



AIM research activities
towards Low carbon Society in Asia

How to Realize Sustainable Low-Carbon Society: Scenarios and Actions

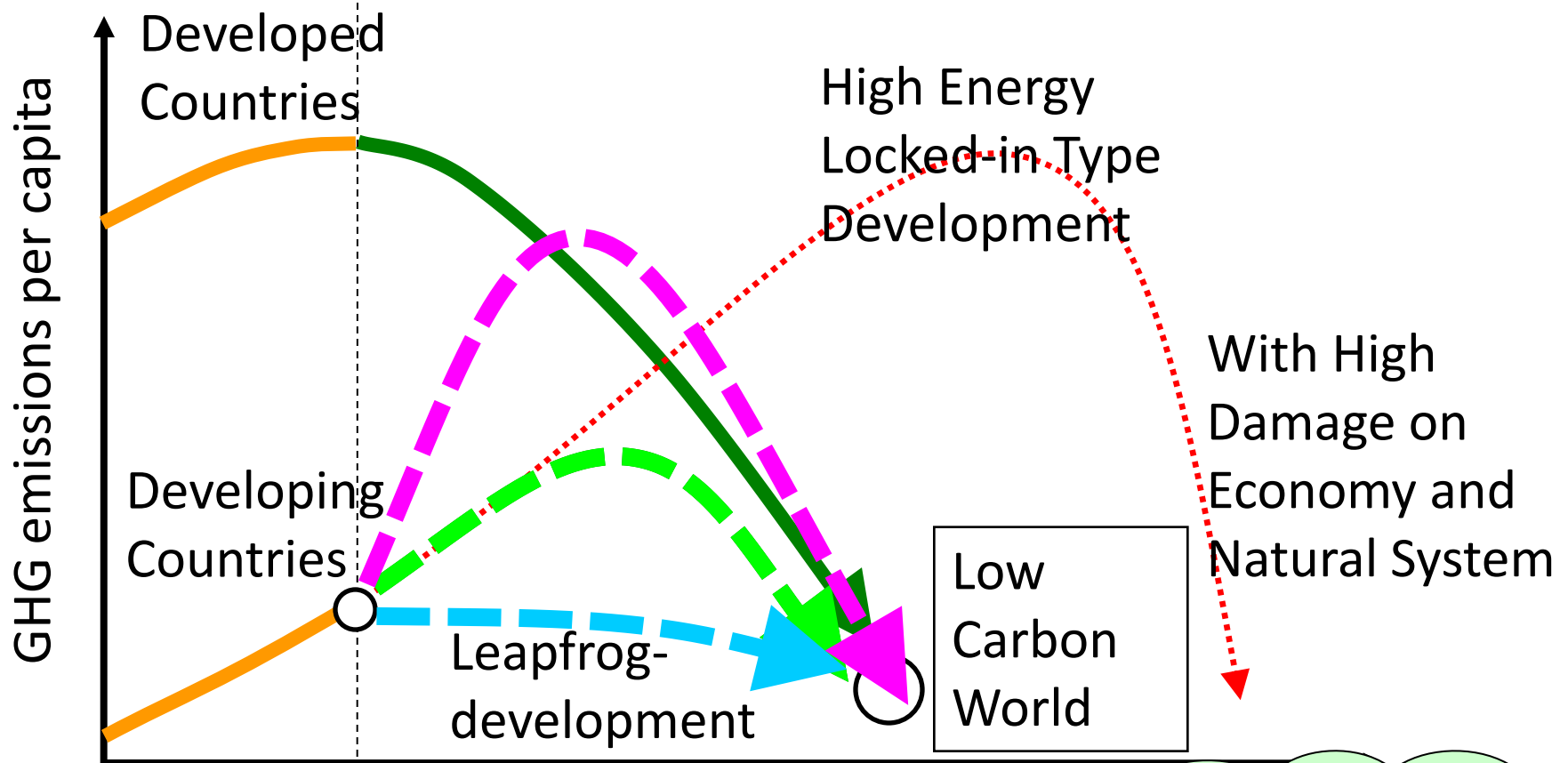
1. If we cannot go to LCS,...
2. LCS offers higher QOL with less energy demand and lower-carbon energy supply
3. LCS needs good design, early action, and innovations

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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

