



Low Carbon Society (LCS)

~ Designing Asian scenarios towards Low Carbon Societies ~

1. If we cannot go to LCS,...
2. LCS offers higher QOL with less energy demand and lower-carbon energy supply
3. LCS needs good design, early action, and innovations



Mikiko Kainuma

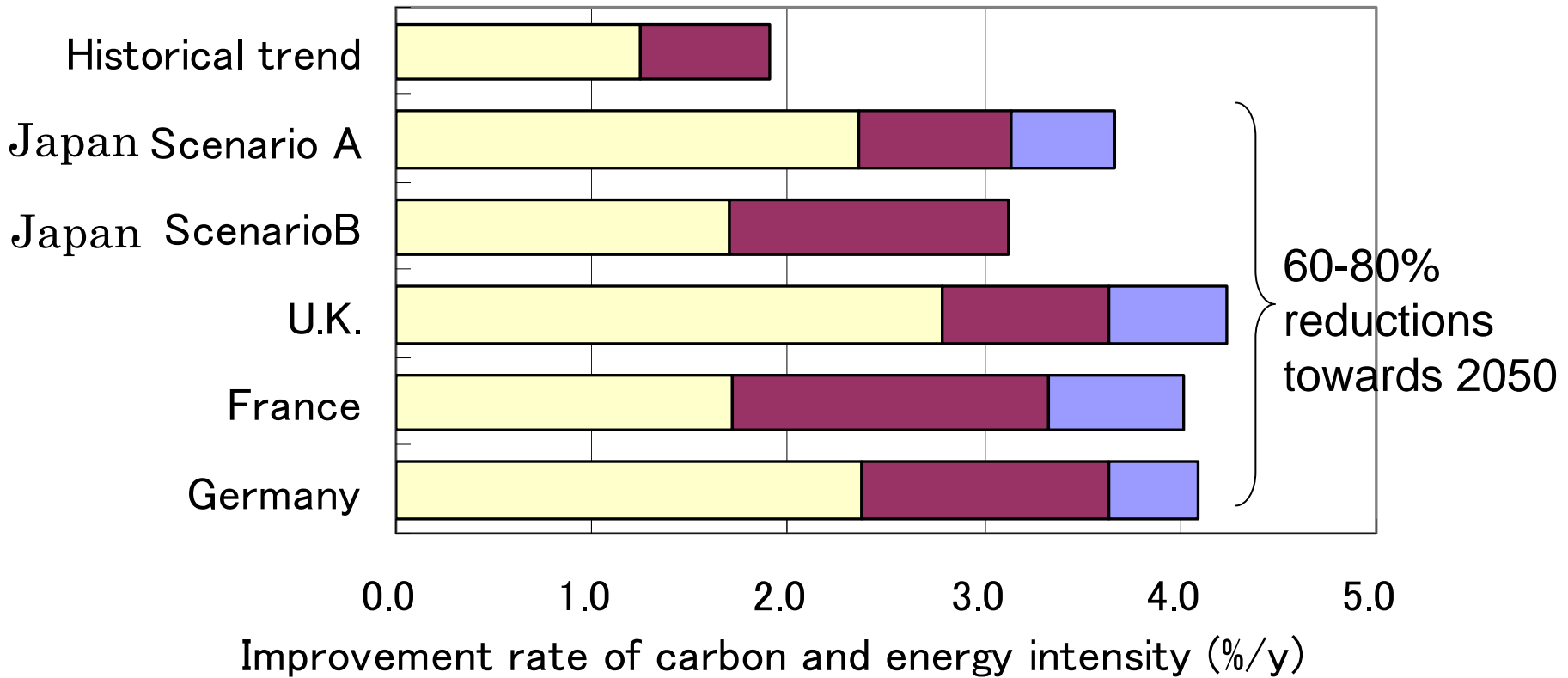
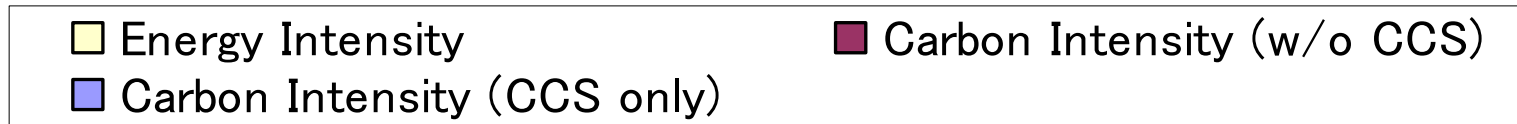
IAMC Meeting, 15 September 2009

National Institute for Environmental Studies

Purpose of LCS studies

- Identifying and understanding the necessity for deep cuts in greenhouse gas (GHG) emissions toward 2050
- Reviewing country-level GHG emissions scenario studies in developed and developing countries.
- Formulating win-win strategies to align sustainable development and climate objectives
- Studying methodologies to achieve LCS – visions, pathways, modeling, financial mechanisms
- Identifying gaps between goals and the current reality
- Sharing best practices and information; identifying opportunities for cooperation

Required improvement rate of carbon and energy intensity to achieve LCS



Keep double speed to improve carbon and energy intensity compared as that of the historical record!

