

SYMPOSIUM ON LOW CARBON ASIA RESEARCH PROJECTS
4 -5 JULY 2011 , PERSADA/PUTERI PACIFIC HOTEL JOHOR BAHRU, MALAYSIA

Action Plans towards Low-Carbon Cooperation in Asia Lessons Learned from Low-Carbon Scenario Study

Mikiko Kainuma

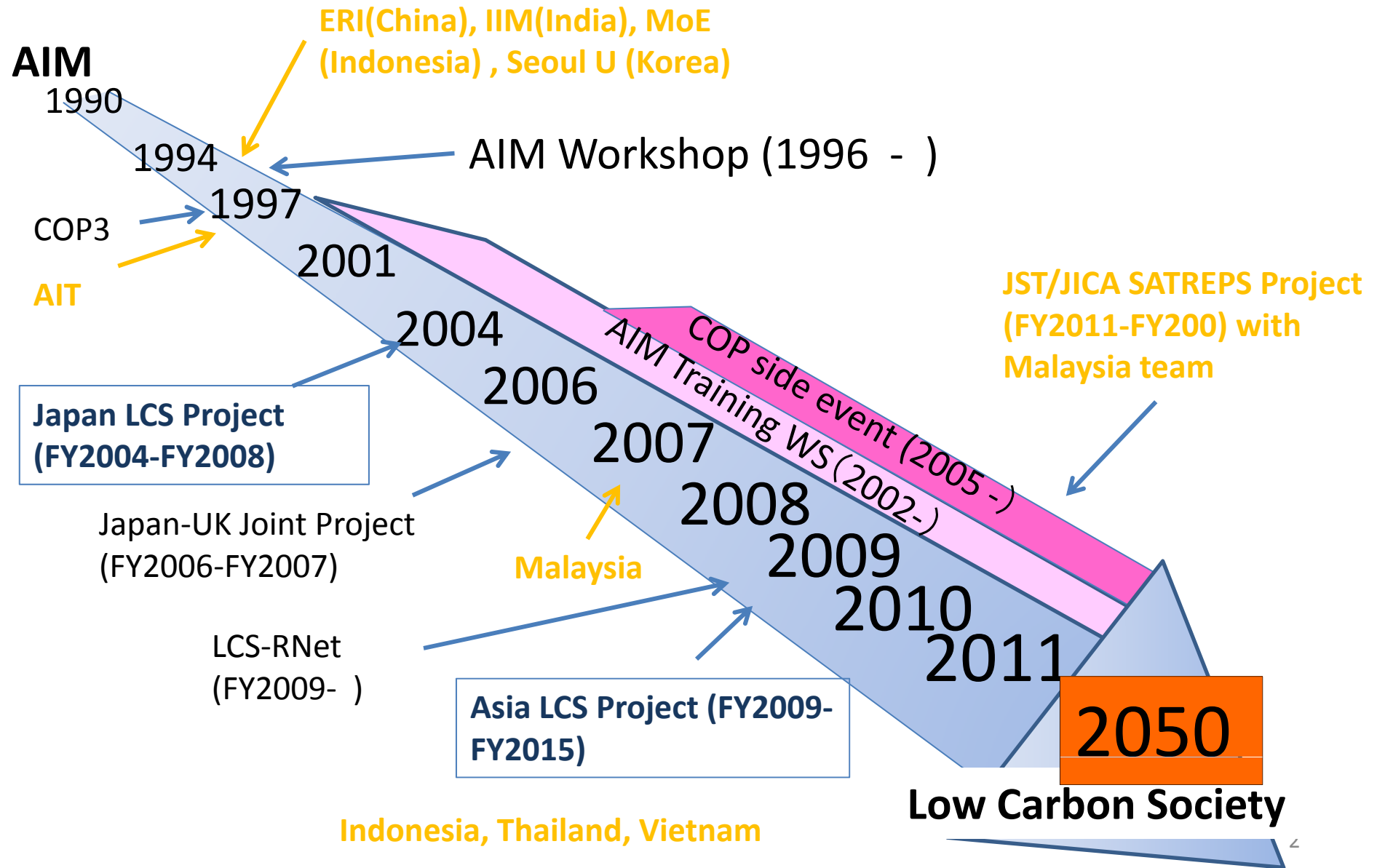
National Institute for Environmental Studies (NIES)

