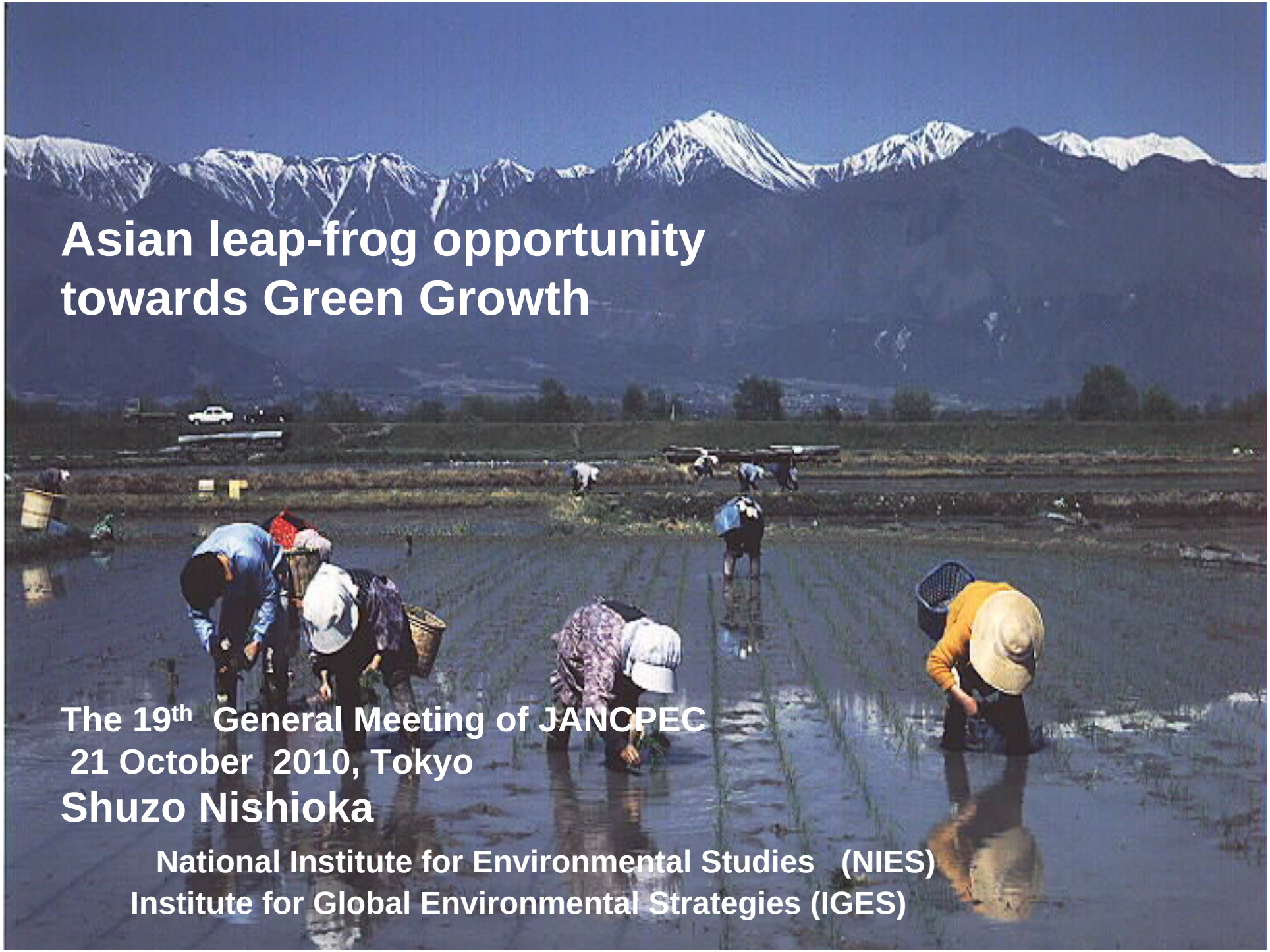


Asian leap-frog opportunity towards Green Growth

The 19th General Meeting of JANCPEC
21 October 2010, Tokyo

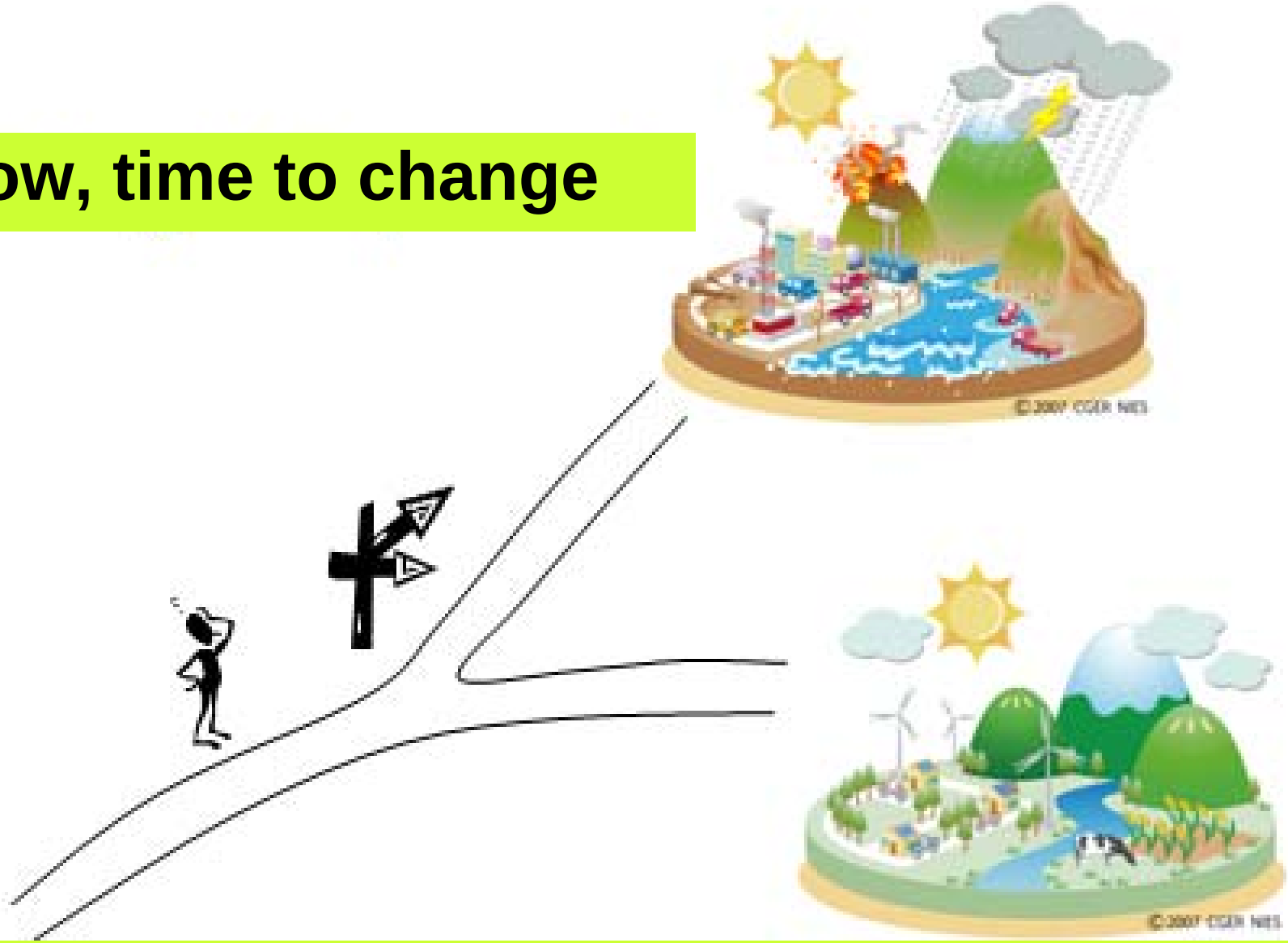
Shuzo Nishioka

National Institute for Environmental Studies (NIES)
Institute for Global Environmental Strategies (IGES)

