

A photograph of farmers working in a flooded rice paddy field. Several farmers are bent over, planting rice seedlings in the water. They are wearing traditional hats and carrying baskets. In the background, there are snow-capped mountains under a clear blue sky. A white car is visible on a road in the distance.

# **Asian leap-frog opportunity towards Green Growth**

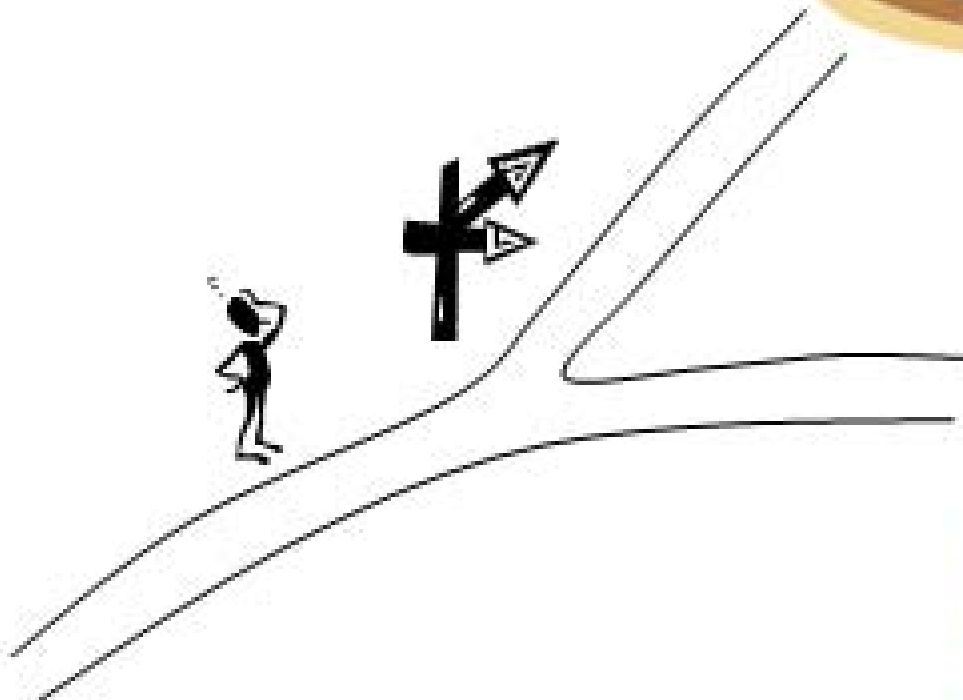
**The 19<sup>th</sup> General Meeting of JANCPEC  
21 October 2010, Tokyo  
Shuzo Nishioka**

