/2050_LCS_Scenarios_Actions_English_080715.pdf

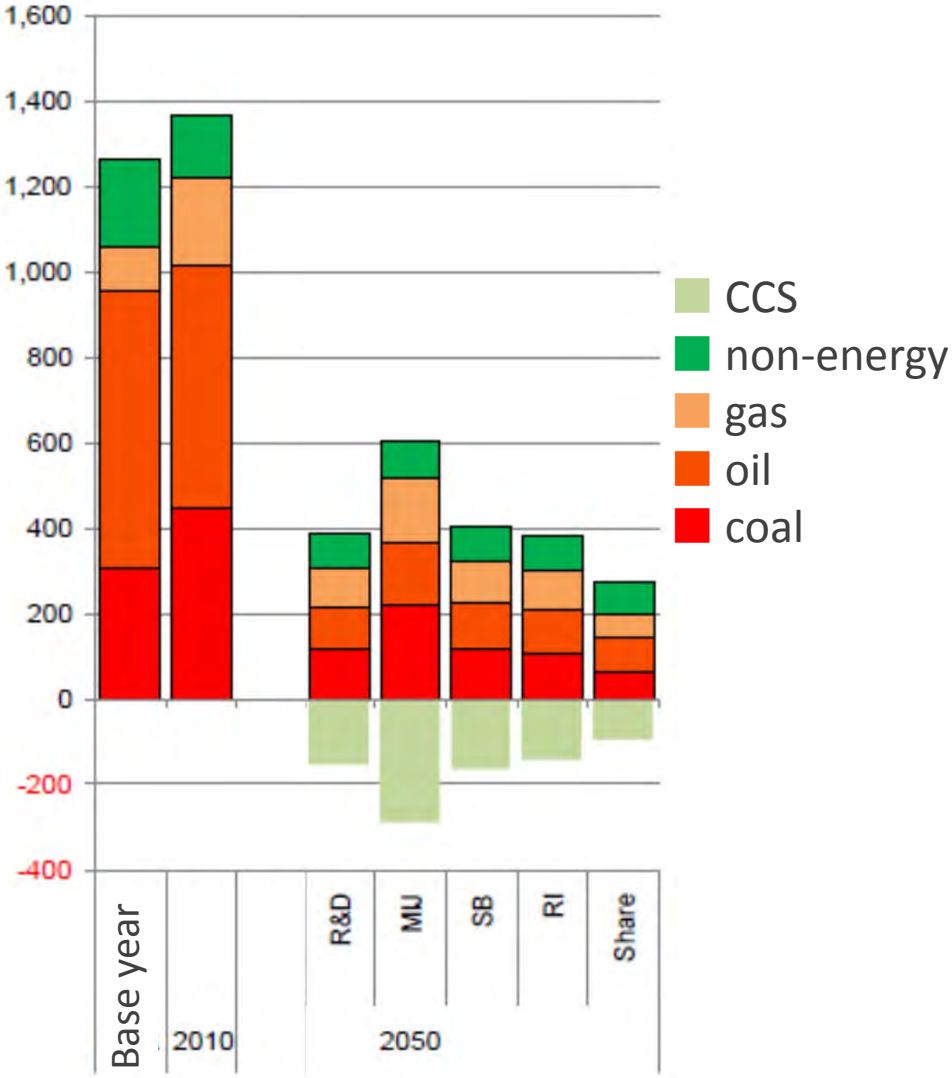


Central Environment Council (2013)

Results of 5 different societies in Japan



Final energy demand (Mtoe)