Two stages of LCS scenario development and relations among model groups

Stage 1: Design of a Low Carbon Society

1. Creation of narrative storylines of future Low Carbon Societies
2. Description of sector-wise details of the future LCSs.
3. Quantification of the Macro-economic and social aspects of the LCSs.
4. Identification of effective policy measures and packaging them

Stage 2: Putting them together and design roadmaps towards LCS

1. Design of policy roadmaps toward the Low Carbon Society
2. Feasibility analysis of the roadmaps considering uncertainties involved in each policy option
3. Analysis of robustness of the roadmap caused by social, economical and institutional acceptability and uncertainties

Group 1: Element models;

AIM/enduse[country], Energy supply model, Household production/lifestyle model, Transportation demand model, Population and household model, Building dynamics model, Material stocks and flow model, Econometric type macro-economy model

Group 2: Integration models; Extended Snapshot Tool (ExSS) AIM/CGE



Group 3: Backcasting Model for roadmap design and transient control (BCM)

Two stages of LCS scenario development

Stage 1-1: Creation of narrative storylines of future Low Carbon Societies

- Examples of Japan 2050 LCS study -

For Japan, we prepared 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%/yr GDP per capita growth	1%/yr GDP per capita growth
		

	Vision A	Vision B
Goal of life	Pursue economical "success" in the competitive society and spend much time on their own skill development.	Contribute to society as possible in the various fields of their capabilities
Work	Pursue high productivity and efficiency. "Success in the economic society has the highest priority over any other factors.	Although working is one worthwhile activities, more placed on balance between work and life
Residence	Prefer sophisticated and convenient urban life.	Prefer slower and healthy rural life.
Acceptance of advanced technologies	Positively accept new and advanced technologies. People tend to expect advent of new technologies to overcome various social issues.	Take a cautious attitude towards some advanced technologies (e.g., Genetic technologies, atomic power). Accept inconvenient lifestyle to some extent.
Presence of Japan	Japan should continue to be a great economic nation and lead the world. In order to achieve the goals, more stress should be placed on economic development policies	Japan should show our pride by our own culture or international cooperation, although economy is also important

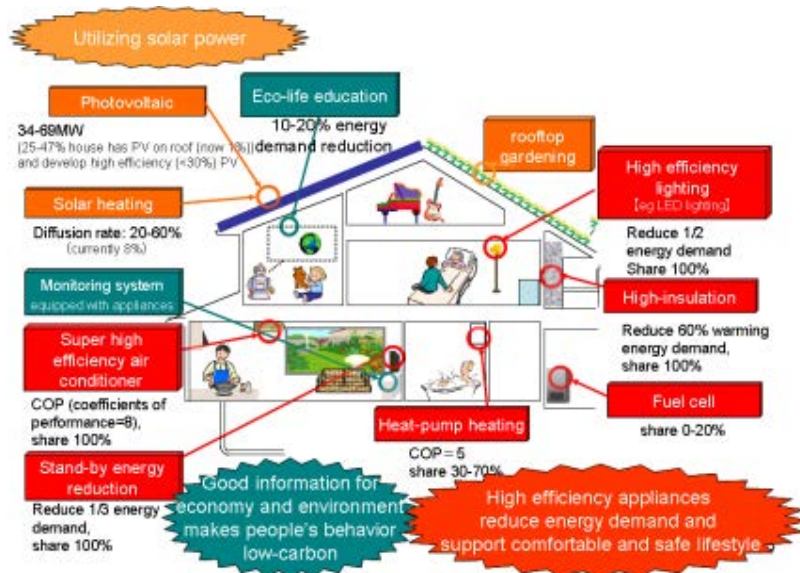
Two stages of LCS scenario development

Stage 1-4 : Identification, quantification, promotion and evaluation of Innovations towards LCS