Background and what to do now

- Climate change: low carbon & resilient society inevitable
- Asia is the key to LCS transition
- Asia is in a good position as change maker
  - Historical timing
  - Depleting resource, increasing energy price, creeping aged-society
  - Globalization: increasing fluidity of capital, technology, human resource,..
- Global framework start working
  - Rule for global commons are now processing
  - 'Copenhagen accord', NAMA+fund
- Asian chance as frontier in the playing field
  - Rapid growing investment, affluent money in financial market, not yet locked into energy intensive society, technological leapfrog
- Time to look future sustainable LCS, draw pathway of green growth, consider together effective use of human & natural resources for next generation
  - Green Growth, NAMA+ LCS-RNet+ LC cities…
- Expand regional LC Development basis
  - Funding mechanism beyond CDM, Bi/ uni-lateral credit, regional emission trading scheme, join research in science and technology
- Asian wisdom? Sufficiency economy, NGH indicator, Buddhism, Taoism, Confucianism, Gandhi, symbiosis with nature

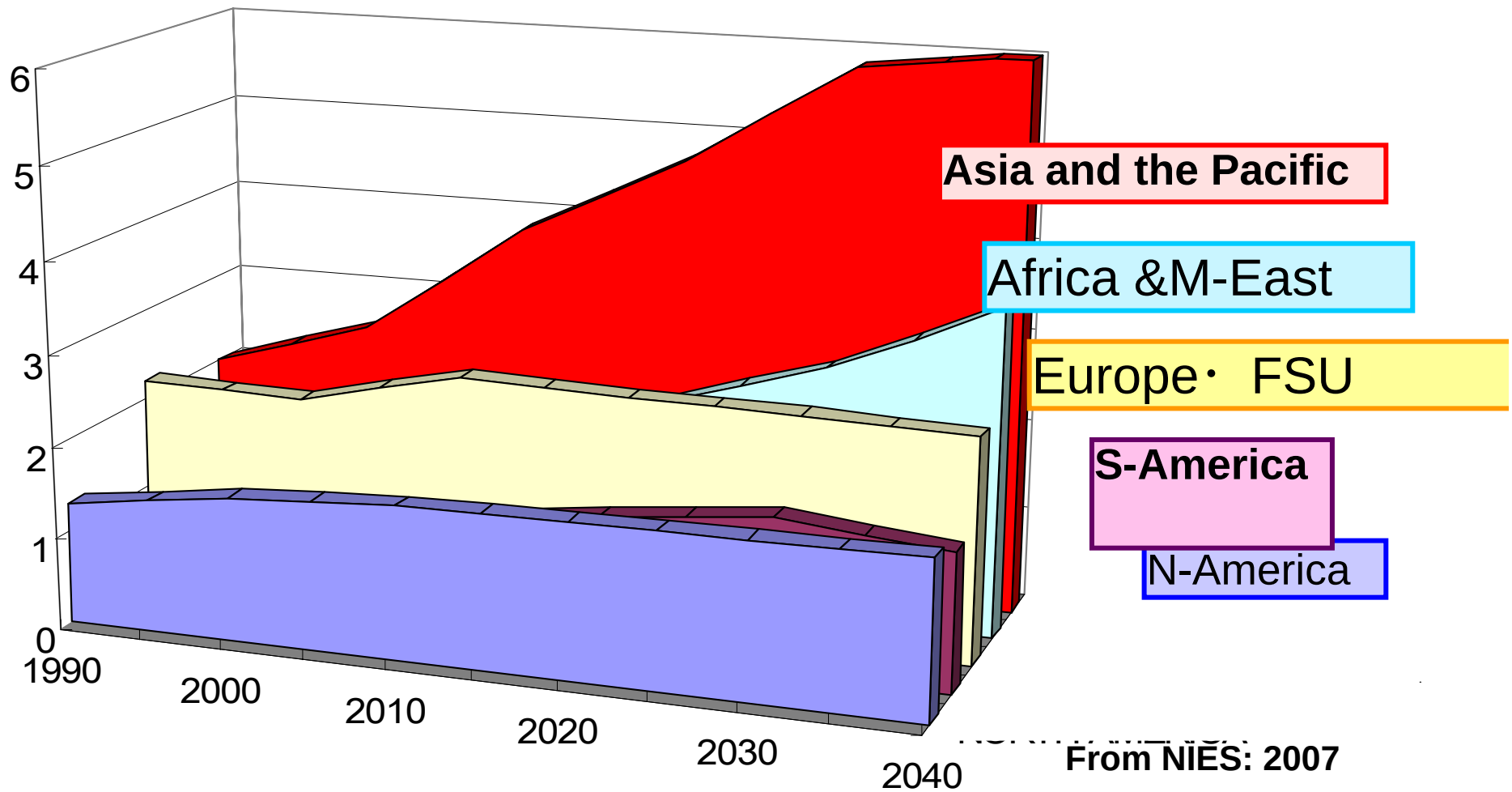
Now, time to change



To avoid lock- into highly energy dependent development, long-term vision is requited