**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

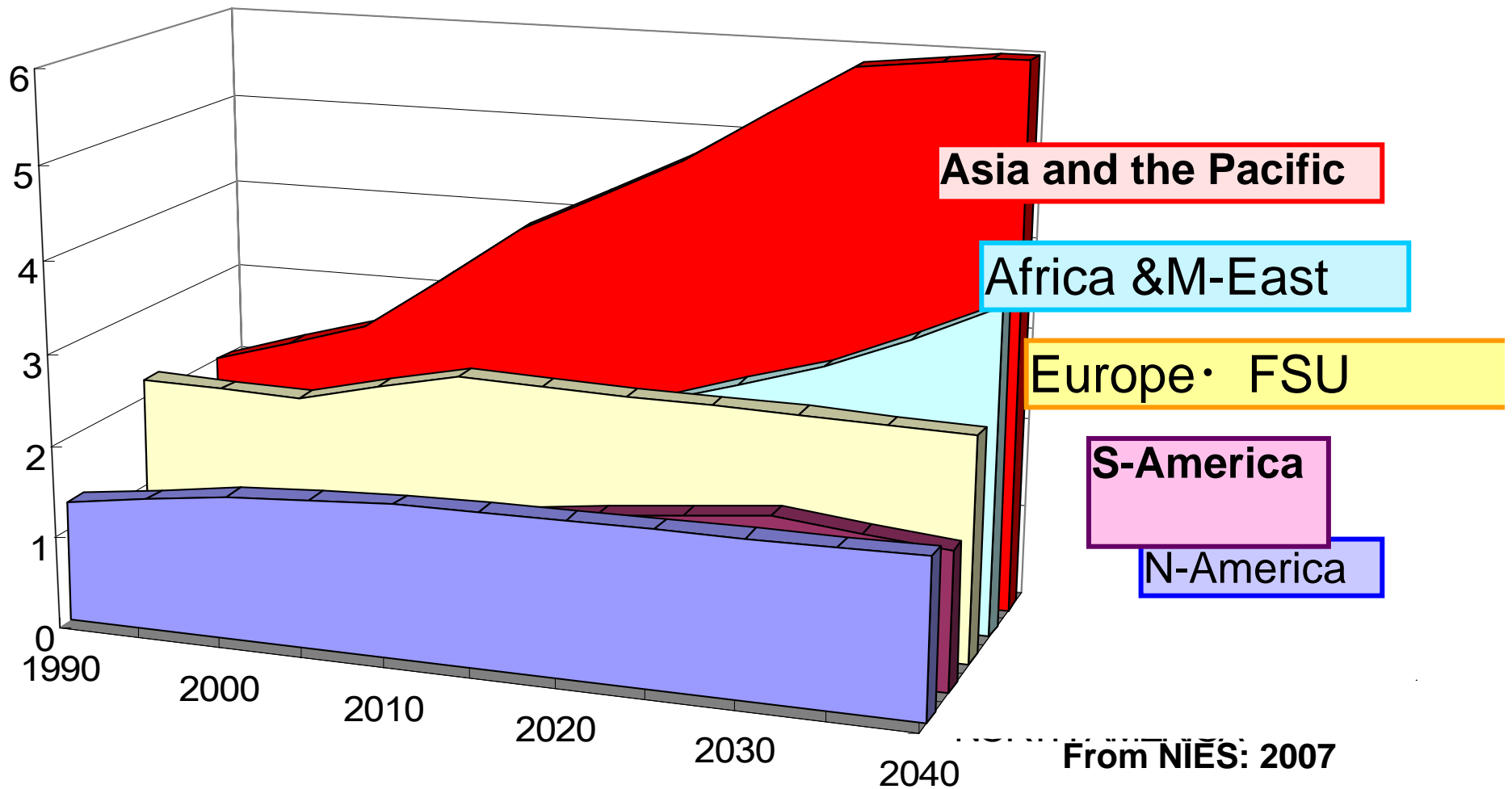
**Now, time to change**



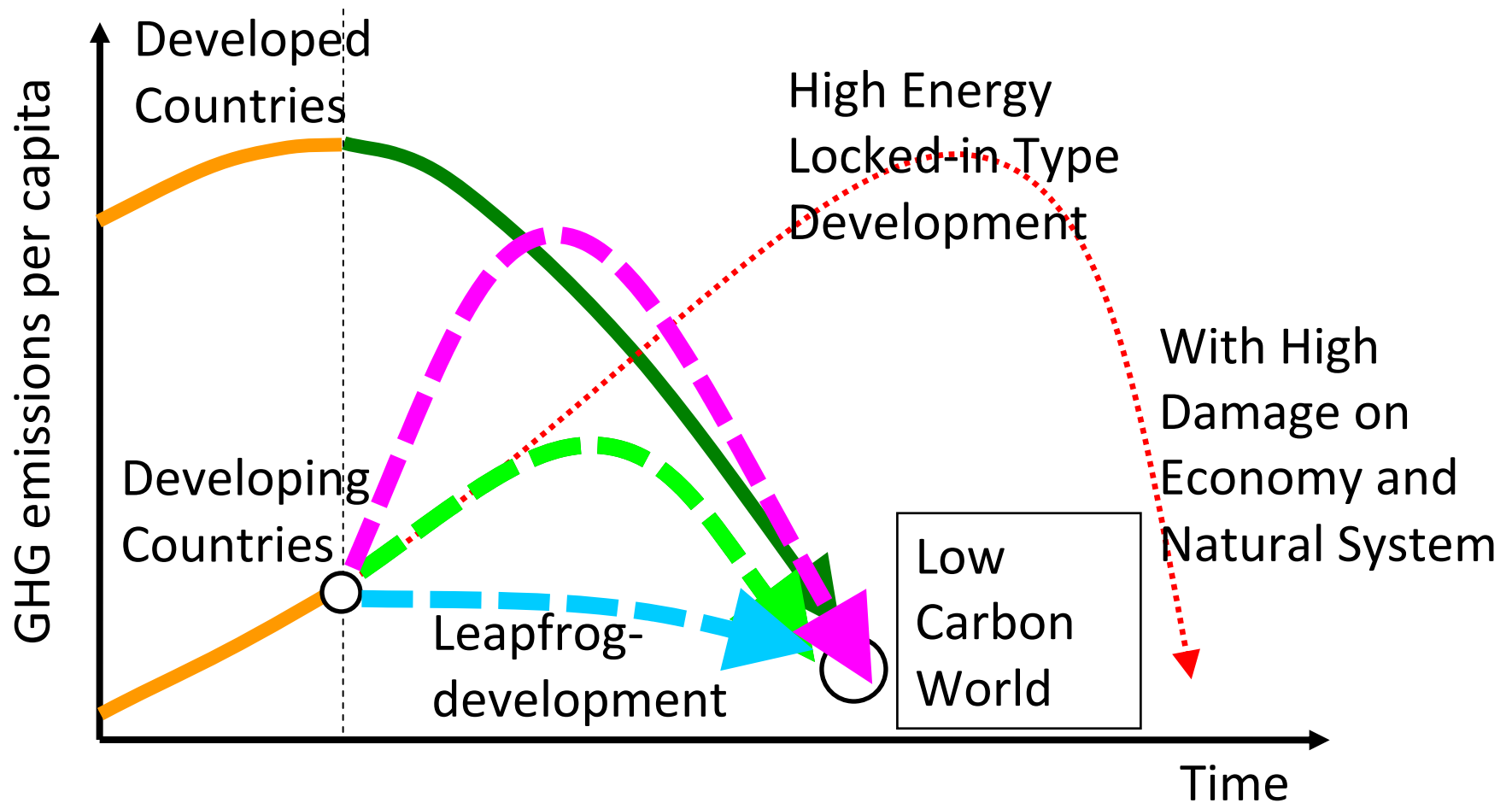
**To avoid lock- into highly energy dependent development, long-term vision is required**

# Asia: large GHG emitter

CO<sub>2</sub> Emission Projection(Gt-C)