Two stages of LCS scenario development

Stage one: 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 policy measures and packaging the measures

Stage two : Construction of a policy roadmap toward the Low Carbon Society



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

Stage 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
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, artificial intelligence, etc.). 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 presence in the world by our own culture or international cooperation, although economy is also important

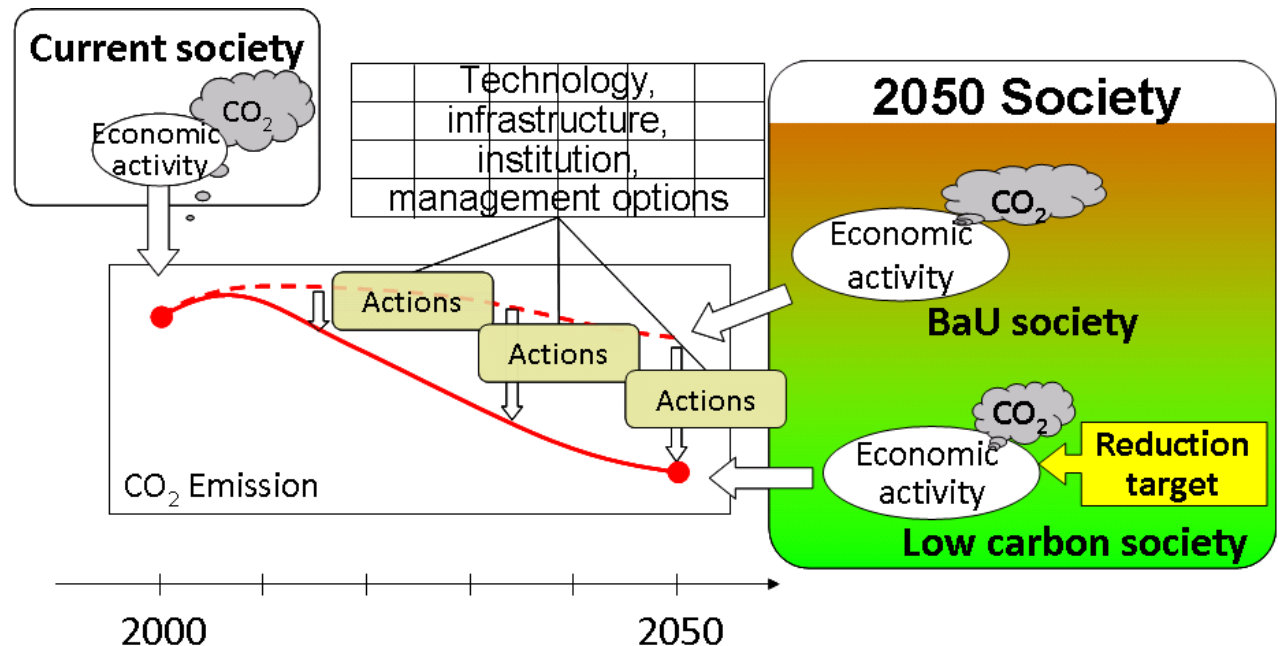
Vision A	Vision B
Vivid, Technology-driven	Slow, Natural-oriented
Urban/Personal	Decentralized/Community
Technology breakthrough Centralized production /recycle	Self-sufficient Produce locally, consume locally
Comfortable and Convenient	Social and Cultural Values
2%/yr GDP per capita growth	1%/yr GDP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