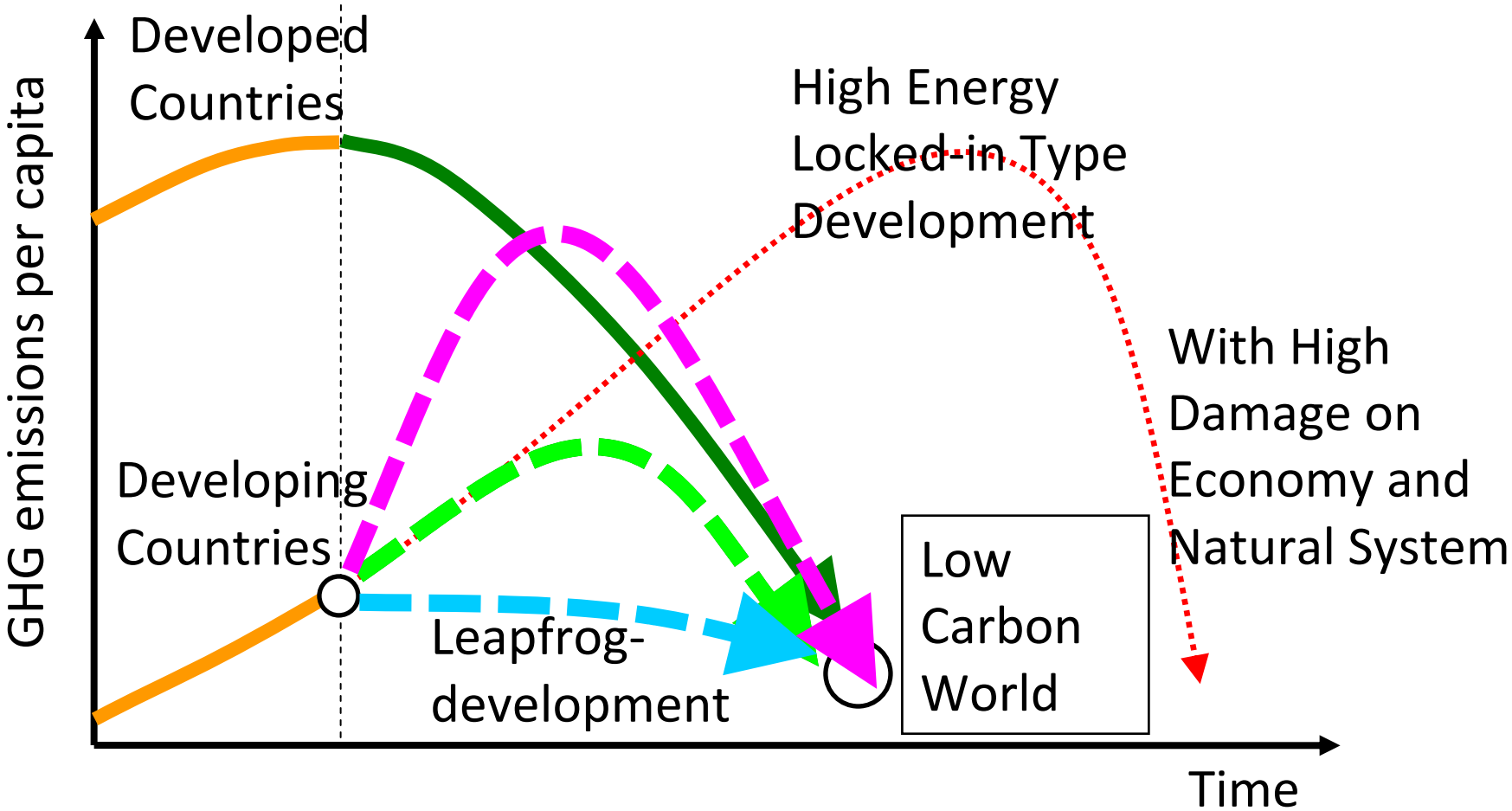
Asia: large GHG emitter

CO_2 Emission Projection(Gt-C)



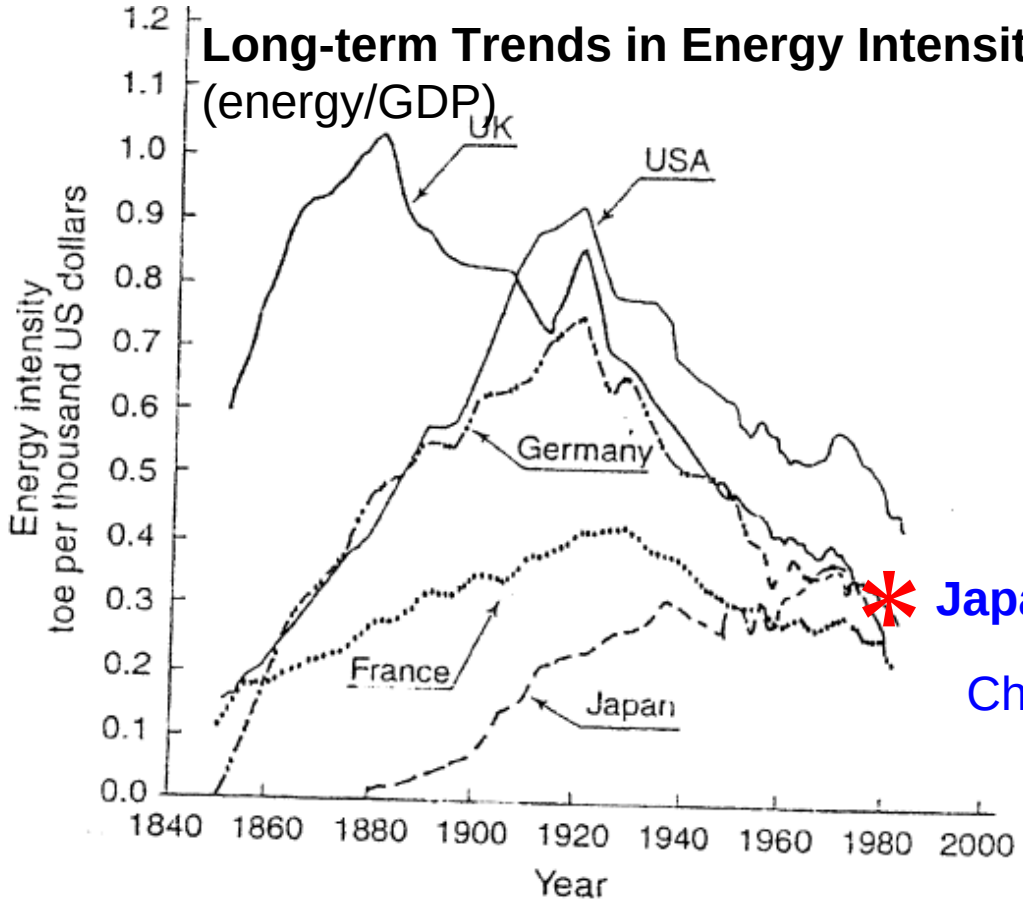
From NIES: 2007

Asian Low Carbon Society scenarios



Research project "Asian Low-Carbon Society Scenario Development "
(project leader: Mikiko Kainuma) FY2009-2013,
funded by Global Environmental Research Program, MOEJ

Japanese experience of leapfrog



Japan's leap-frog

China ?
India ?