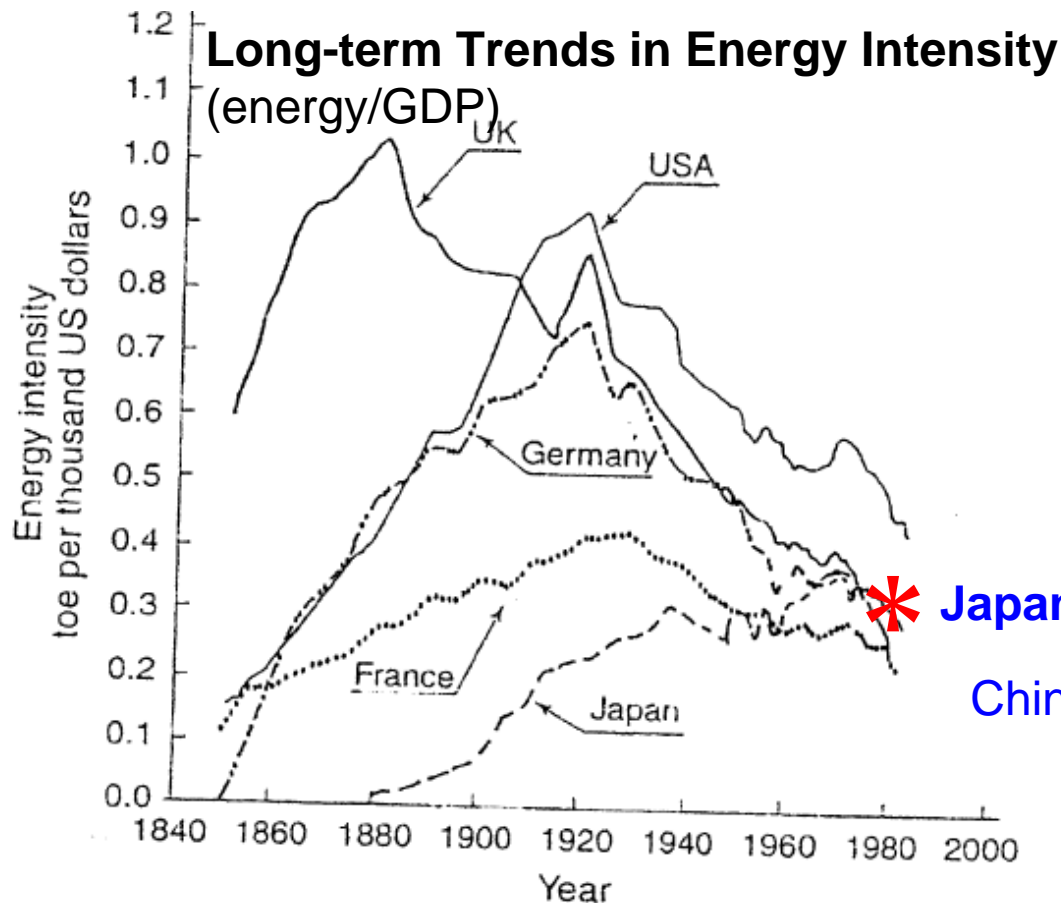


# Asian Low Carbon Society scenarios



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

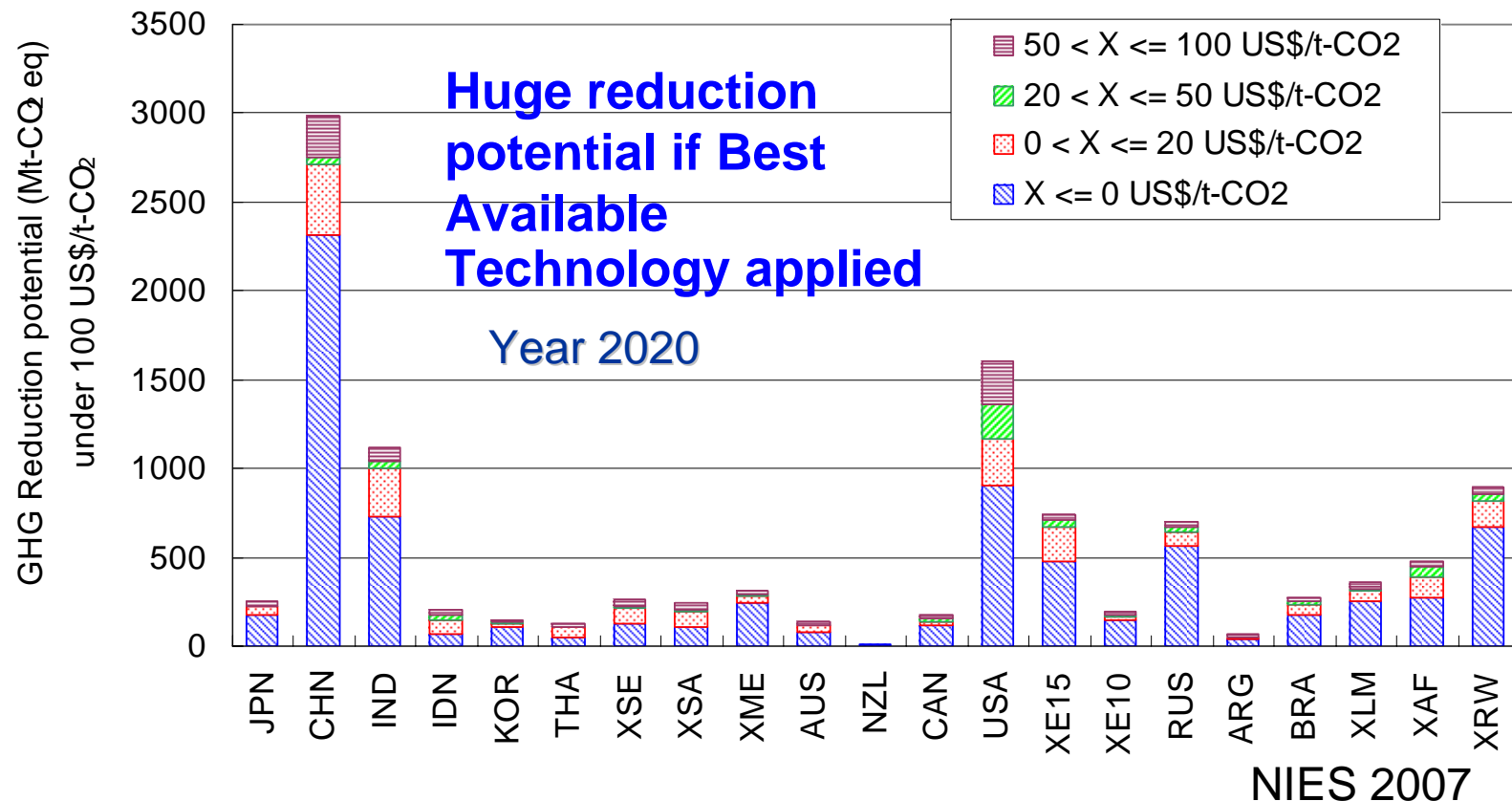
- How can we facilitate technology leap flogging to promote low carbon development?
- What would be mechanisms (international and national, market and non market) that could facilitate those leap-floggings to low carbon technologies?