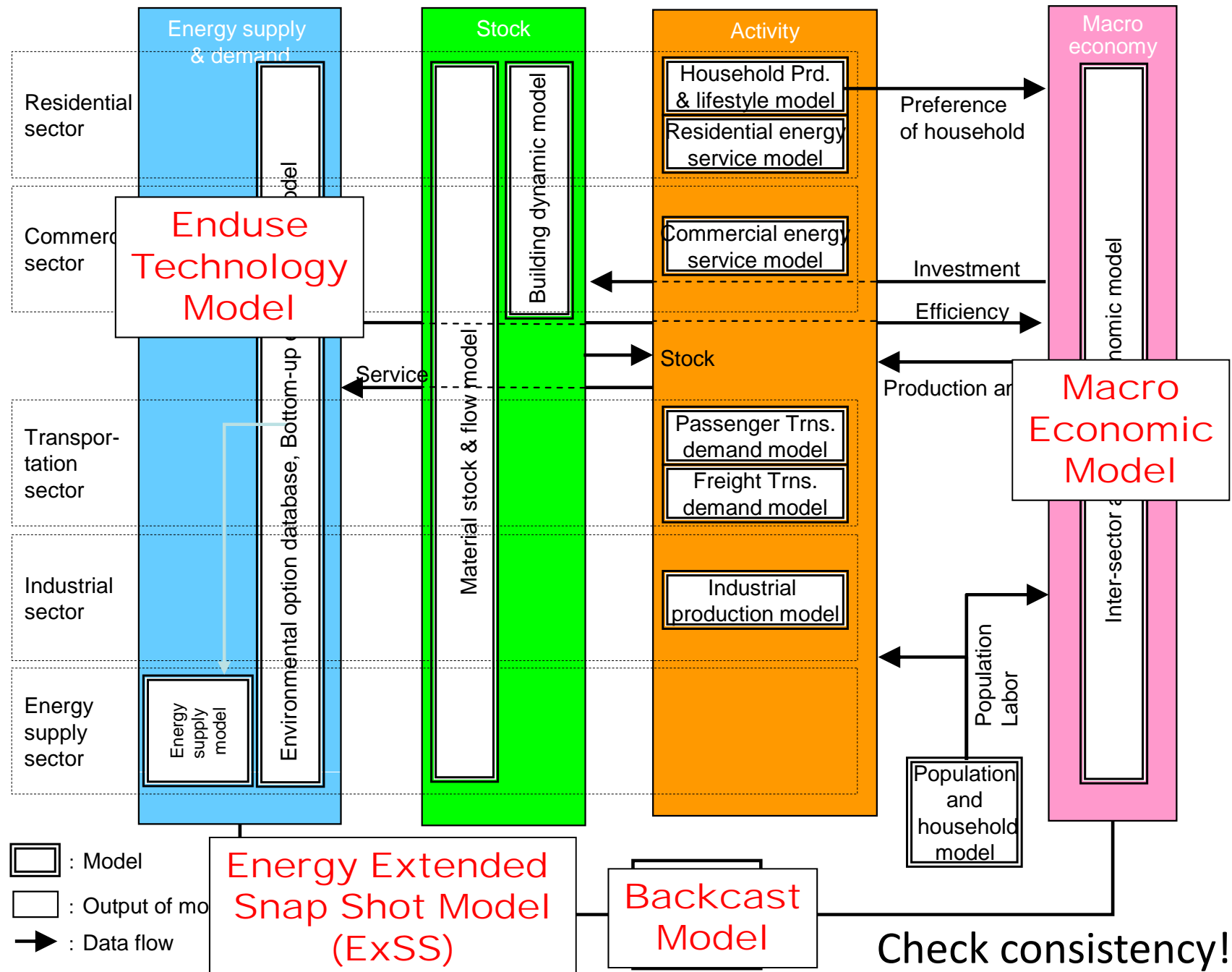


<http://2050.nies.go.jp/LCS/>

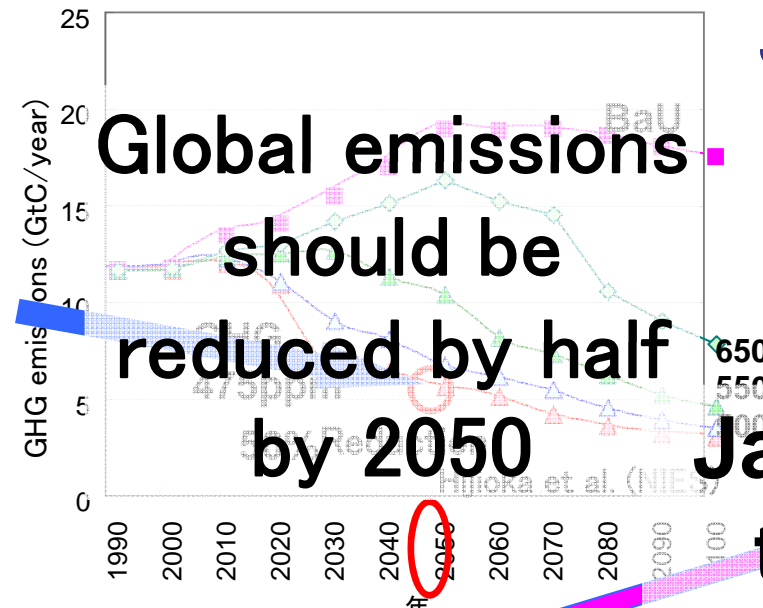
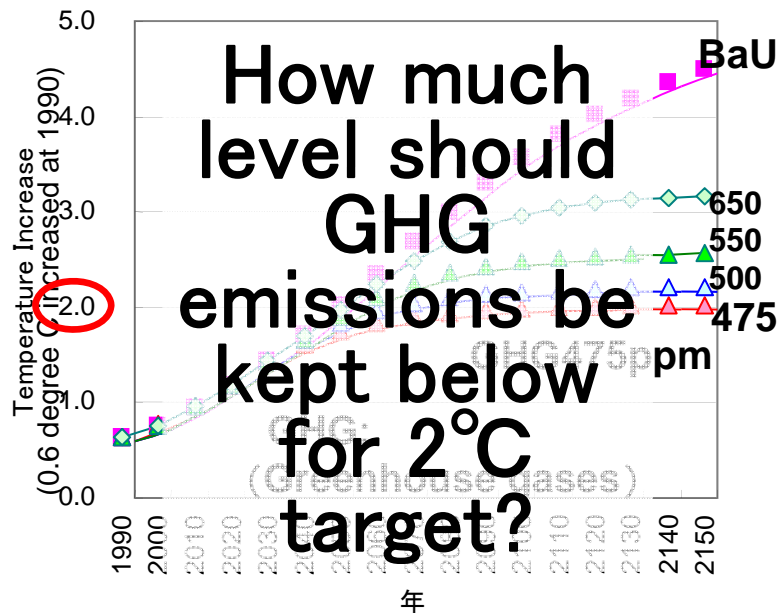
Funded by Ministry of Environment, Japan

Asia-Pacific Integrated Model (AIM)





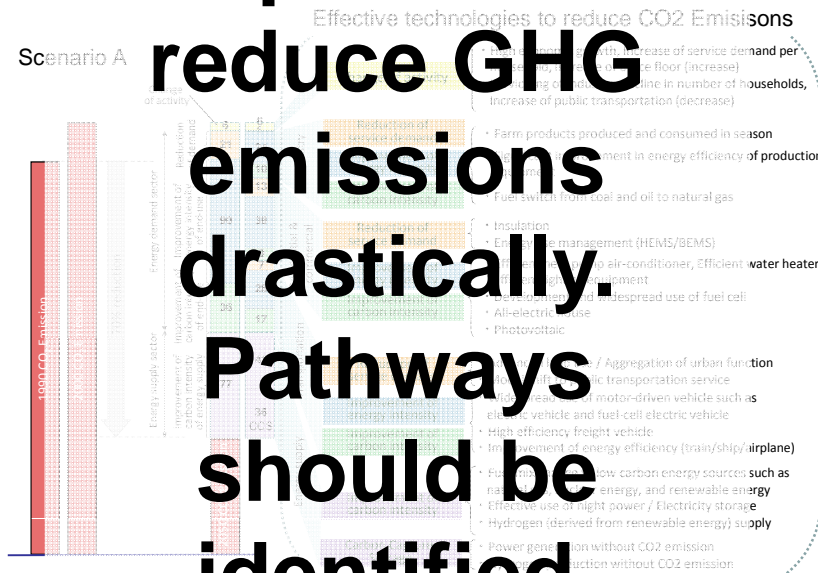
AIM (Asia-Pacific Integrated Modeling) for Asia LCS scenarios



Japan LCS study

**Japanese
target:
60-80%**

It is possible to reduce GHG emissions drastically. Pathways should be identified.



How to structure global participation

Developing countries: earlier guidance toward LCS is key



Japan 2050 scenario

Target for Low Carbon Society

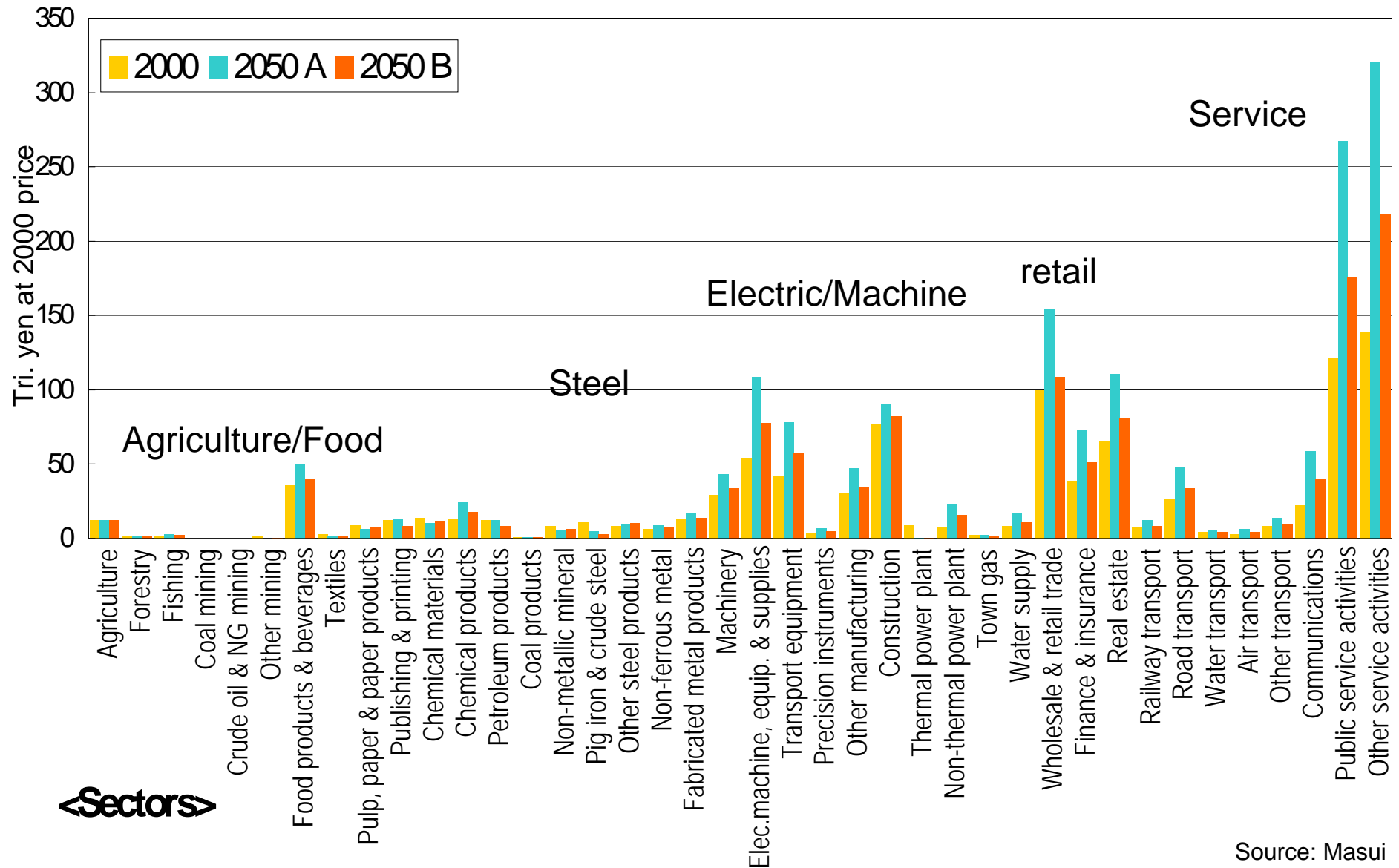
Shuzo Nishioka, Junichi Fujino;
NIES COP11 and COP/MOP1 side event
Global Challenges Toward
Low-Carbon Economy (LCE), Dec.3, 2005