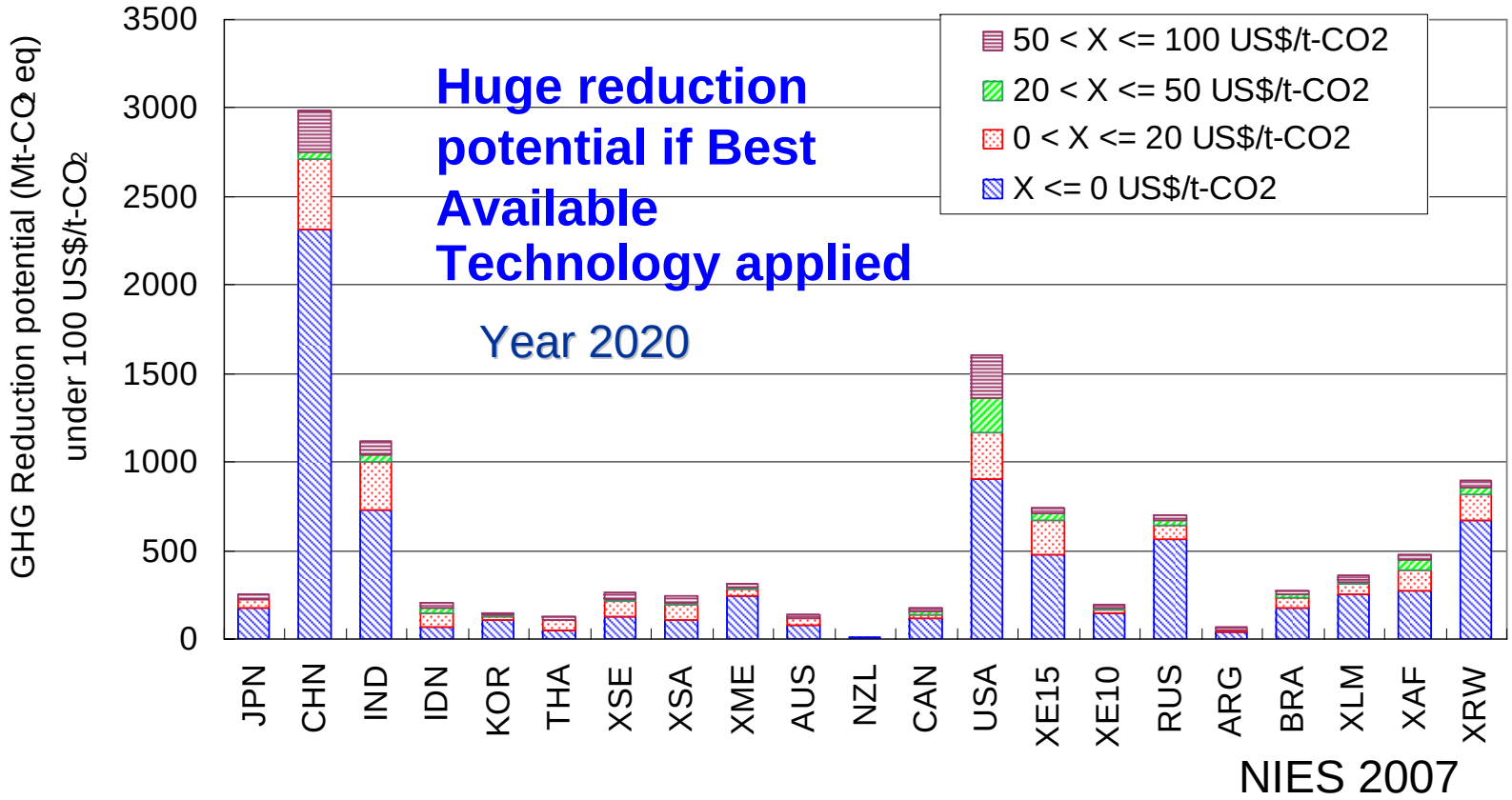
Possibility of Asian countries' catch-up

- **How can we facilitate technology leap flogging to promote low carbon development?**
- **What would be mechanisms (international and national, market and non market) that could facilitate those leap-floggings to low carbon technologies?**

Low carbon technologies already available

Reduction Potential :
Effectiveness of Technology Transfer

Low discount rate case （under 100US$/ t -CO2)

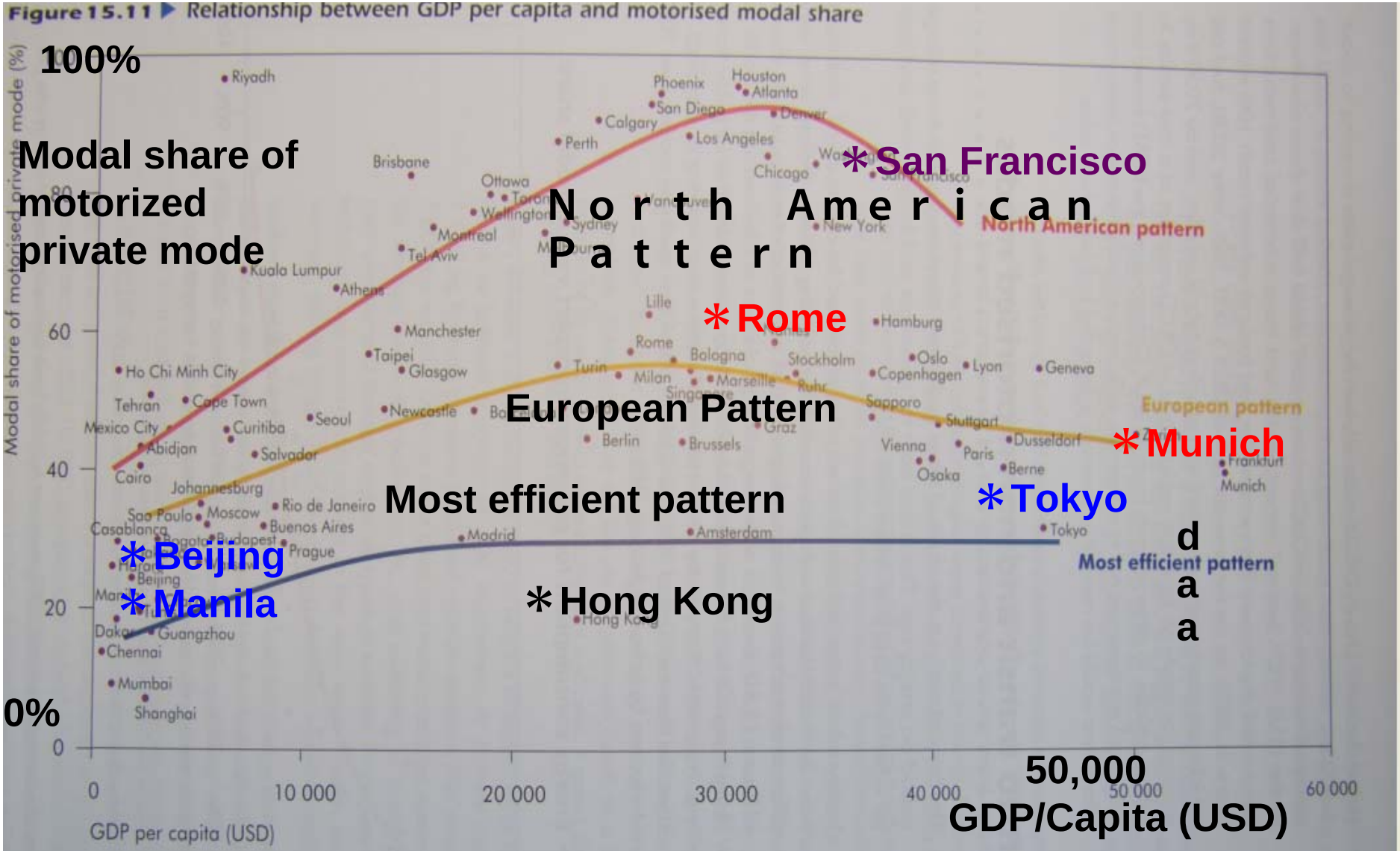


NIES 2007

- **China, US, India, Western Europe and Russia are major 5 regions where there are large reduction potentials, and it accounts for 63 % of total reduction potentials in the world. Top 10 regions account for about 80 % of total reduction potentials.**

Leapfrog Possibility in Asia

	Country	Domestic factor	External factor
Industrial Structure	India: IT Industry	Education/human resource	Soft tec. Globalization
Energy structure	Japan: Low energy intensity	Technology Rapid growth	Oil Crisis Energy security
Urban Structure	Singapore: transportation, water, housing,, Tokyo: Public transportation	Small land strong leadership Rapid urbanization	Relationship with Malaysia Before auto-age
Distributed energy	India: renewable energy, Biomass Brazil ： ethanol	Poor power grid Investment, land area Sugar cane, lack of Oil	
Information	China: Mobile	Rapid economic growth, big land area, Not enough com-grid	IT technology
Renewable Energy System	?	Freedom of new grid/distributed	Climate Issue
Agriculture	Low energy use	Self sufficiency	Energy price



Free from past high-energy technology-system

Designing efficient Infrastructure

ource: UITP, 2006 (Courtesy of SYSTRA).