- An example of LCS house, Comfortable and energy-saving house -

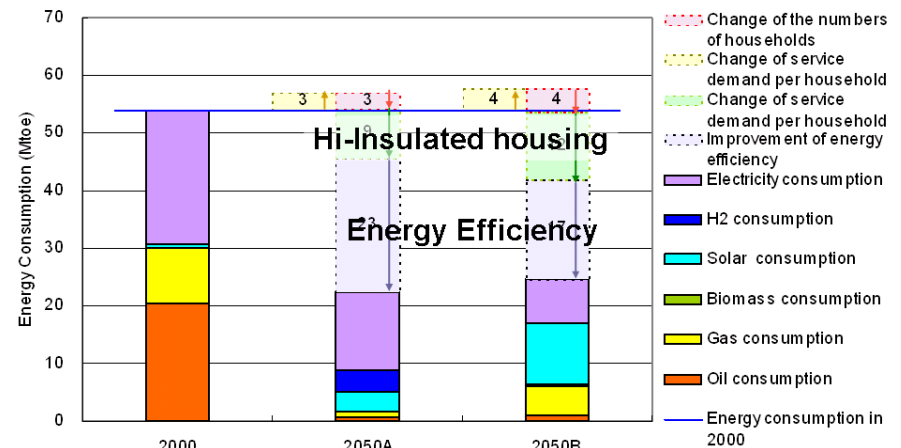
Identification and promotion of Innovations

“Innovation of comfortable and energy-saving house”



Quantification and evaluation

“ Residential sector: Energy reduction potential: 40-50%”

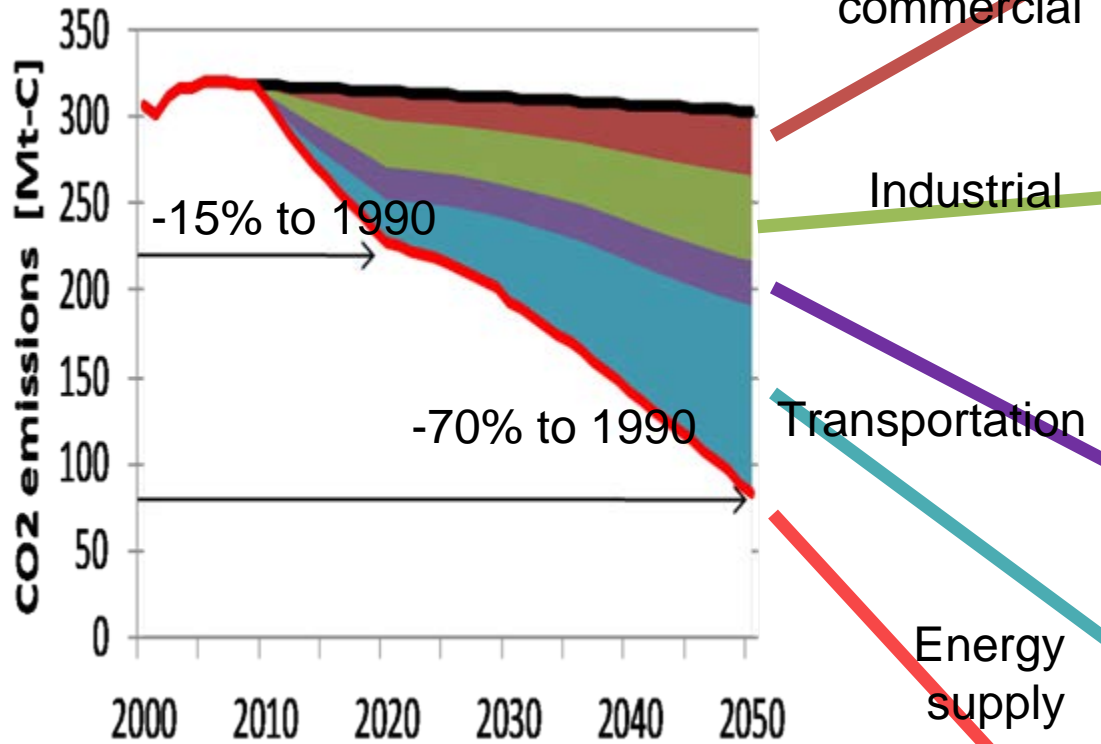


Change of the number of households: the number of households decrease both in scenario A and B
 Change of service demand per household: convenient lifestyle increases service demand per household
 Change of energy demand per household: high insulated dwellings, Home Energy Management System (HEMS)
 Improvement of energy efficiency: air conditioner, water heater, cooking stove, lighting and standby power