# Low carbon technologies already available

Reduction Potential :  
Effectiveness of Technology Transfer

**Low discount rate case (under 100US\$/ t -CO<sub>2</sub>)**



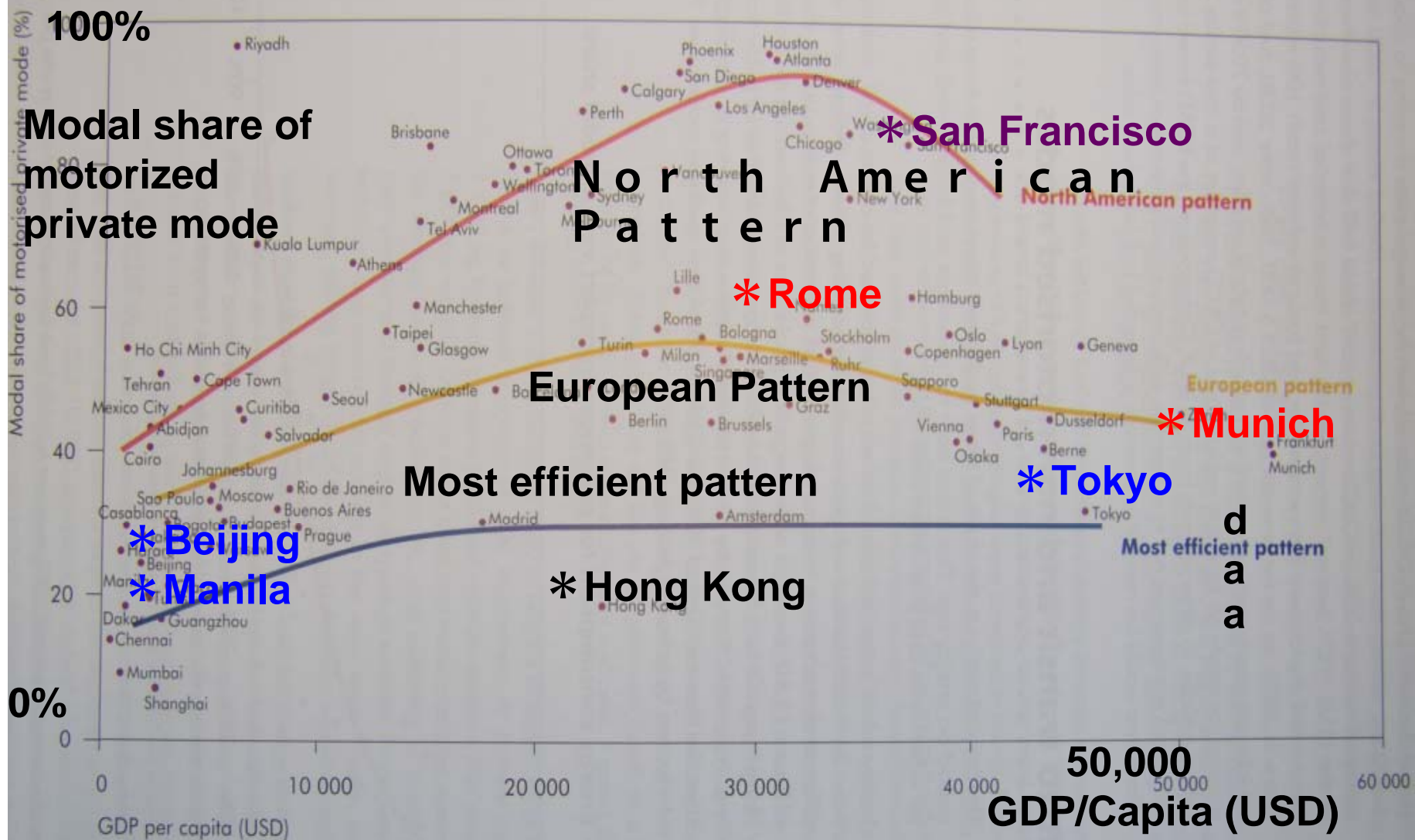
- **China, US, India, Western Europe and Russia are major 5 regions where there are large reduction potentials, and it accounts for 63 % of total reduction potentials in the world. Top 10 regions account for about 80 % of total reduction potentials.**