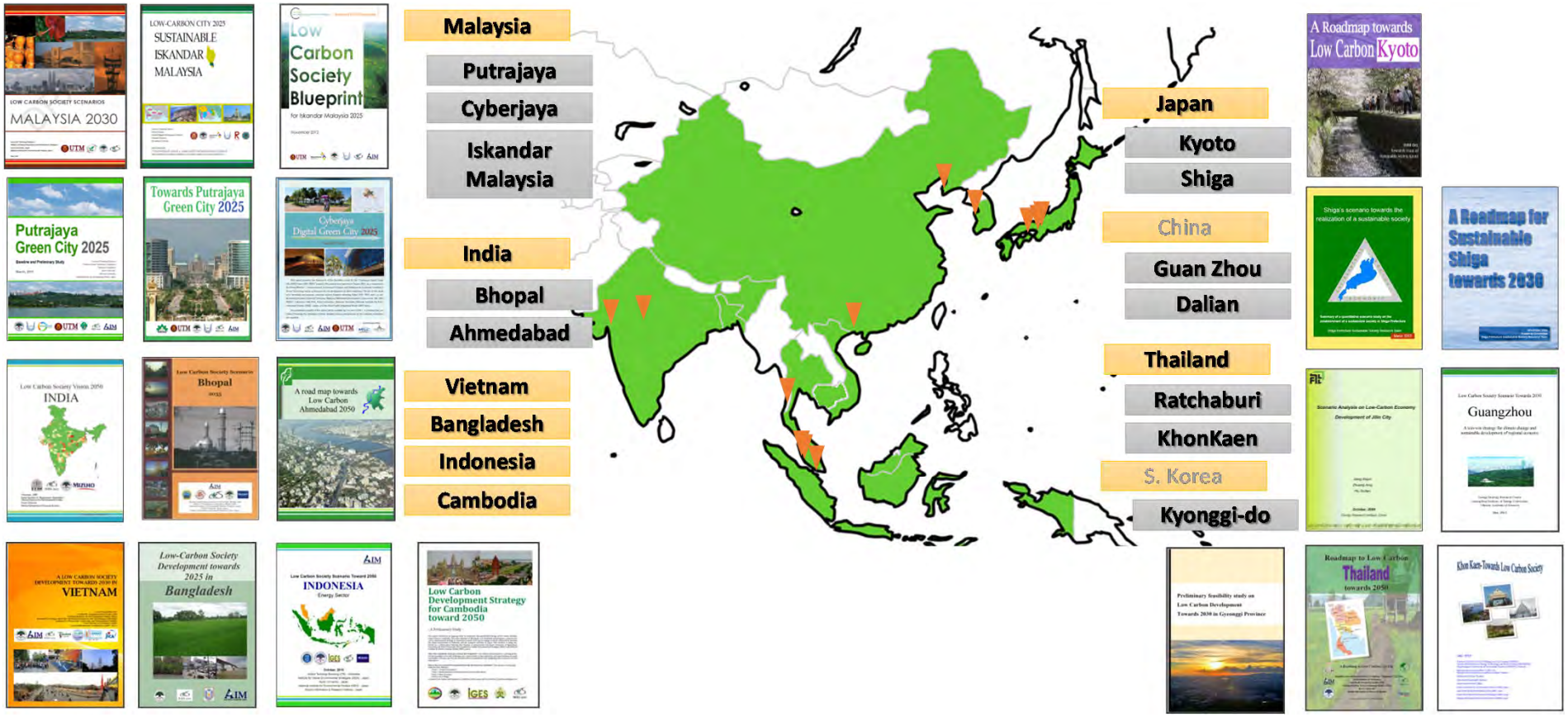


GHG emissions (MtCO2eq)

Central Environment Council (2013)

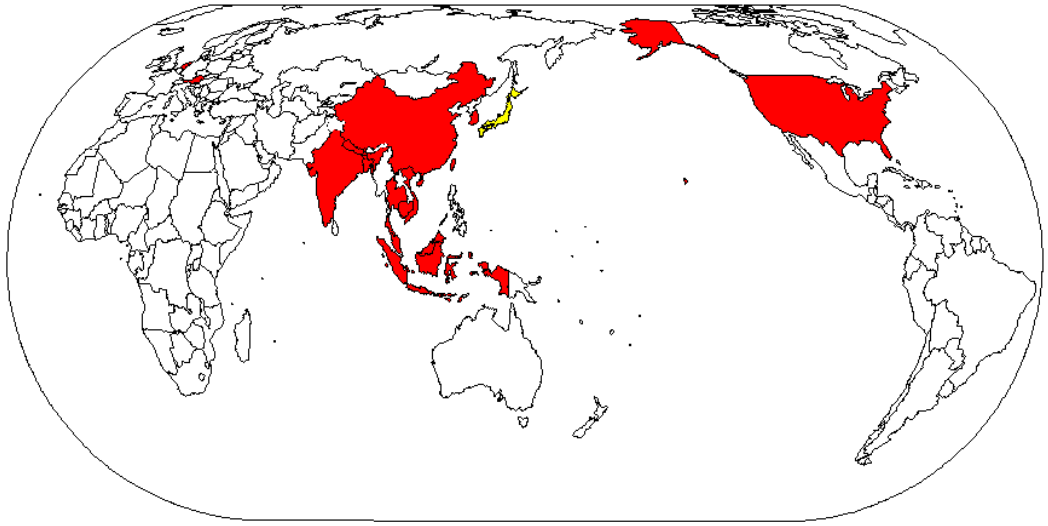
Research collaboration toward low carbon society in Asian

Communication and feedbacks of LCS study to real world



http://2050.nies.go.jp/

International Network of AIM (Asia-Pacific Integrated Model)



The 22nd AIM International Workshop 2016, NIES

- Asian countries will update their mitigation target and roadmap to achieve the 2/1.5 degree target reflecting their issues to be solved and the resources to be endowed.
- Model can be a collaboration tool between science and decision making process. From the long-term viewpoint, each country will need the capacities to develop model and scenarios by itself.
- AIM (Asia-Pacific Integrated Model) has supported Asian countries to develop the integrated assessment model and their long-term low carbon scenarios.

Capacity development in Asia by AIM (Asia-Pacific Integrated Model) team, NIES

- Photos: Jan. 30-Feb. 1 2017, SIIT-TU, Thailand
- Introduction of AIM (ExSS, Enduse & CGE)
- Sep. 4-Oct.13, 2017: CGE
- Oct. 23-27, 2017: Enduse