Two stages of LCS scenario development

Stage 2-1: Design of policy roadmaps toward the Low Carbon Society

A Dozen Actions

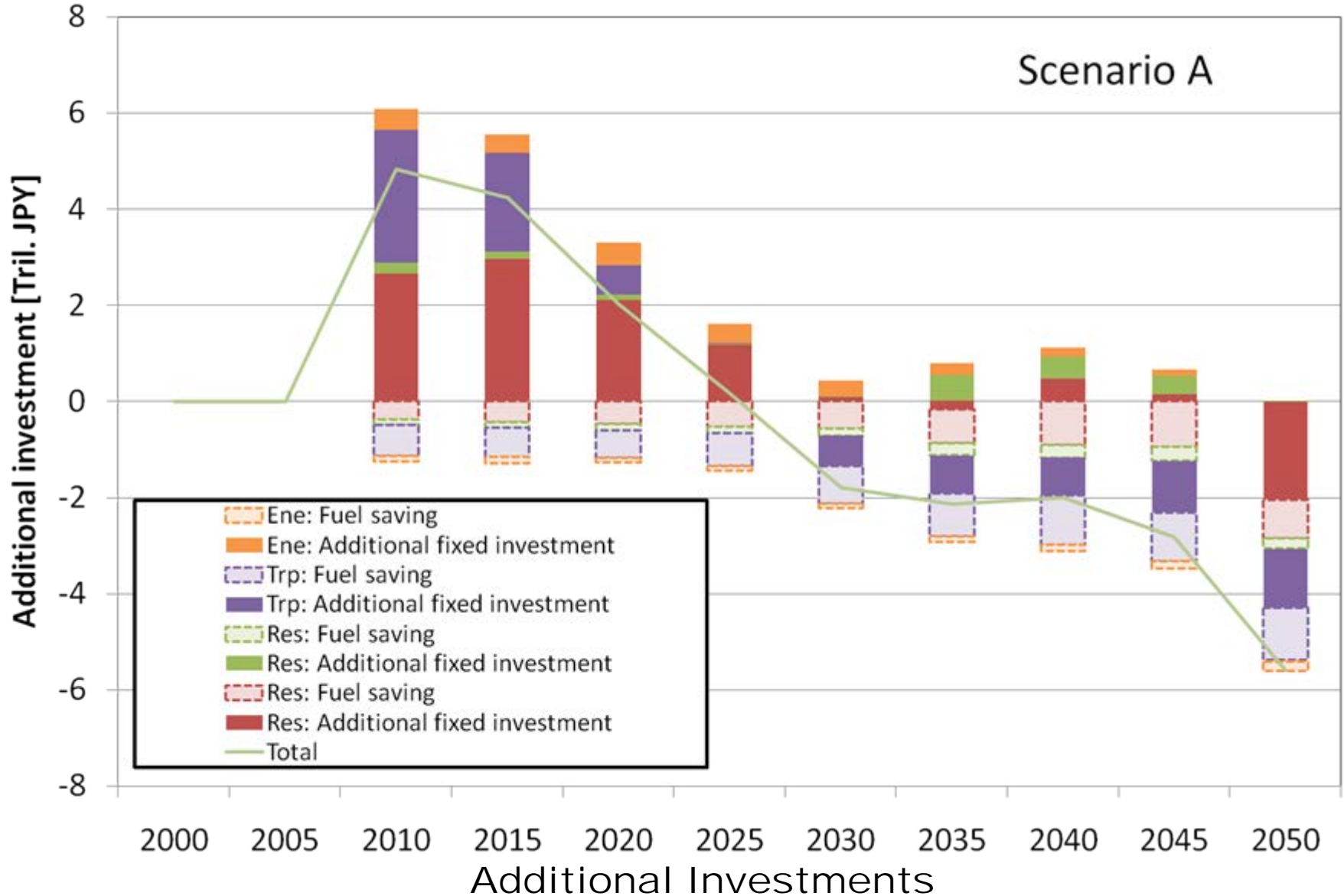


CO2 emission projections based on a dozen actions toward 70% reduction

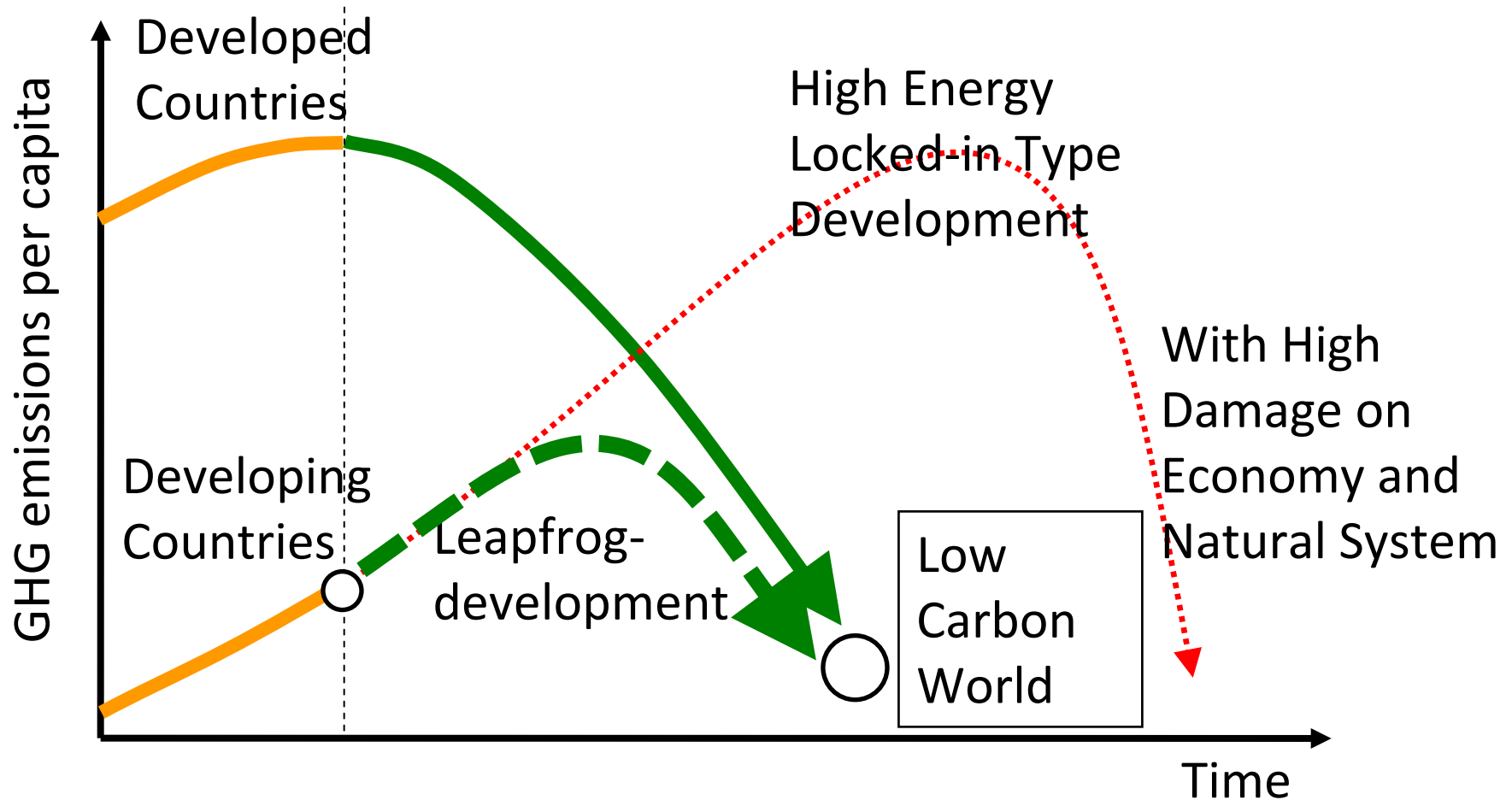
1. Comfortable and Green Built Environment
2. Anytime, Anywhere Appropriate Appliances
3. Promoting Seasonal Local Food
4. Sustainable Building Materials
5. Environmentally Enlightened Business and Industry
6. Swift and Smooth Logistics
7. Pedestrian Friendly City Design
8. Low-Carbon Electricity
9.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