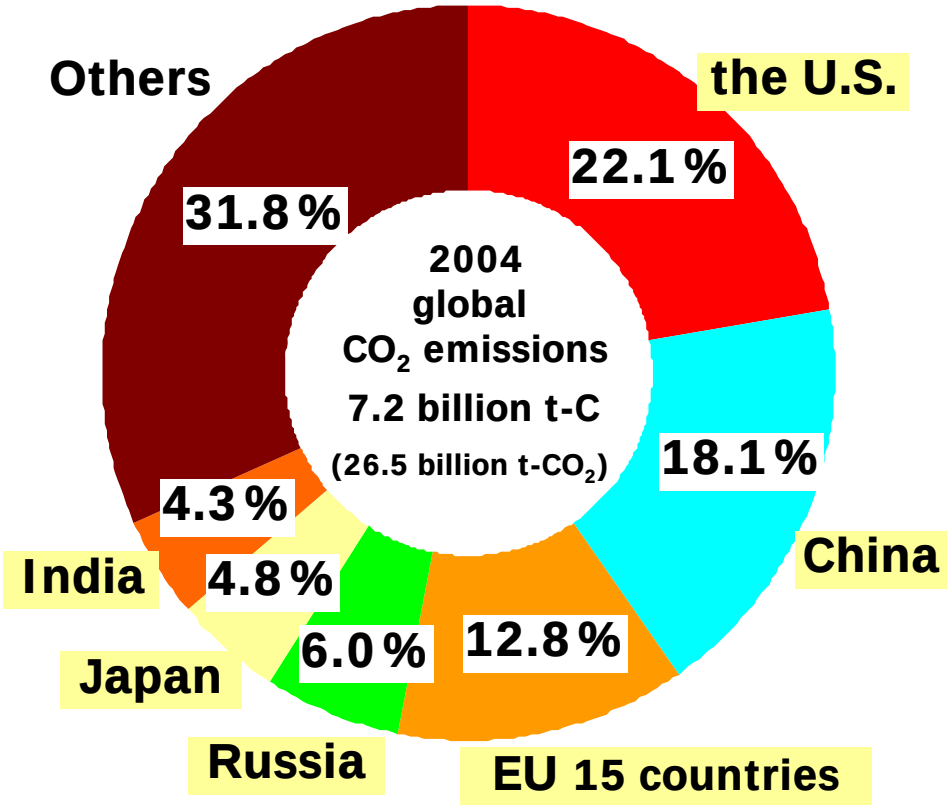
here is a wide range of modal shares for cities of similar incomes with three distinct pathways as incomes rise. If cities in the developing world invest heavily in public and on-motorised transport infrastructure, they may be able to follow more sustainable pathways.

From IEA: 2008

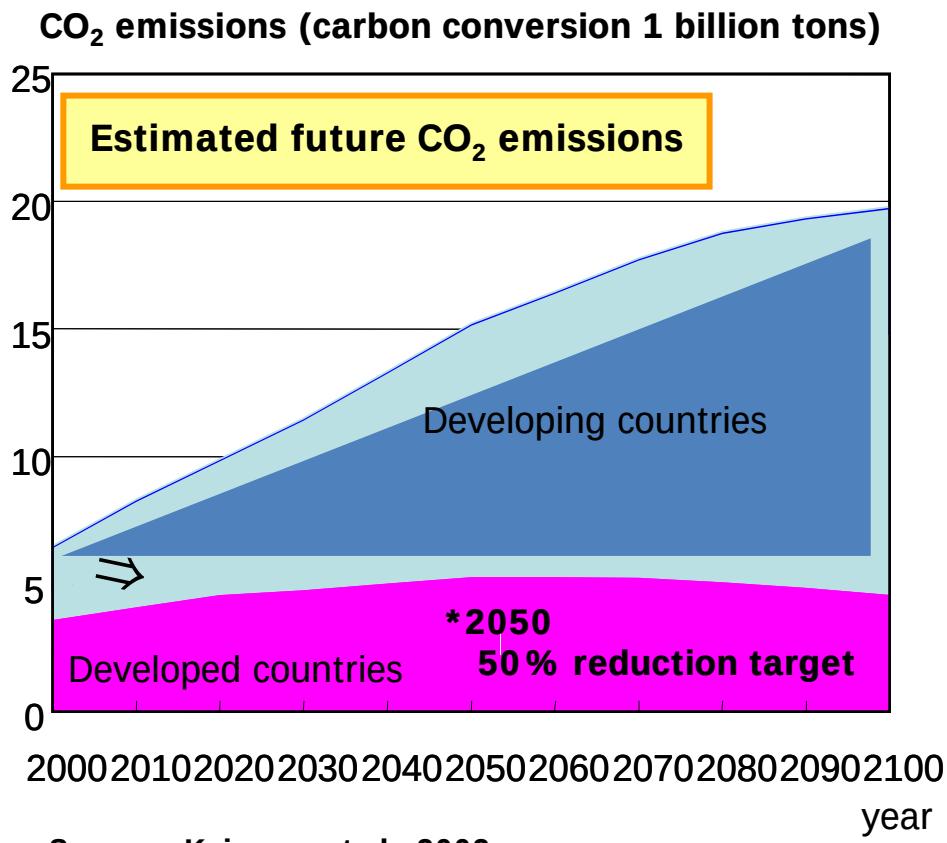
Cooperation with developing countries is the key issue

Current and estimated future total global CO_2 emissions

(significant worldwide reduction is essential)



Made by the Ministry of the Environment, Japan based on Energy & Economics Statistics in Japan (2007 version)



Sources: Kainuma et al., 2002:
Climate Policy Assessment, Springer, p.64.

Kyoto Protocol framework for period subsequent to first commitment period (2013 onwards)

- ***An effective framework capable of promoting maximum efforts to reduce emissions by non-signatory U.S. and exempt developing major emitter nations such as India and China is needed.***

Asia in NAMAs

Many of the Asian countries are ready to go toward their targets

Category 1	Category 2	Category 3	Category 4		
Enabling Conditions	Projects, Programs and Sectoral Measures	Carbon Neutrality	Emission Reduction Targets		
Afghanistan Botswana Georgia	Armenia Benin Central African Republic Republic of Congo Corte d'Ivoire Ethiopia Eritrea Gabon Ghana Cameroon Jordan Madagascar Mauritania Mongolia Peru San Marino Sierra Leone Macedonia Togo Tunisia	Bhutan Costa Rica Maldivesma	Intensity target (GDP)	Absolute target	
				Base Year	BAU
			China India Categorization of the Annex II of Copenhagen Accord (40 Countries)	Antigua Barbuda (1990) Marshall Islands (2009) Moldova (1990)	Brazil Indonesia Israel Mexico Papua New Guinea South Korea Singapore South Africa)

Low-Carbon Asia Scenario cooperative project

Sustainable development through LCS

Future trends on socio-economic conditions, energy, resources, regional diversity, culture, lifestyle, etc.