Stage 2 : Designing roadmaps towards LCS

- Back-casting from the target -

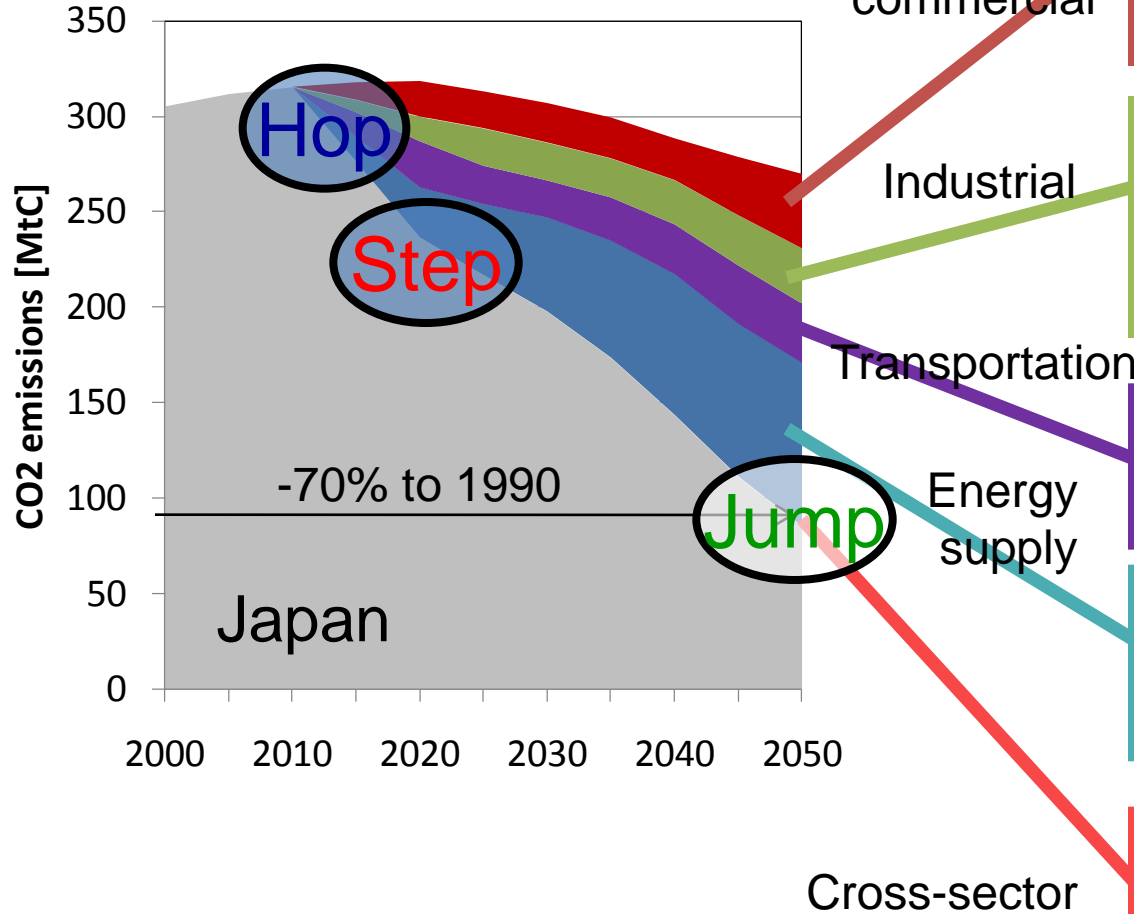
To achieve the emission reduction target, we must clarify the followings

- how much must we investigate,
 - 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.



LCS study in Japan

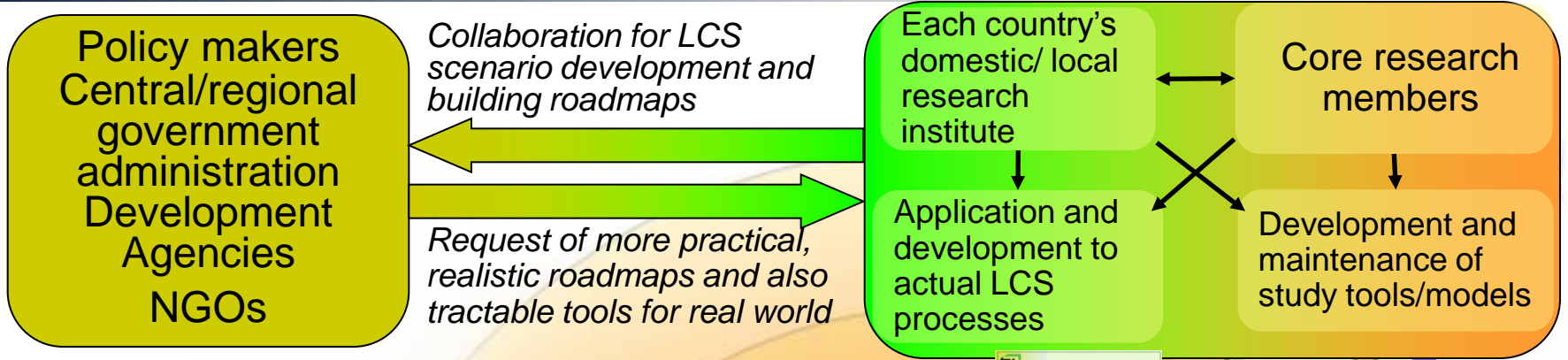
A dozen actions make it possible to reduce 70% CO2 emissions by 2050