Two stages of LCS scenario development

Stage 2-1: Design of policy roadmaps toward the Low Carbon Society



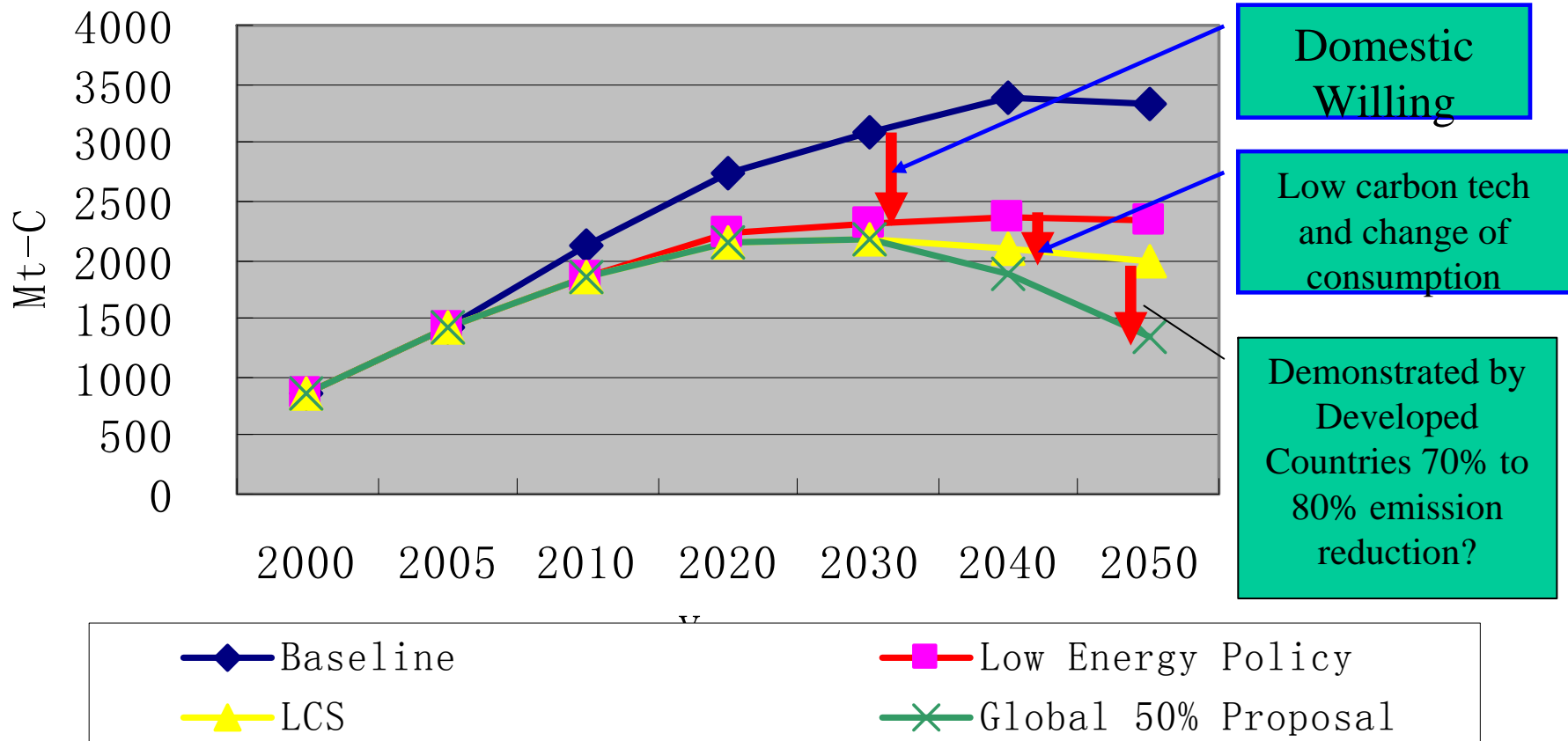
Asian LCS scenarios study



Modeling Sustainable Low-Carbon Asia

Asian LCS scenarios study is funded by Global Environmental Research Program, Ministry of Environment, Japan 9