Institutional design for int'l cooperation

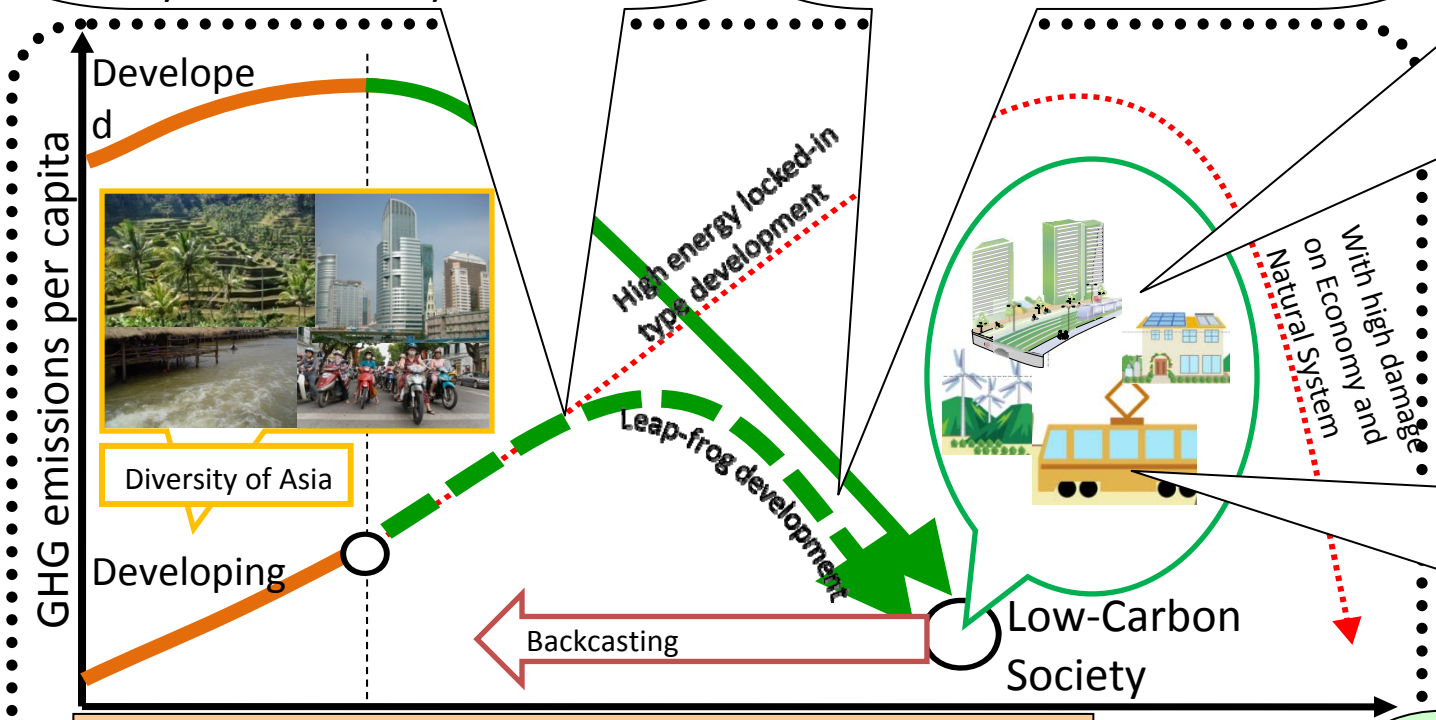
Institutional design for international cooperation, regional regime, etc.

Sustainable resource management

- Constructing material accounts
- Low-Carbonization through improvement resource productivity and material recycle

LC Transportation

- Low-Carbon City with LC transport system
- Grand design for future transport system



Development of Asia LCS Scenarios

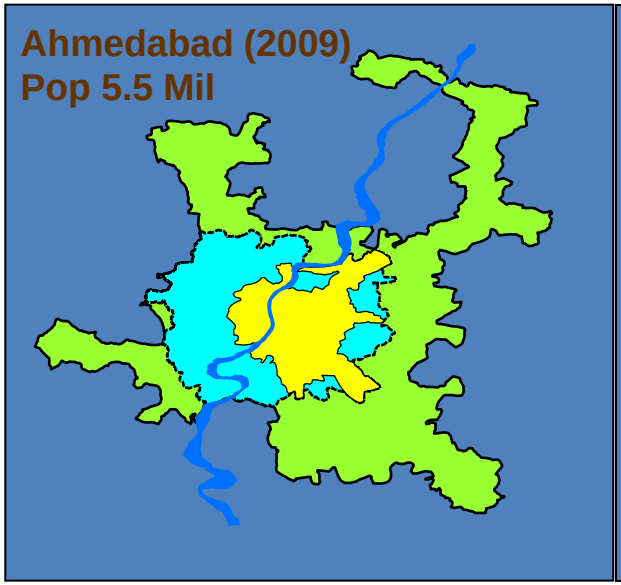
(1) Depicting narrative scenarios for LCS
(2) Quantifying future LCS visions
(3) Developing robust roadmaps by backcasting

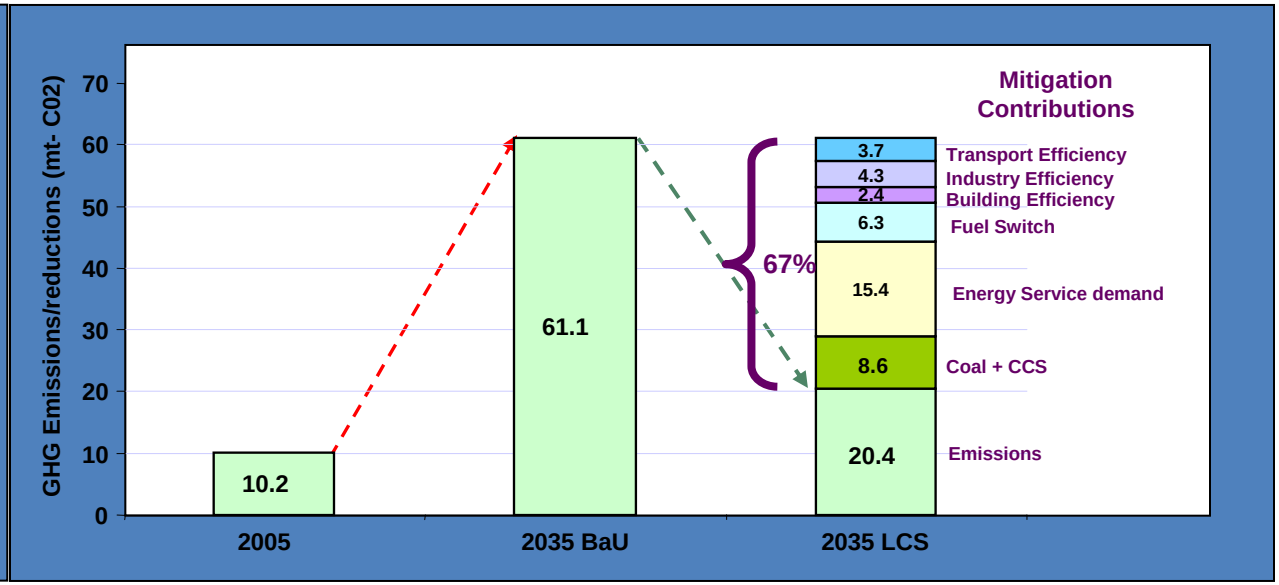
- Encouraging in framing for LC policy in each Asian countries
- Assistance for international negotiations with scientific basis
- Approaches for int'l LCS activity framework
- Networking among LCS research in Asia