LCS visions in Japan

two different but likely future societies

Vision A	Vision B
Vivid, Technology-driven	Slow, Natural-oriented
Urban/Personal	Decentralized/Community
Technology breakthrough Centralized production /recycle	Self-sufficient Produce locally, consume locally
Comfortable and Convenient	Social and Cultural Values
2%/Cap/year GDP growth	1%/Cap/year GDP growth
	

Industrial structure in 2050 in Scenario A and B, estimated by CGE model

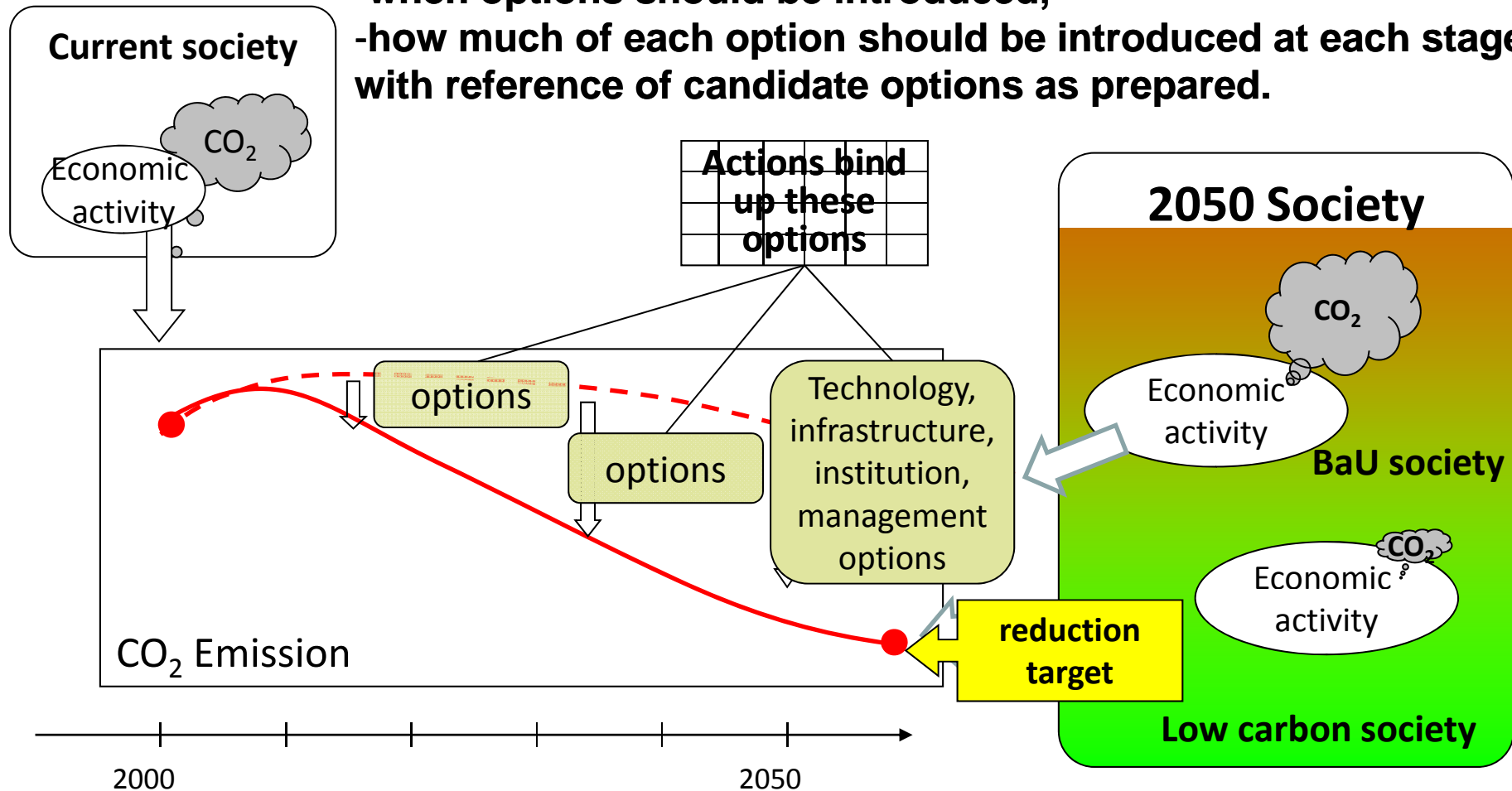


What Japan Low-carbon society scenario study has done

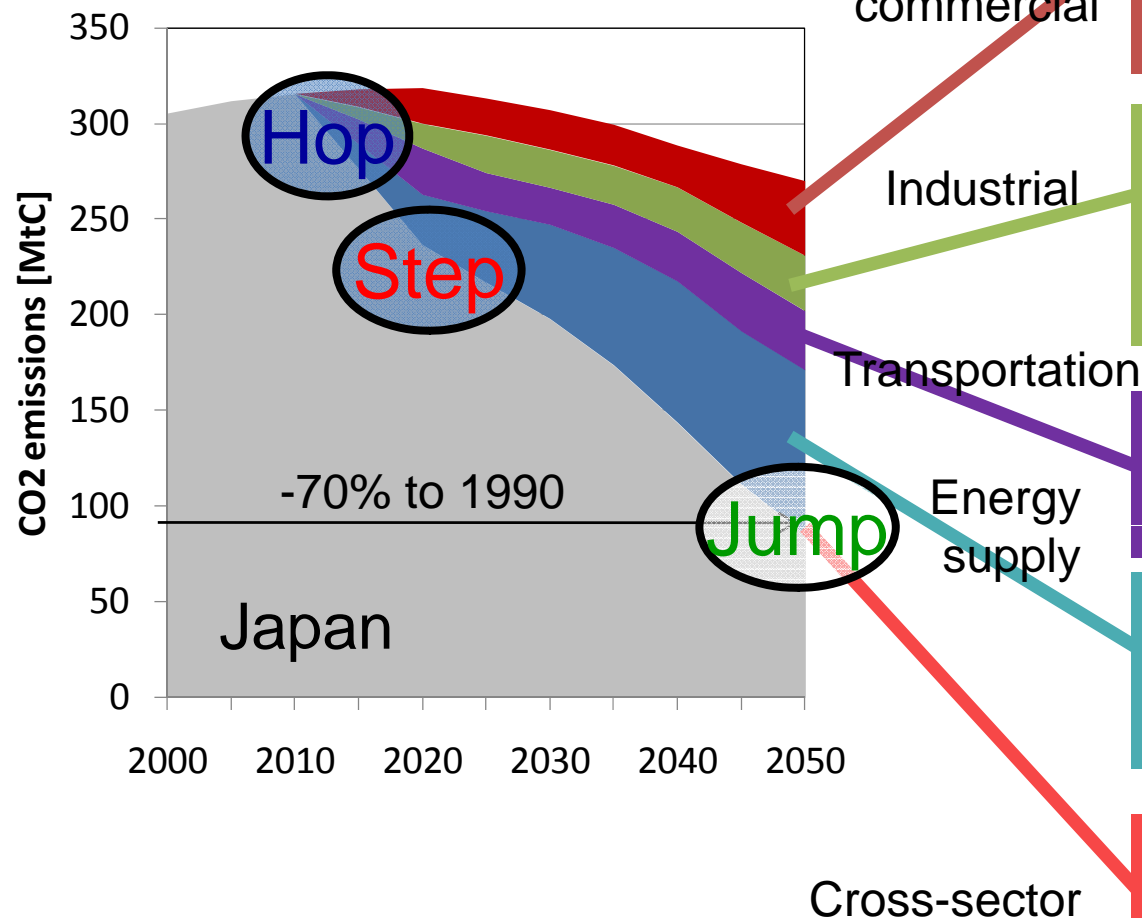
In order to achieve the reduction goal by 2050, we investigated