# 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<br>Rapid growth  | Oil Crisis<br>Energy security                     |
| Urban Structure         | Singapore: transportation, water, housing,,<br>Tokyo: Public transportation | Small land strong leadership<br><br>Rapid urbanization              | Relationship with Malaysia<br><br>Before auto-age |
| Distributed energy      | India: renewable energy, Biomass<br>Brazil : ethanol                        | Poor power grid<br>Investment, land area<br>Sugar cane, lack of Oil |   |
| Information             | China: Mobile   | Rapid economic growth, big land area,<br>Not enough com-grid        | IT technology                                     |
| Renewable Energy System | ?   | Freedom of new grid/distributed                                     | Climate Issue                                     |
| Agriculture             | Low energy use  | Self sufficiency  | Energy price                                      |



Figure 15.11 Relationship between GDP per capita and motorised modal share



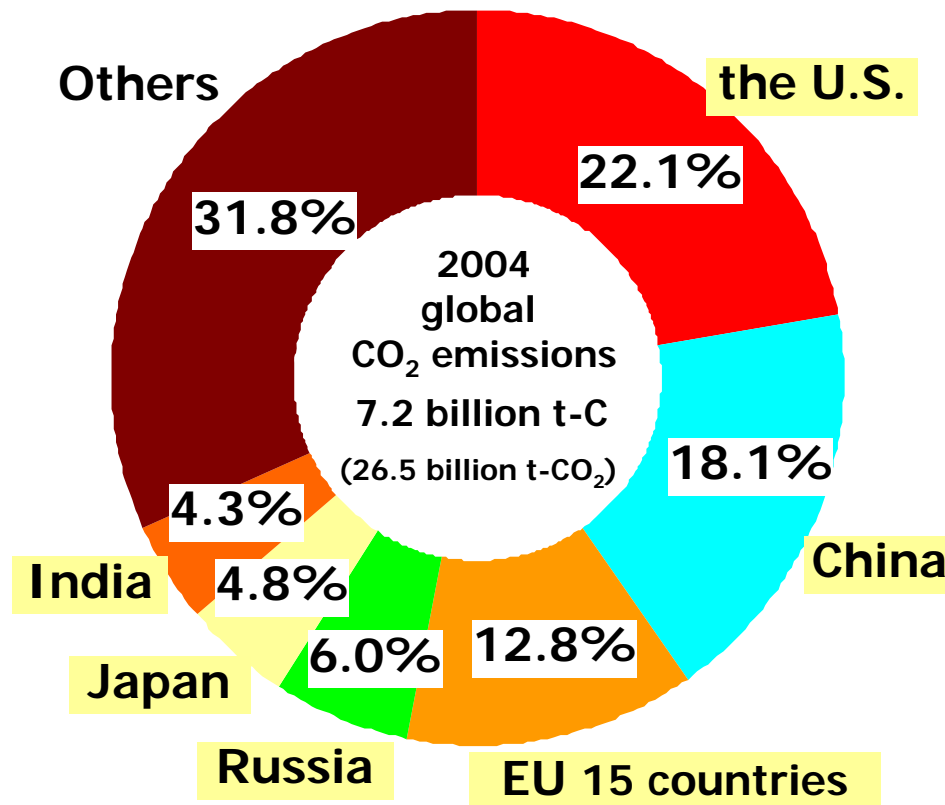
Free from past high-energy technology-system  
Designing efficient Infrastructure