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 deploy our study to real world



Climate and Energy Policies

Country	Economic Growth	Climate Policy	Energy Policy
China 	GDP: 4 times from the year 2000 to 2020 (7%pa)	CO2 emissions per GDP: 40-45% reduction by 2020 to 2005 level	Share of non-fossil fuel in PE:15% (2020) Nuclear: 2020 (70-80GW), 2030 (200GW), 2050 (400-500GW)
Indonesia 	2005-2010: 5.5% 2010-2014: 6.6% 2015: 7.2% 2015-2030: 7.2%	26% reduction to BaU during next 10 years. 41% with international support	<ul style="list-style-type: none"> • Geothermal: more than 5% (2025) • Other new/renewable: more than 5% (2025) • Bioenergy: more than 5% (2025) • Liquid coal: at least 2% (2025) • Oil: less than 20%; Gas: more than 30%; coal: more than 33%
India 	2007-2012: 9%	Emission per GDP: 20-25% reduction by 2020 to 2005 level	<ul style="list-style-type: none"> • Primary energy supply: 117EJ (2052) • Electricity supply: 75EJ (2052) • Renewable energy: 2.7EJ (2052) • Nuclear energy: 19.4EJ (2052)
Japan 	GDP: more than 2%	2020: 25% reduction to 1990 level 2050: 80% reduction	<ul style="list-style-type: none"> • Energy independence and Fossil Fuel develop: double (2030) • Increase of zero emission electricity • Decrease in energy consumption in household: half
Korea 		2020: 30% reduction to BaU (4% to 2005 level) Forest sink: 1854MtCO2 (2020)	<ul style="list-style-type: none"> • Energy efficiency: 0.185kgoe/US\$ (46% decrease to present) • Share of renewable energy (in primary energy supply): 8.6% (2020), 11% (2030) • Emission factor in electricity: 0.11kgC/kwh (2022)
Malaysia 	High income country by 2020	2020: 40% reduction to 2005 level with international support (technology transfer and funding)	<ul style="list-style-type: none"> • Increase of energy import of hydro and coal (2015) • Remove subsidy to fossil fuel (2015) • Energy saving: 4000ktoe(cumulative by 2015) • Renewables in electricity: 24% in 2050 (total capacity: 21.4GW, Electricity generation 44208GWh)

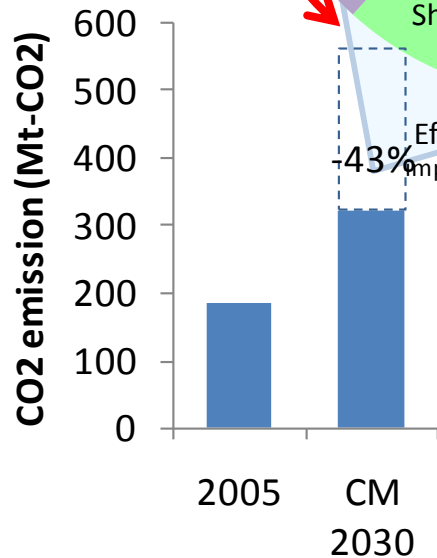
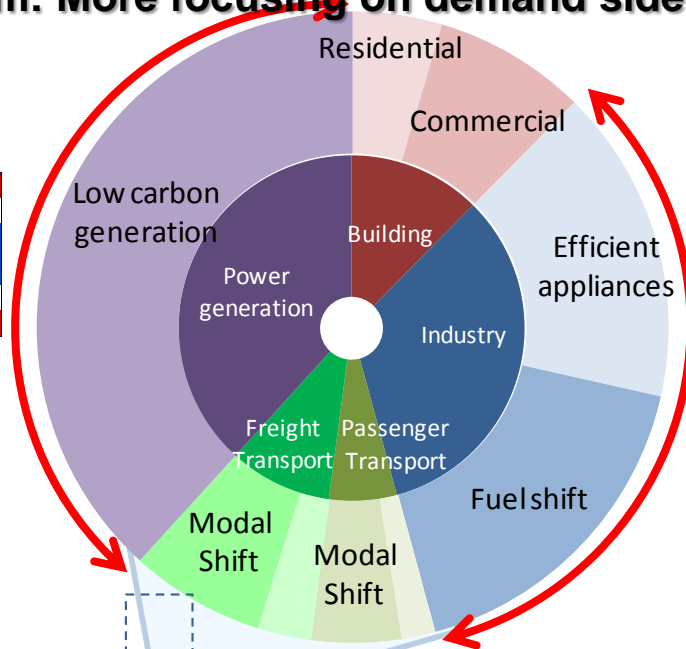
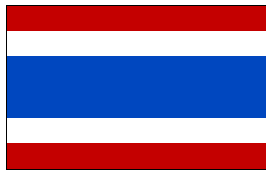
The effects of countermeasures differ by country