- which options should be selected,
- when options should be introduced,
- how much of each option should be introduced at each stage,

with reference of candidate options as prepared.



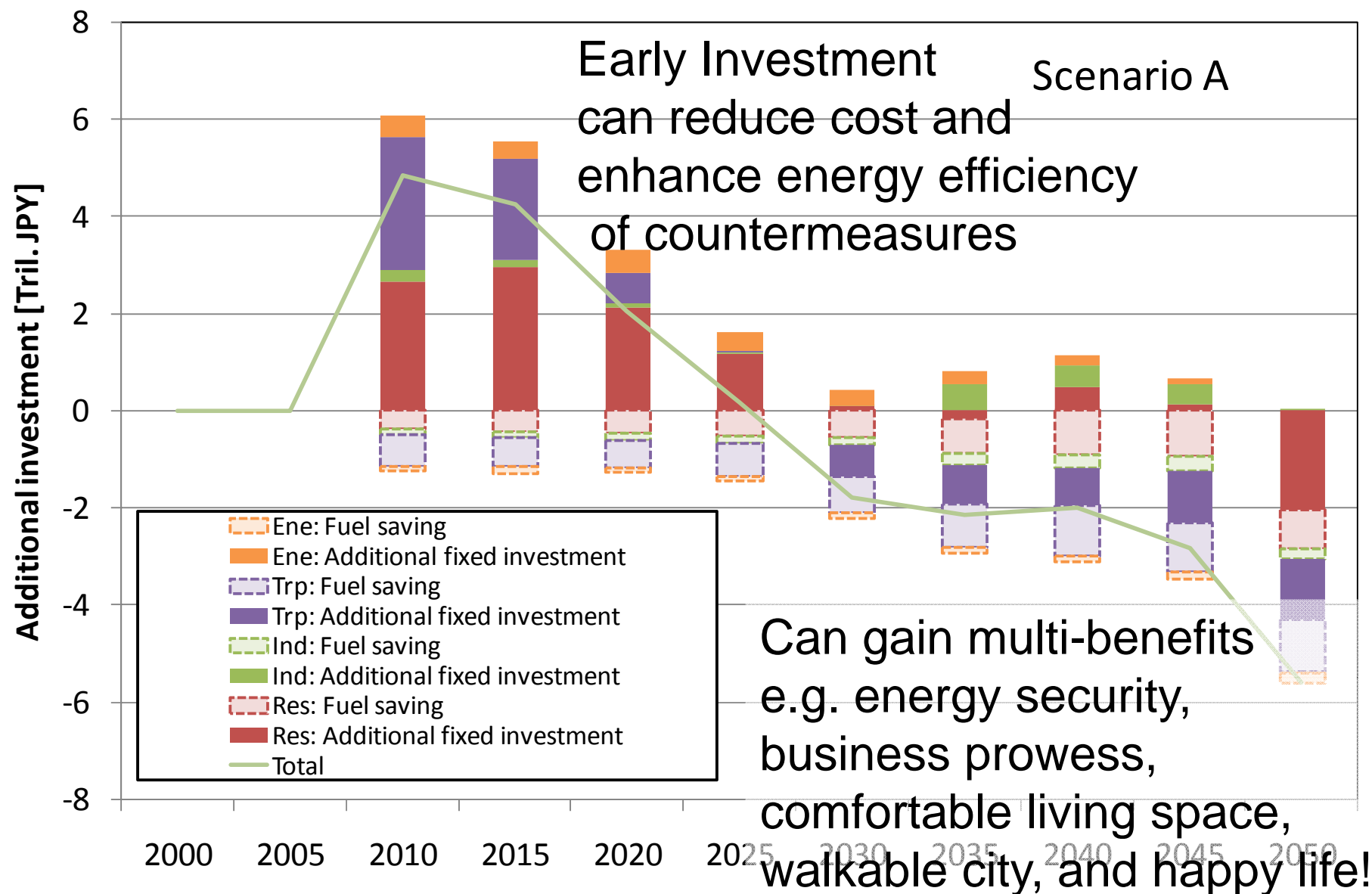
A dozen actions make it possible to reduce 70% CO2 emissions by 2050



Key Actions toward LCS in Japan

1. Comfortable and Green Built Environment
2. Anytime, Anywhere Appropriate Appliances
3. Promoting Seasonal Local Food
4. Sustainable Building Materials
5. Environmentally Enlightened Business and Industry
6. Swift and Smooth Logistics
7. Pedestrian Friendly City Design
8. Low-Carbon Electricity
9. Local Renewable Resources for Local Demand
10. Next Generation Fuels
11. Labeling to Encourage Smart and Rational Choices
12. Low-Carbon Society Leadership