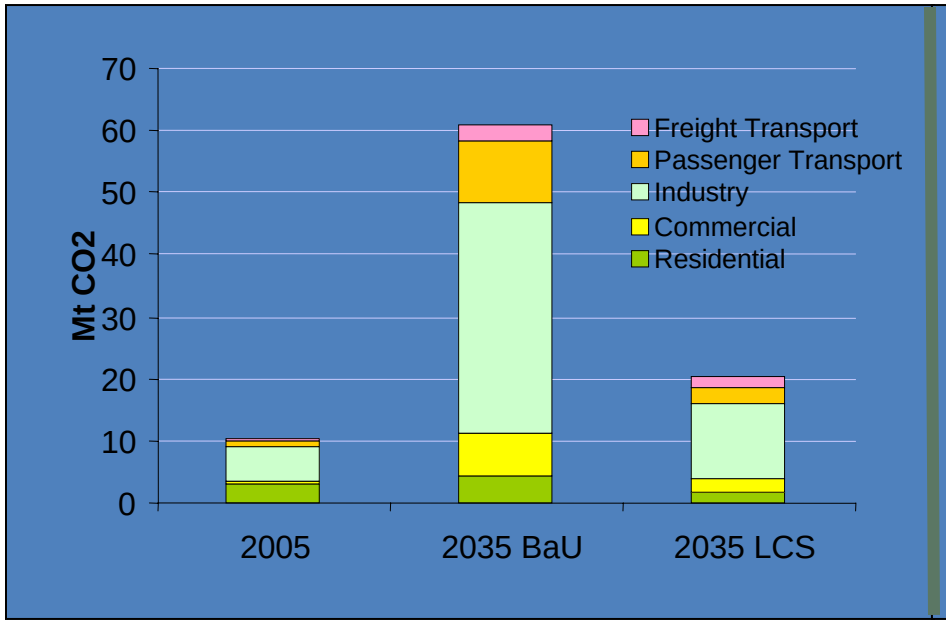
Policy Packages for Asia LCS

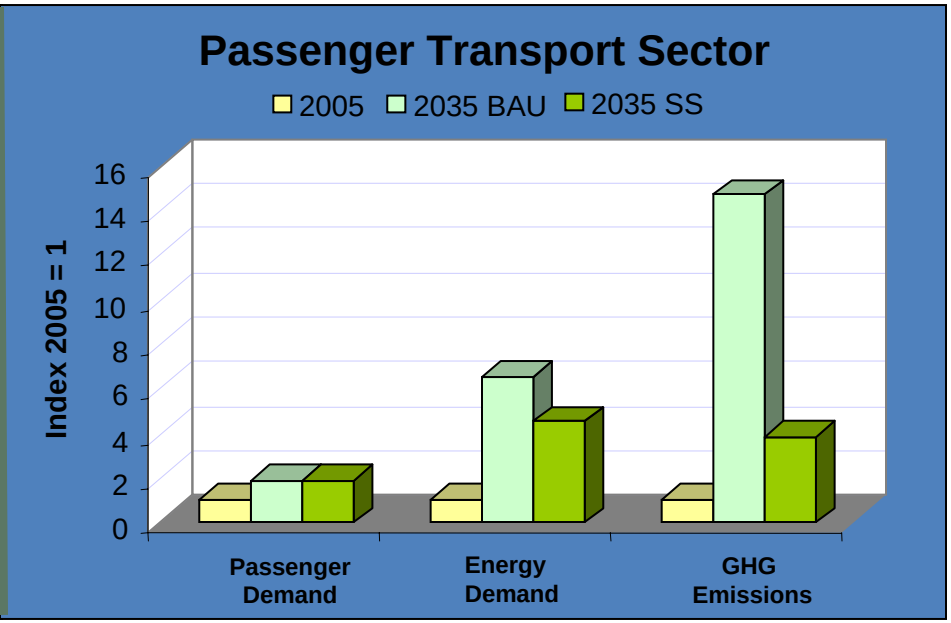
(Kainuma 2009)

Sustainable Low Carbon Cities: Ahmedabad



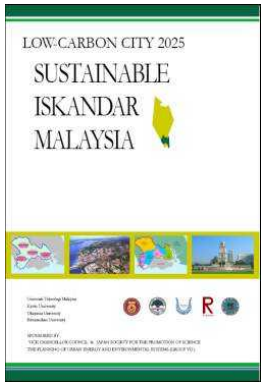


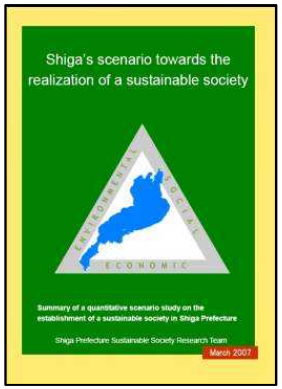


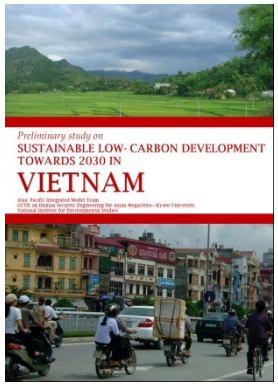


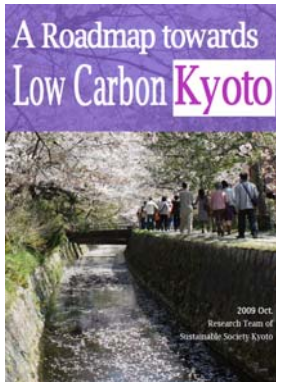
Source: Shukla

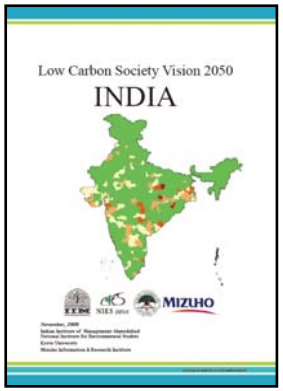
Examples of cooperative studies of Low Carbon Cities