CO2 Emission from Energy Activities in China, IPAC Results



Sustainable Cities: Planning and Infrastructures

- Land-use Planning
- Building Choices
- Infrastructures
- Service Networks

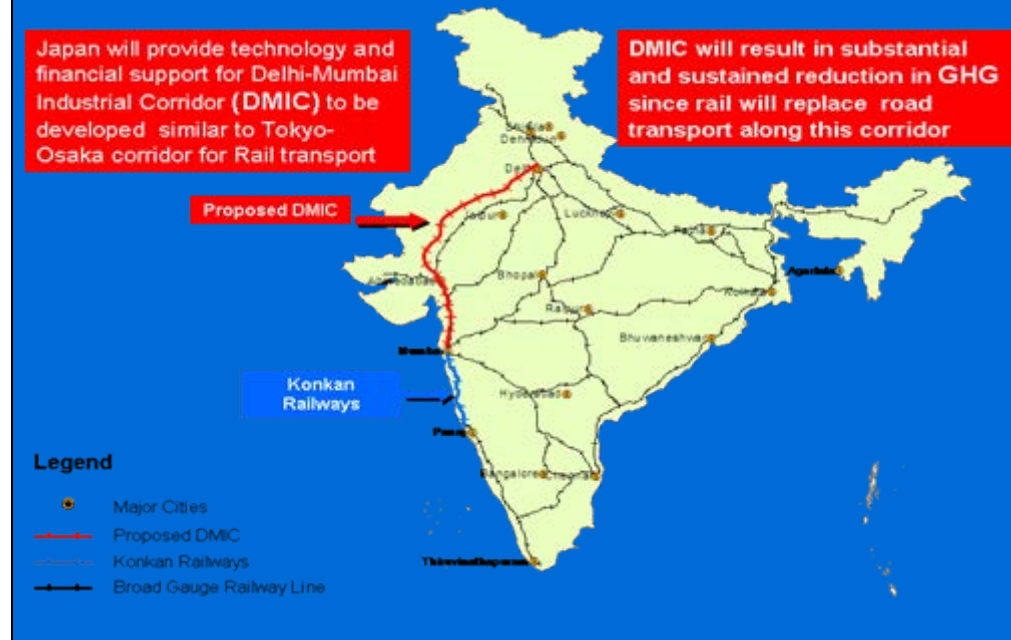
Bus Rapid Transport System



Technologies for Train Corridors

Japan will provide technology and financial support for Delhi-Mumbai Industrial Corridor (DMIC) to be developed similar to Tokyo-Osaka corridor for Rail transport

DMIC will result in substantial and sustained reduction in GHG since rail will replace road transport along this corridor



Low-Carbon Society Scenarios for India:

Aligning Sustainable Development and Climate Actions

P.R. Shukla, Indian Institute of Management

Japan Low Carbon Society Scenarios toward 2050 Project Symposium

Tokyo, Japan, February 12, 2009

Measures to achieve low carbon society during 2005-2050

Cleaner Fuel Use and Environment Friendly Public Transport System

Use of non-motorized transport systems

- shift to non-motorized transport

Master plan for compact cities

- Lowers travel demand

Public transport friendly design of cities and transport system

- modal shift, higher use of Mass Rapid Transits

Use of clean fuel and efficient vehicles

- improving efficiency and lowering carbon intensity of energy use in transport; promoting biofuels.

Energy Efficiency Improvements (End Use and Industrial Production)

Labeling on electrical appliances

Energy auditing – promoting use of efficient technology in industries

Carbon emission labeling of industrial products

- Promoting use of low carbon products.

Low Carbon Electricity Generation

Efficient and cleaner power generation

- Promoting natural gas based advanced combined cycle power plants

Renewable Portfolio Standard (RPS)

- Biomass based power
- Solar based power

Nuclear power generation

Natural gas use in electricity generation

Building Insulation in Residential and Commercial Sector

Building codes

- Regulatory measures to lower energy use

Financial incentives through Energy Conservation Fund

Public awareness campaign

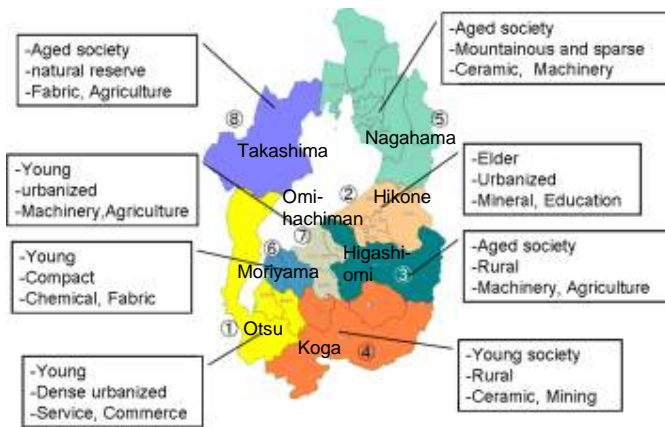
- to promote voluntary measures



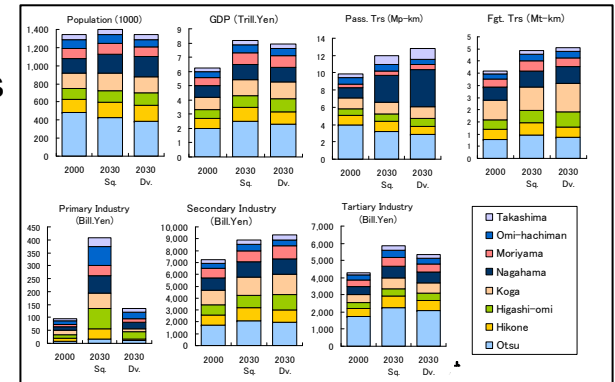
Sustainable Shiga study

In order to taken account of regional characteristics in Shiga prefecture,...