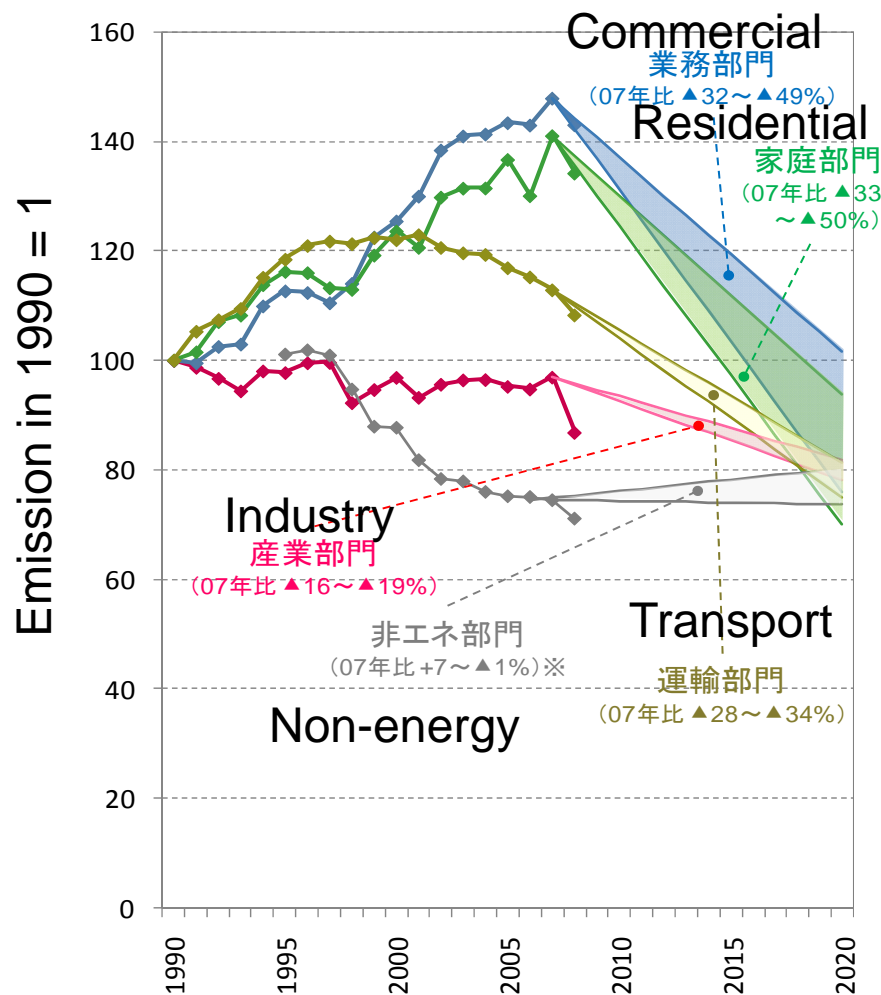
How to reach the Japan LCS Targets



Analysis on Japan's mid-term target on GHG reduction

Historical and projected GHG emissions

GHG emissions trends



Reduction rate in 2020

to 2007	▲ 15%		▲ 20%		▲ 25%	
Industry	▲ 16%	▲ 10% ▲ 5%	▲ 17%	▲ 10% ▲ 7%	▲ 19%	▲ 11% ▲ 8%
Residential	▲ 33%	▲ 19% ▲ 14%	▲ 40%	▲ 24% ▲ 17%	▲ 50%	▲ 31% ▲ 19%
Commercial	▲ 32%	▲ 19% ▲ 13%	▲ 40%	▲ 25% ▲ 15%	▲ 49%	▲ 31% ▲ 18%
Transport	▲ 28%	▲ 27% ▲ 1%	▲ 31%	▲ 30% ▲ 1%	▲ 34%	▲ 32% ▲ 1%
Non-energy	7%	7% 0%	1%	1% 0%	▲ 1%	▲ 1% 0%

to 1990	▲ 15%		▲ 20%		▲ 25%	
Industry	▲ 18%	▲ 13% ▲ 5%	▲ 19%	▲ 13% ▲ 6%	▲ 22%	▲ 14% ▲ 8%
Residential	▲ 6%	14% ▲ 20%	▲ 16%	8% ▲ 23%	▲ 30%	▲ 3% ▲ 27%
Commercial	1%	20% ▲ 19%	▲ 11%	11% ▲ 22%	▲ 25%	2% ▲ 27%
Transport	▲ 19%	▲ 18% ▲ 1%	▲ 22%	▲ 21% ▲ 1%	▲ 25%	▲ 23% ▲ 2%
Non-energy	▲ 20%	▲ 20% 0%	▲ 25%	▲ 25% 0%	▲ 26%	▲ 26% 0%