Scenarios of each region vary in terms of combination of actions and their effects.

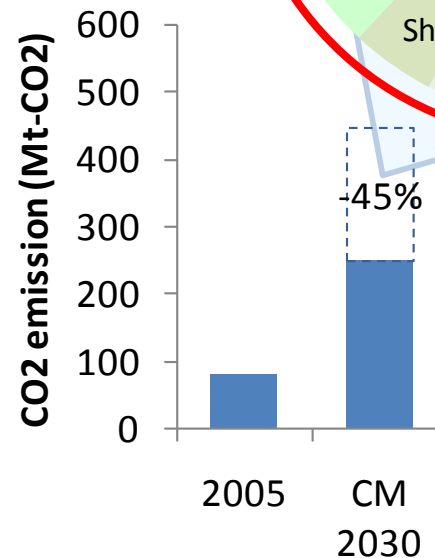
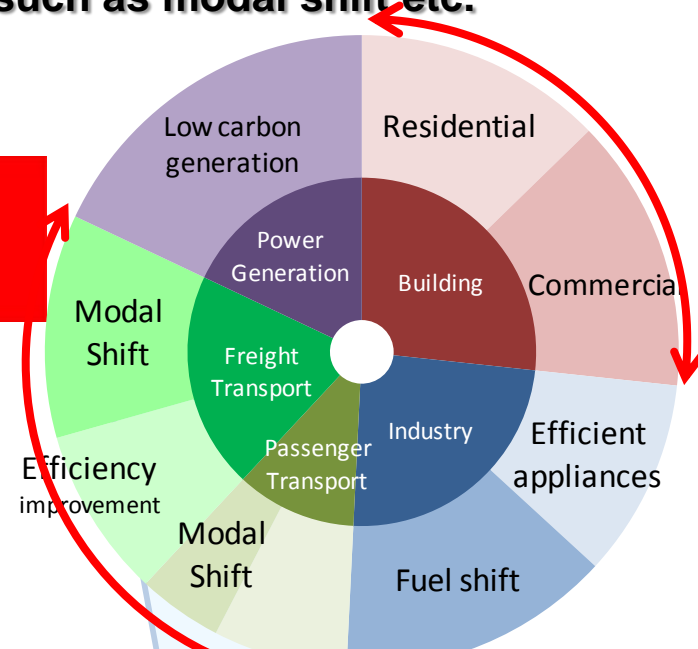
Ex) Thailand: Higher reductions from power generation and fuel shift in Industry

Vietnam: More focusing on demand side measures such as modal shift etc.