There 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 non-motorised transport infrastructure, they may be able to follow more sustainable pathways.

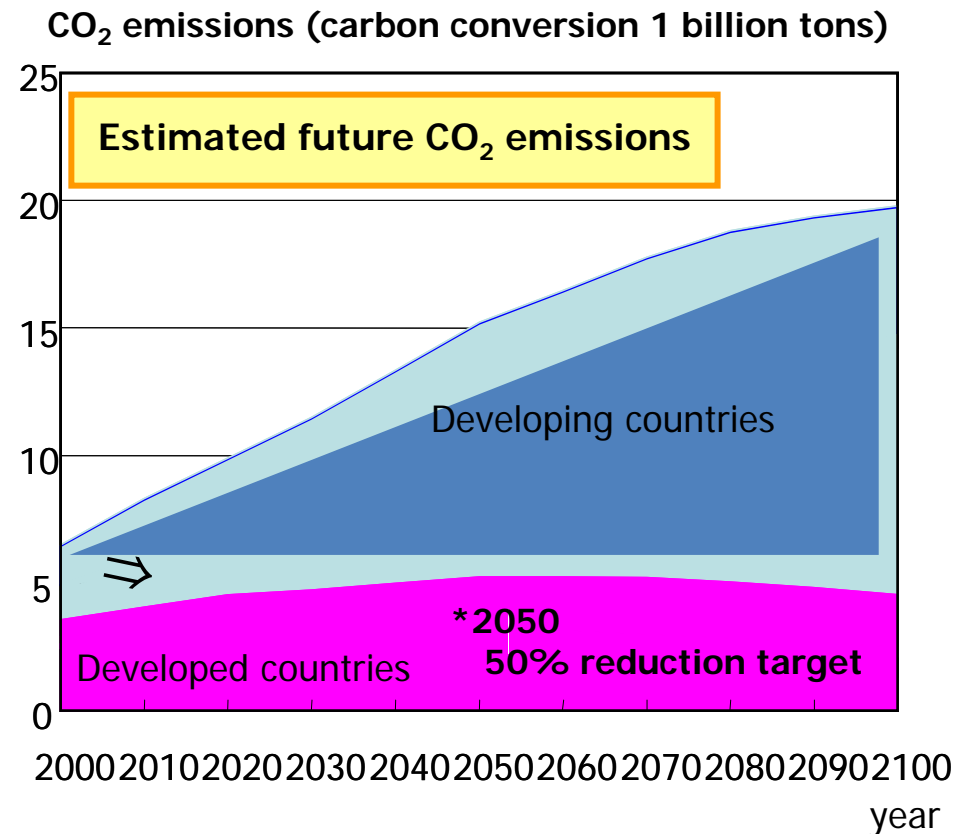
From IEA: 2008

## Cooperation with developing countries is the key issue

Current and estimated future total global CO<sub>2</sub> 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)