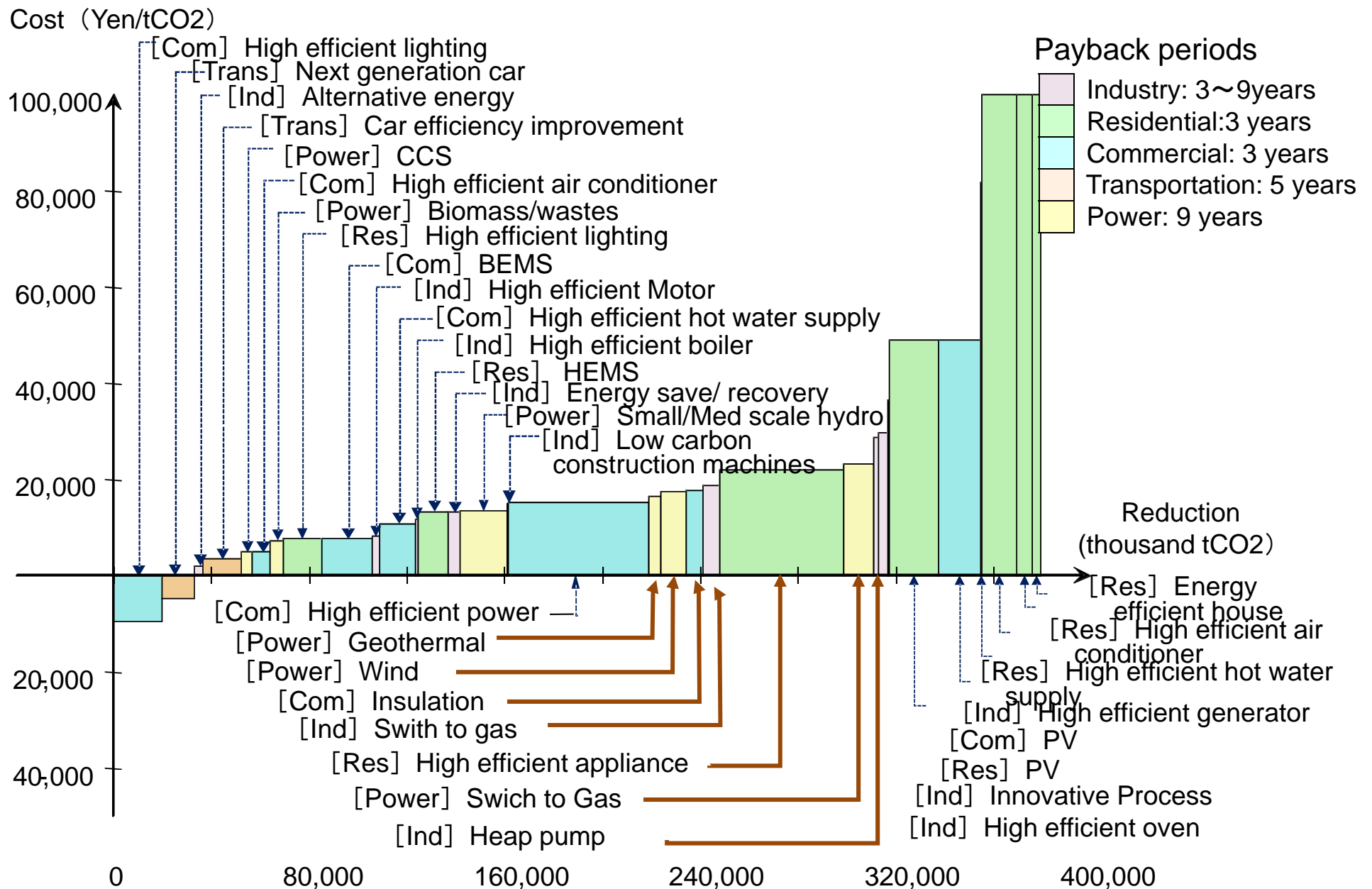
Left: total reduction

Right: upper: reduction within the sector

lower: reduction due to energy sector

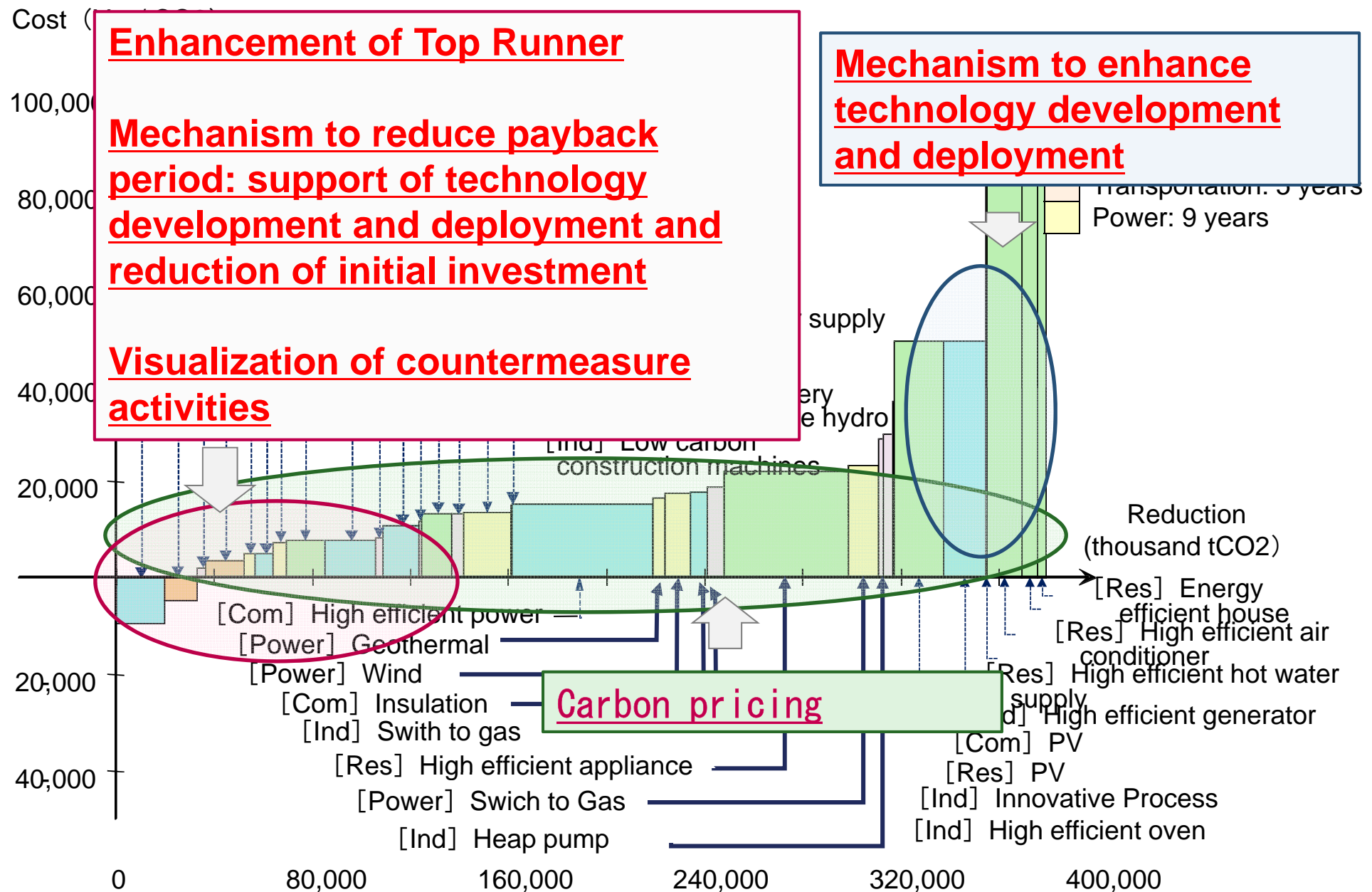
Analysis of Mid-term target setting in Japan

Marginal abatement cost curve for 25% GHG reduction in 2020



Analysis of Mid-term target setting in Japan

Marginal abatement cost curve for 25% GHG reduction in 2020

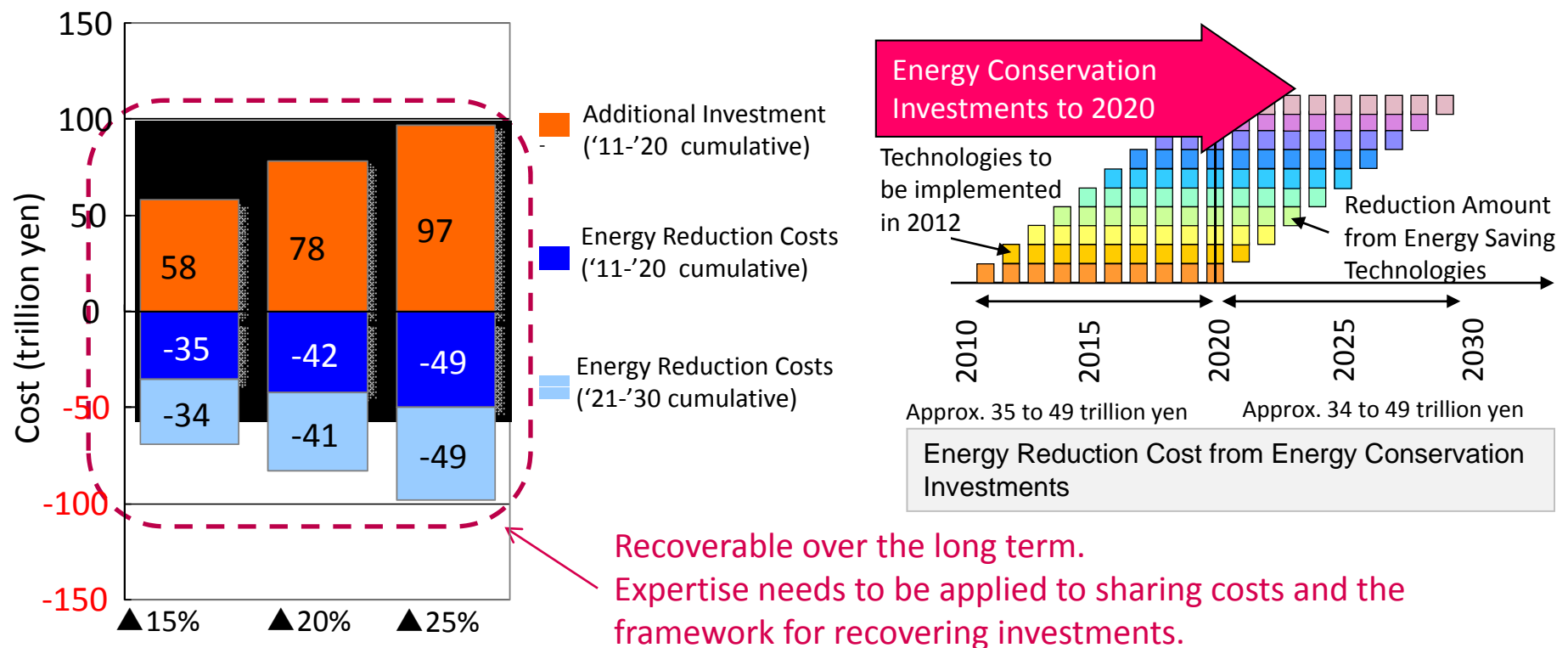


Roadmap for Achieving LCS:

Investments lead not only costs but also benefits

Half of all additional investments for climate stabilization measures can be recovered by 2020 based on the energy cost savings, while all additional investments can be recovered by 2030. Further discussions are required on how to share initial costs and what type of framework to use to recover costs quicker.

[Relationship between Additional Investments for Global Warming Measures and Energy Reduction Costs]



Comments from the Roadmap Subcommittee

- Japan needs to evaluate these figures together with the secondary effects outside of energy conservation.
- For companies, planning investments based on the energy conservation benefits 10 and 20 years into the future does not fit with reality.
- The effects of climate change occur after a time lag, so the current generation that made the investment will not necessarily be the ones to benefit from such investments.