Thailand

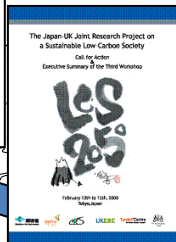


Vietnam



International Cooperation toward Low Carbon Society

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



**LCS-RNet:
endorsed by
G8EMM**



**LCS study in
Japan**

**Promote
researches on
Asia LCS**



AIM training workshop at NIES, 20

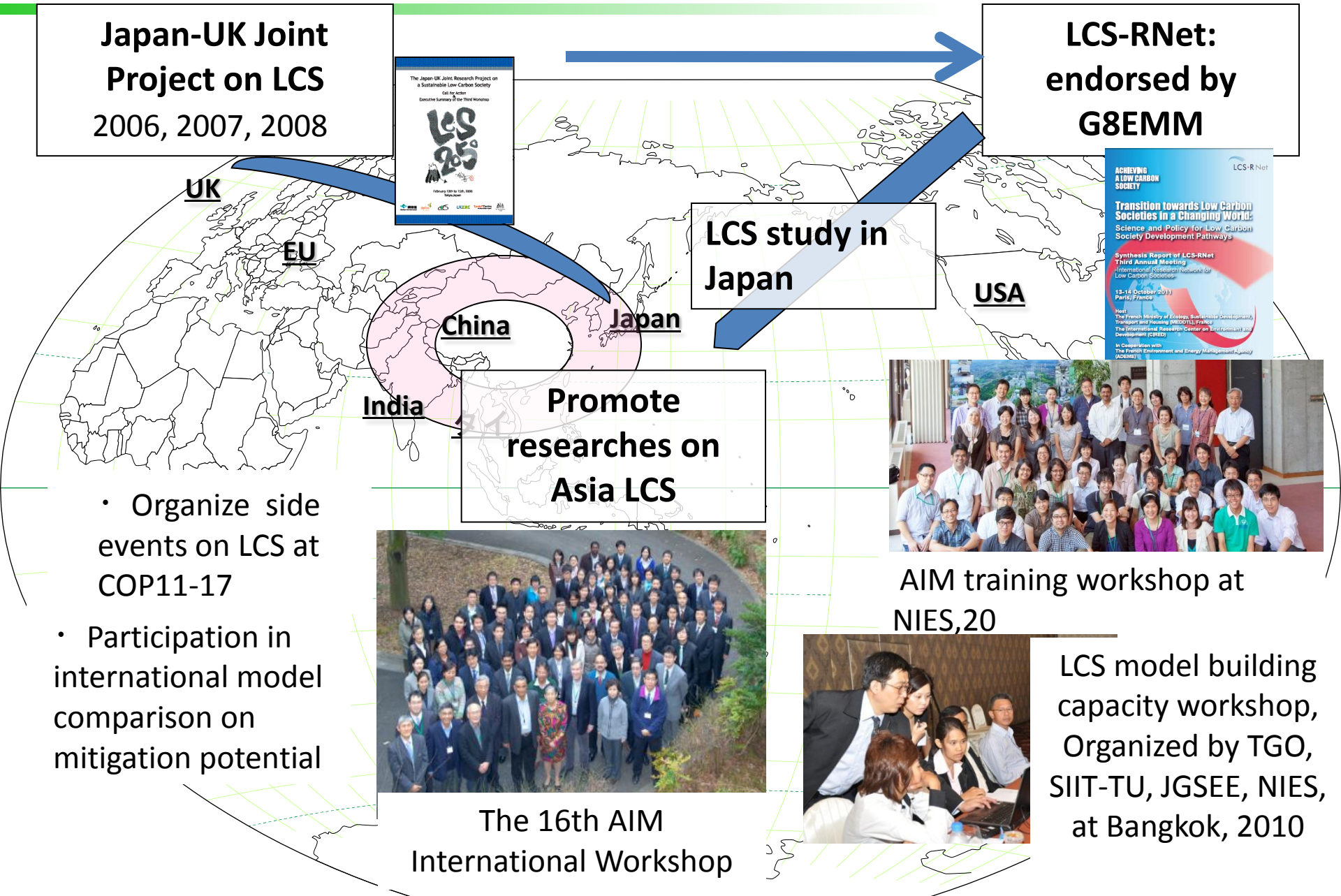


The 16th AIM International Workshop



LCS model building capacity workshop, Organized by TGO, SIIT-TU, JGSEE, NIES, at Bangkok, 2010

- Organize side events on LCS at COP11-17
- Participation in international model comparison on mitigation potential



Consideration on how to approach LCS

1. Fundamental shifts in paradigms regarding economic development and life styles are required to achieve LCS. Most of these factors are exogenous to climate policy, but needs to be integrated.
2. Each city/ country/ region has its own background and characteristics. They have their own targets and ways of approach.
3. There are many common factors to be considered.
 - Global economy/ financial markets
 - Implementation of energy efficiency measures
 - Reducing the costs and accelerating the diffusion of renewable energy technologies like wind, solar and bioenergy,
 - Forest
 - Co-benefit
4. Participation from different stakeholders