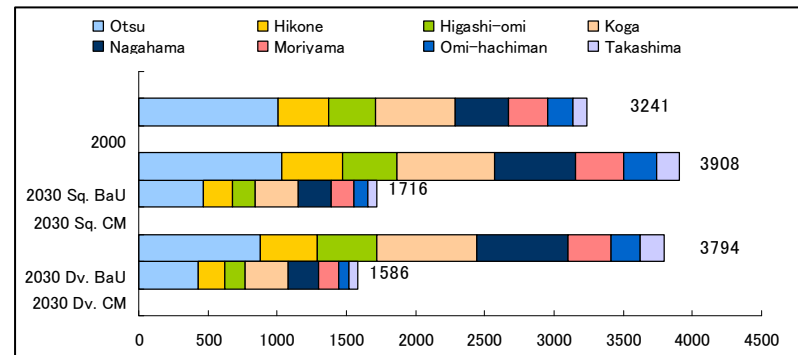
1. Considering differences of demographic and industrial structure, intra-regional trade and commuting structure, target area was divided into 8 regional activity zones.



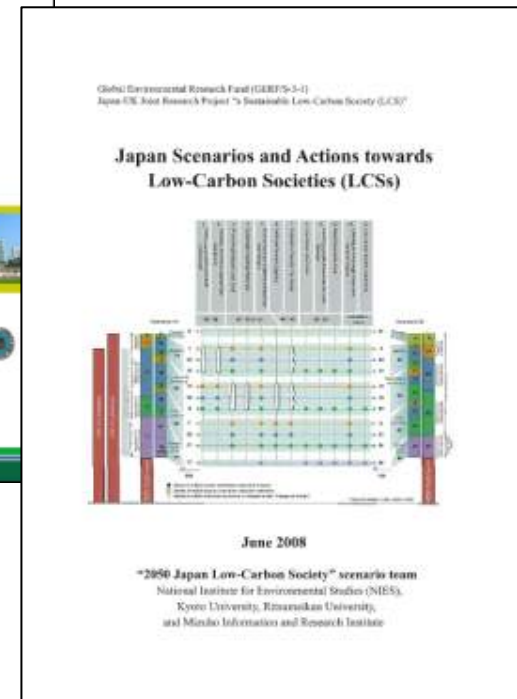
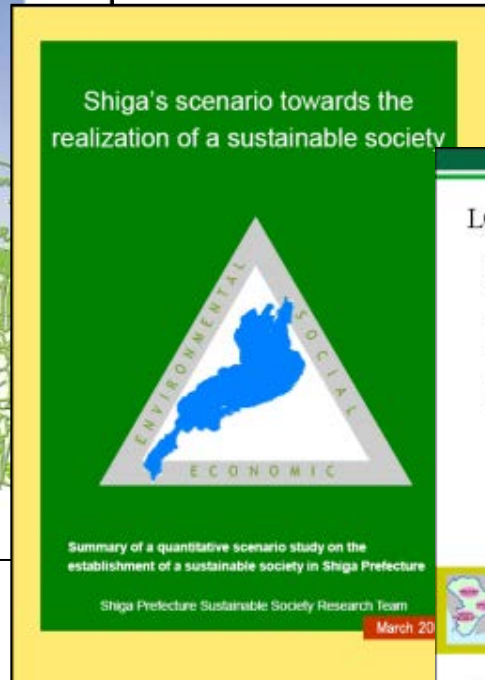
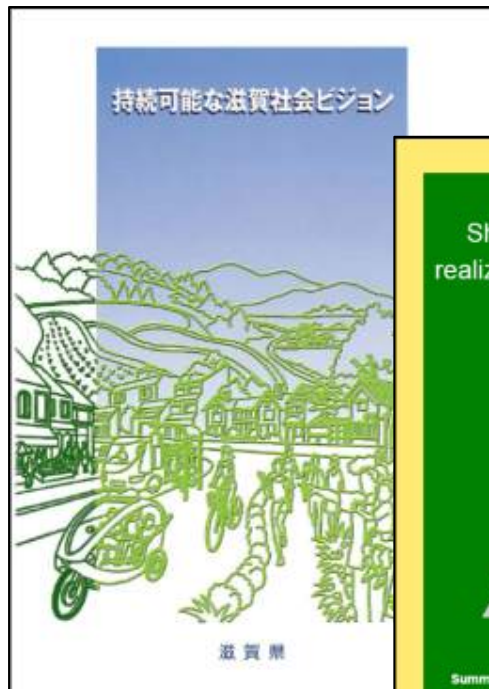
2. Projecting quantitative socio-economic structures under alternative future scenarios relating GHG emissions...



3. Evaluating effectiveness of policy measures and their regional deployments



Demonstration and publicity material of our LCS study on national-level and sub-national-level analysis



LCS is not only to avoid dangerous climate change, but to...

- Avoid energy resource battles by using resources in efficient ways
- Develop many innovations to support global sustainable development
- Build safe and sound society considering appropriate land-use and city planning
- and ...

We need good scientific findings
to innovate systems to pledge
people's activities for LCS

Thank you for your attention!