Target in Kyoto

- Base year: 2005
- Target year: 2030
- Target area: Kyoto city area
- Target activity:
 - Residential, commercial and industrial activity in Kyoto city area
 - Transport originated in Kyoto city area
- Target gas:
 - CO₂ from fossil fuel combustion
 - CO₂ from waste (plastic) incineration
- Low-carbon target: -40% compared to 1990 level

Example of concrete execution plan towards Local LCS

- Roadmap towards Low Carbon Kyoto study -

40 % reduction by 2030 to 1990 level

Action 1 Walkable City, Kyoto

The "Walkable City, Kyoto" action will reduce CO₂ emissions in 2030 by 722 kt-CO₂. These are measures for promoting urban design that prioritizes pedestrians and public transport in order to reduce CO₂ emissions in the transport sector.

In part because Kyoto City has already actively promoted this measure, we estimate that many of the measures in the roadmap can be completed by the year 2020. However, other measures such as road pricing and the introduction of light rail transit (LRT) that involve long-term construction work or more significant changes to the transport structure will take longer, so all of the measures will not be completed until 2028.

The objective of "Promotion of mobility management" is to promote the use of public transport by the general public. "Implementation of transport demand management (TDM)" is needed to bring about a voluntary change in the attitude of the general public. This measure will employ educational pamphlets and related maps to encourage the use of public transport, opinion surveys of transport behavior and so on.

"Construction of pedestrian transit malls" is a measure designed to bring about a shift from the use of privately owned automobiles to public transport as the means of transport used by the general public. The sidewalks along Shijo-dori in the city center will be widened to secure a comfortable pedestrian space and promote a modal shift on the part of the general public. The use of pedestrian transit malls by the general public will enable CO₂ emissions to be reduced by 32 kt-CO₂.

Moreover, as many tourists visit Kyoto from other areas, it is important to have these tourists use public transport as well. "Attraction of tourists using public transport" is the measure that will be employed to promote the use of public transport by tourists. Publicity campaigns will be held at major train stations in the Kinki and Chubu districts to invite tourists to come by public transport. Moreover, the introduction of intelligent buses that travel between tourist spots in the city will encourage tourists to use public transport to travel within the city as well. These measures will reduce CO₂ emissions by 12 kt-CO₂.

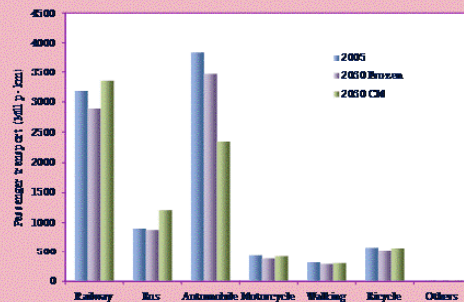


Figure 7 Passenger transport volume

In the "business as usual" case, the modal share for means of transport is the same in 2030 as it was in 2005. In the "corrective measures" case, a modal shift has occurred from privately owned automobiles to other means of transport, with the result that the automobile share has decreased and the share of public transport, bicycle and pedestrian transit has increased.

In the "corrective measures" case, the modal share for means of transport within the region that was occupied by automobiles has shifted 10% to trains, 20% to buses, 5% to pedestrian transit, and 7% to bicycles. Moreover, inter-regional transport within the city by automobile has shifted 10% to trains, 20% to buses, and 5% to pedestrian transit and bicycles. Transport to places outside the region by automobile has shifted 50% to trains.

Six Action Plans in Kyoto

Walkable city, Kyoto

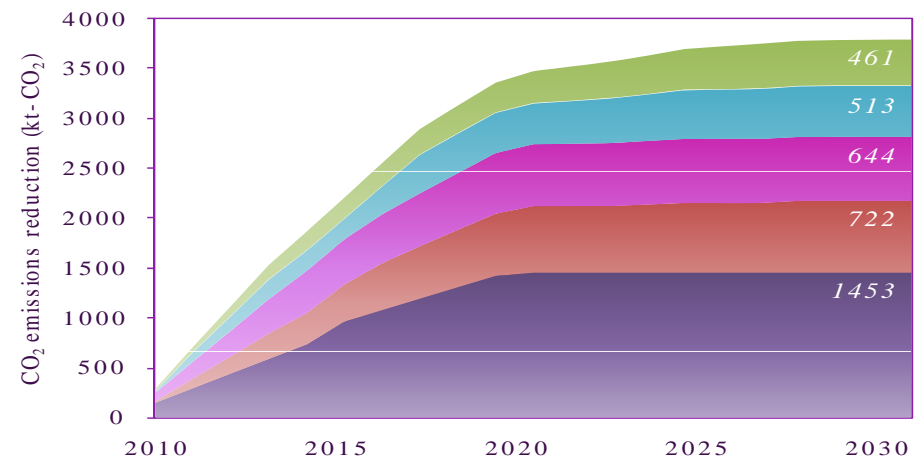
Decarbonization of Industry

Kyoto-style Buildings and Forest Development

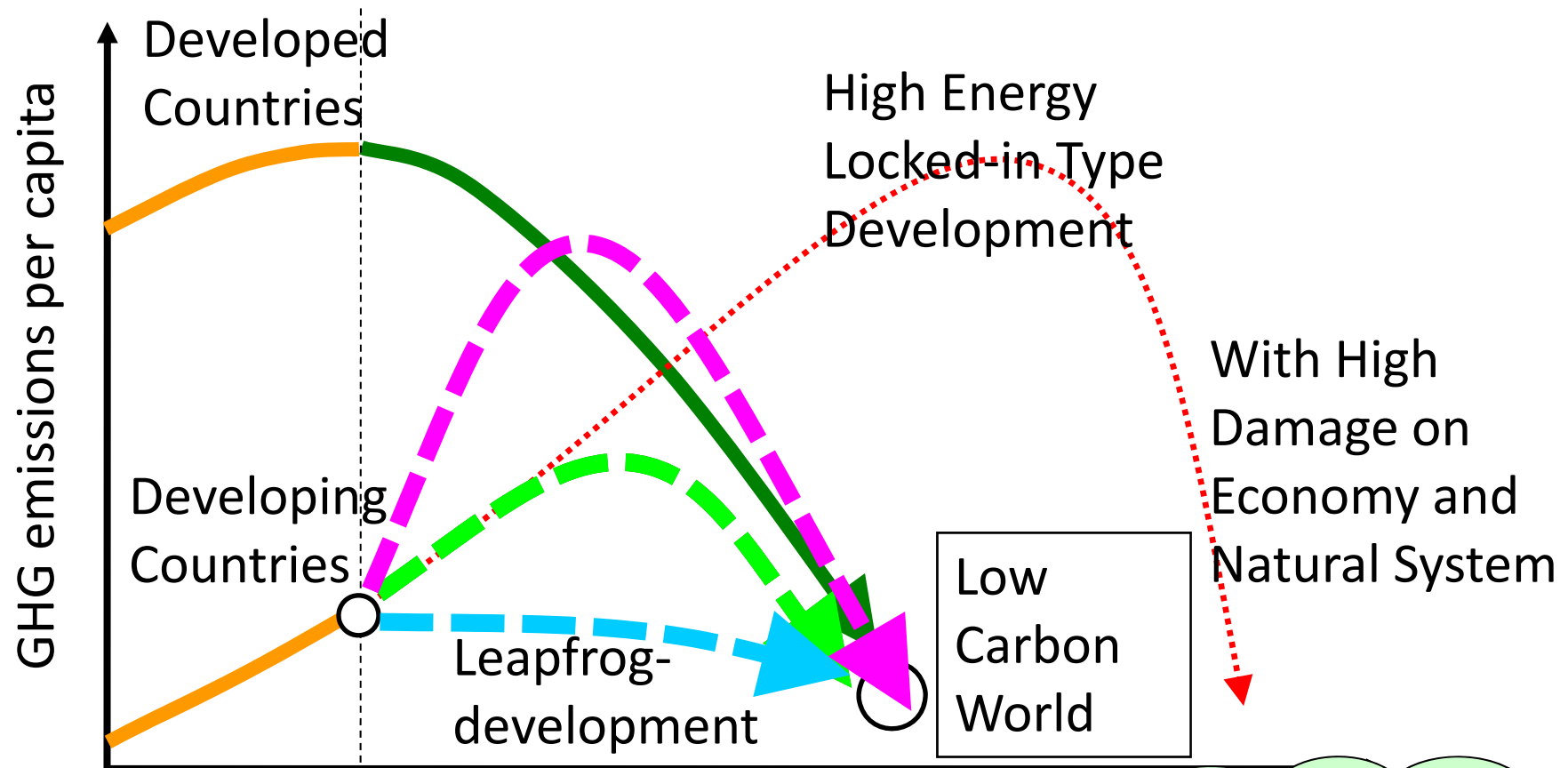
Comprehensive Use of Renewable Energy

Low Carbon Lifestyle

Establishment of a Funding Mechanism



Asian LCS scenarios study



Development of Asia LCS Scenarios

- (1) Depicting narrative scenarios for LCS
- (2) Quantifying future LCS visions
- (3) Developing robust roadmaps