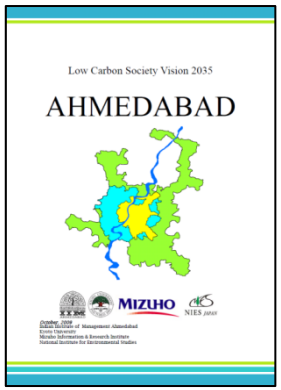


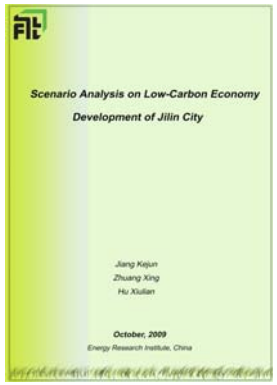


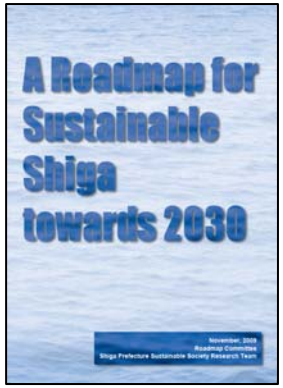






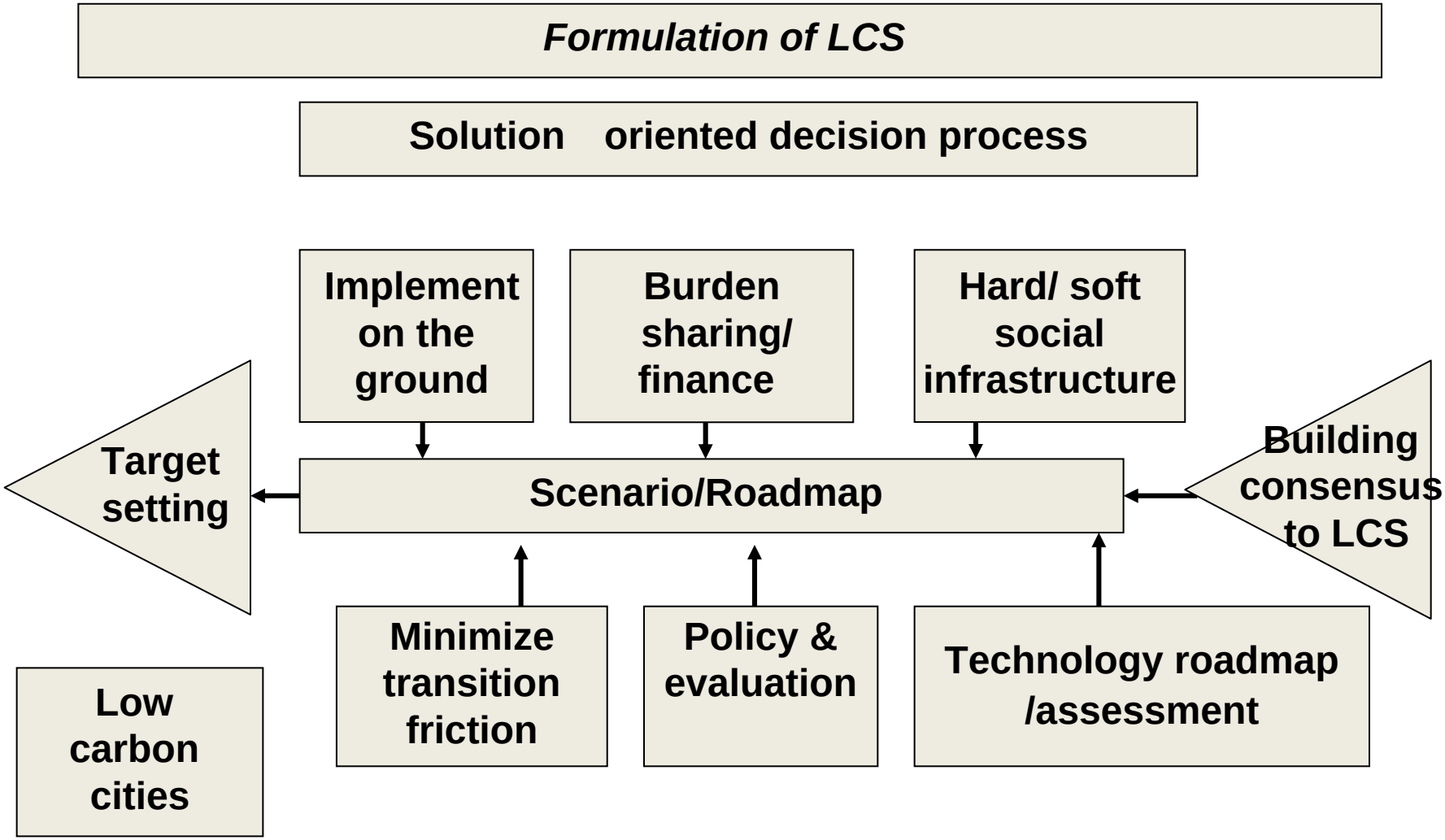


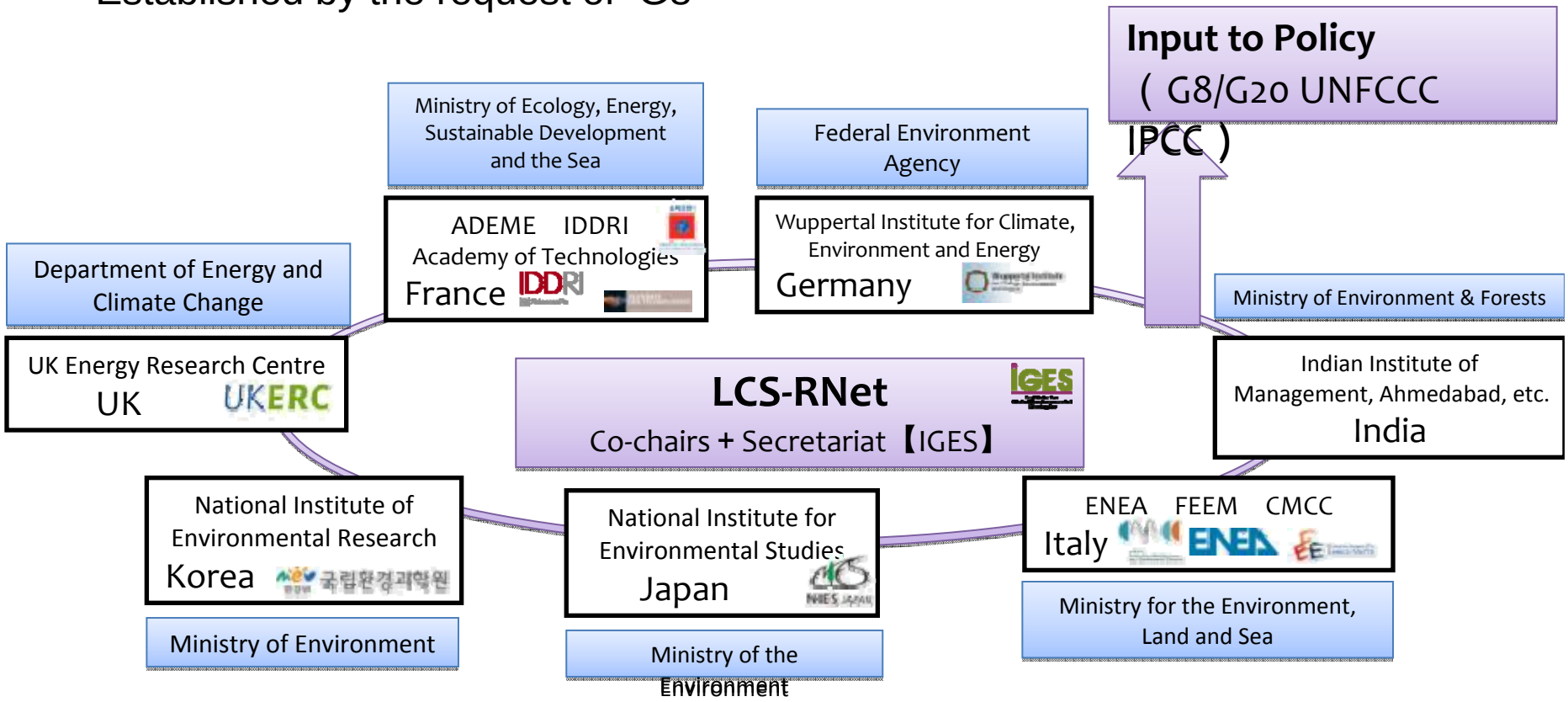




Planning Tools for LCS (2010) (fujino :2010)

Roadmap towards low carbon development



LCS-RNet(International Research Network for Low Carbon Societies)

Network for LCS dedicated research
Established by the request of G8