Policy Packages for Asia LCS

- Encouraging the framing for LC policy in each Asian country
- Assistance for international negotiations with scientific basis
- Networking among LCS research in Asia

Why we need Sustainable Low Carbon Development in Asia?

- Developing in various aspects
 - Share of population & GDP will be more than 50% by 2050
 - Urbanizing rapidly
 - Increasing production and energy demands
- Significant impacts on economy & environment
- Needs to avoid lock-in high carbon infrastructures and energy systems
- Needs to improve quality of live
- Various possible pathways

Major elements to be considered

- **Energy and Land Resources:** Depletion of fossil resource, domestic and international commercial biomass, competition with agricultural production, ...
- **Institution:** Social system, regulation, ...
- **Security:** Social/human security, food security, energy security, ...
- **Co-benefits:** reduction of air pollution, improve health condition, ...

How to deploy our study to real world



We have started collaboration with Malaysia teams



Discussion with Putrajaya Corporation (PJC), 6 Jan. 2011



Workshop at UTM, 7 Jan. 2011



Discussion with Iskandar Regional Development Authority (IRDA), 7 Jan. 2011



Workshop at UTM, 7 Jan. 2011

Asia LCS scenarios and actions: How to achieve sustainable low-carbon society

Dissemination & ExSS Workshop in Thailand

Low-carbon society model capacity building workshop

Bridge simulation scenarios and sustainable LCS policy
implementation using AIM (Asia-Pacific Integrated Model)

Organized by TGO, SIIT-TU, JGSEE, NIES

November 19, 2010. Pullman King Power Hotel, Bangkok

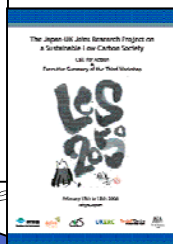


Barriers to overcome in LCS Pathways

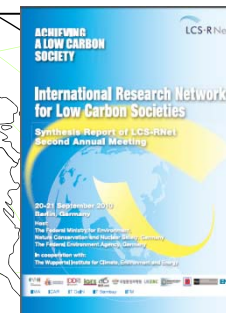
- ❖ No common generalized policies can be developed. Individual solutions are needed for each region / city.
- ❖ Success depends on the participation of local government / people.
- ❖ Almost no awareness in small regions / cities.
- ❖ Capacity building is slow and time taking.
- ❖ Good quality infrastructure and services are almost always necessary.
- ❖ Without synergies with development priorities, LCS is difficult to be achieved.
- ❖ Investment has to be more in innovations.
- ❖ Needs strong messages from policy makers.

Promoting LCS with International Collaboration

Japan-UK Joint Project on LCS
2006, 2007, 2008



**LCS-RNet:
supported by
G8EMM**



**Low carbon
society study**

Join research in Asia

UK

EU

USA

China Japan
India Korea
Thailand Cambodia
Vietnam
Malaysia
Indonesia

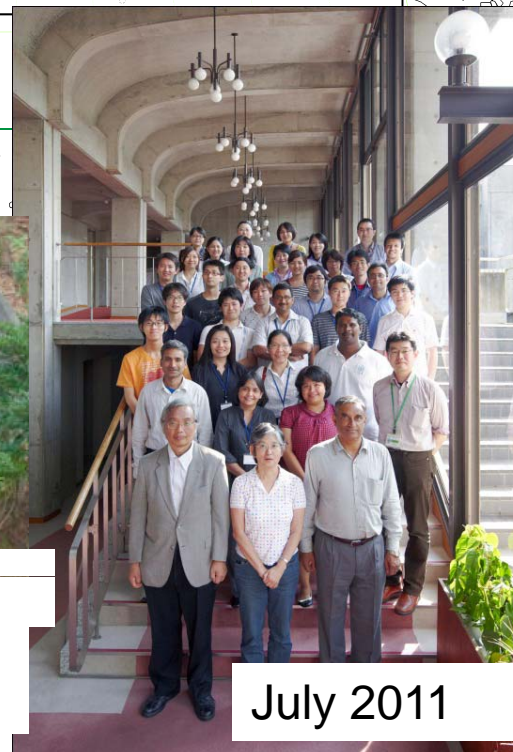
**COP Side Events
since COP11**

International
workshops: IPCC
scenario meetings,
AME, EMF, OECD,
SBSTA, GEI, etc.



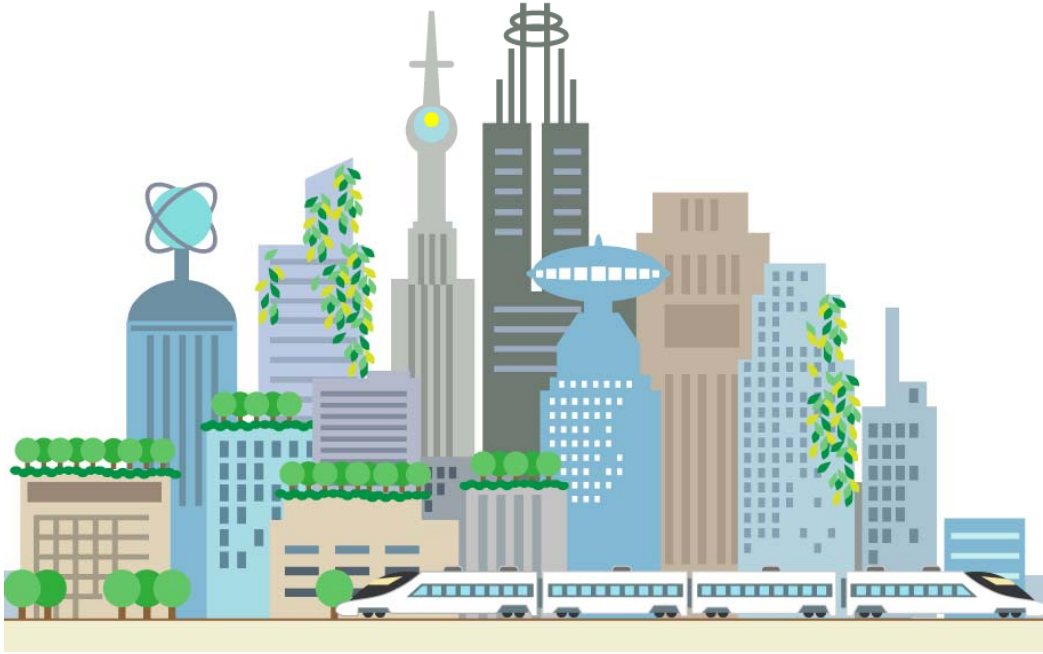
Feb. 2011

AIM International
Workshop Since 1996



July 2011

AIM Training
Workshop:
Model
development
with young
scientists
since 2002



Thank you for your attention!