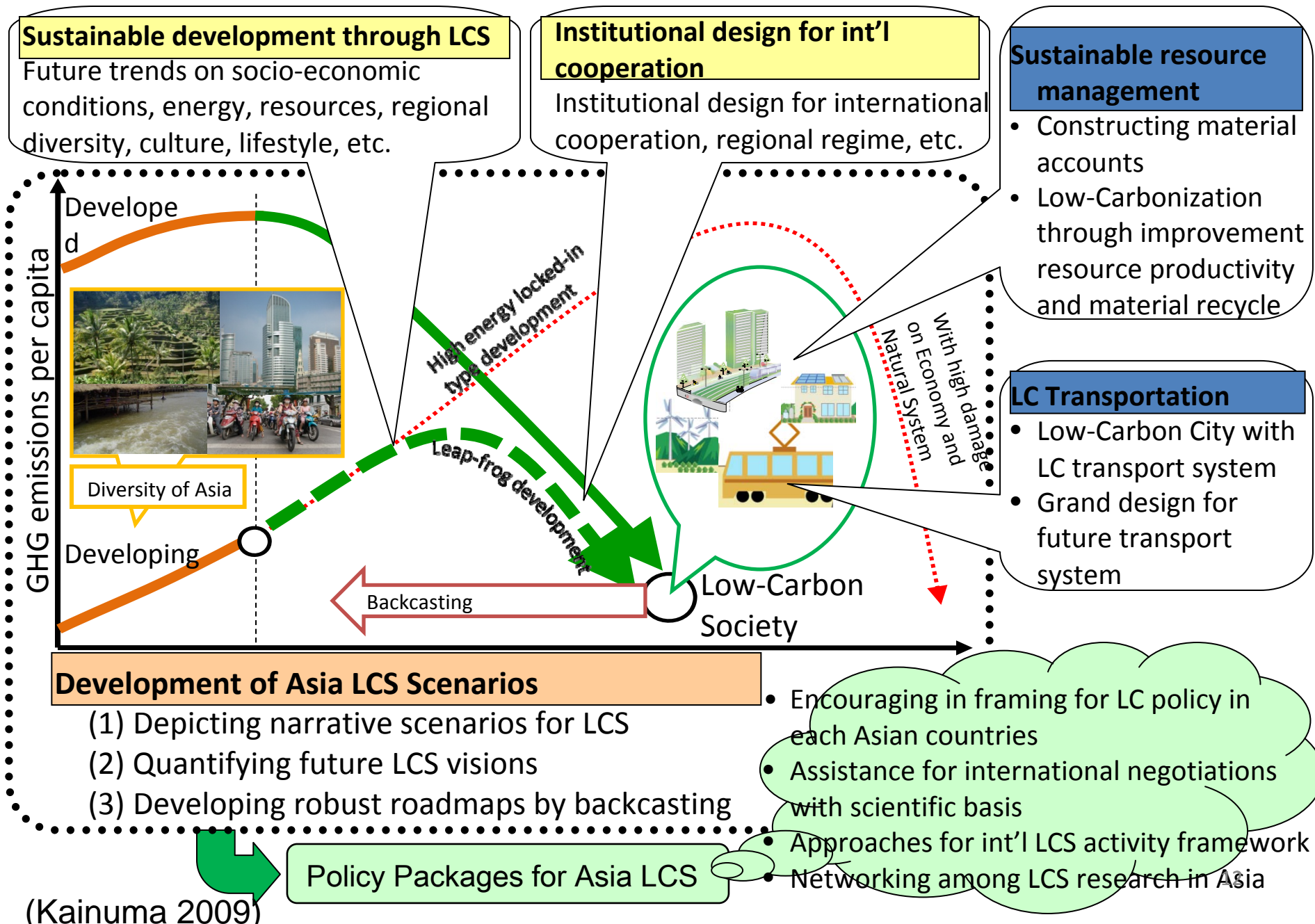
- *An effective framework capable of promoting maximum efforts to reduce emissions by non-signatory U.S. and exempt developing major emitter nations such as India and China is needed.*

# Asia in NAMAs

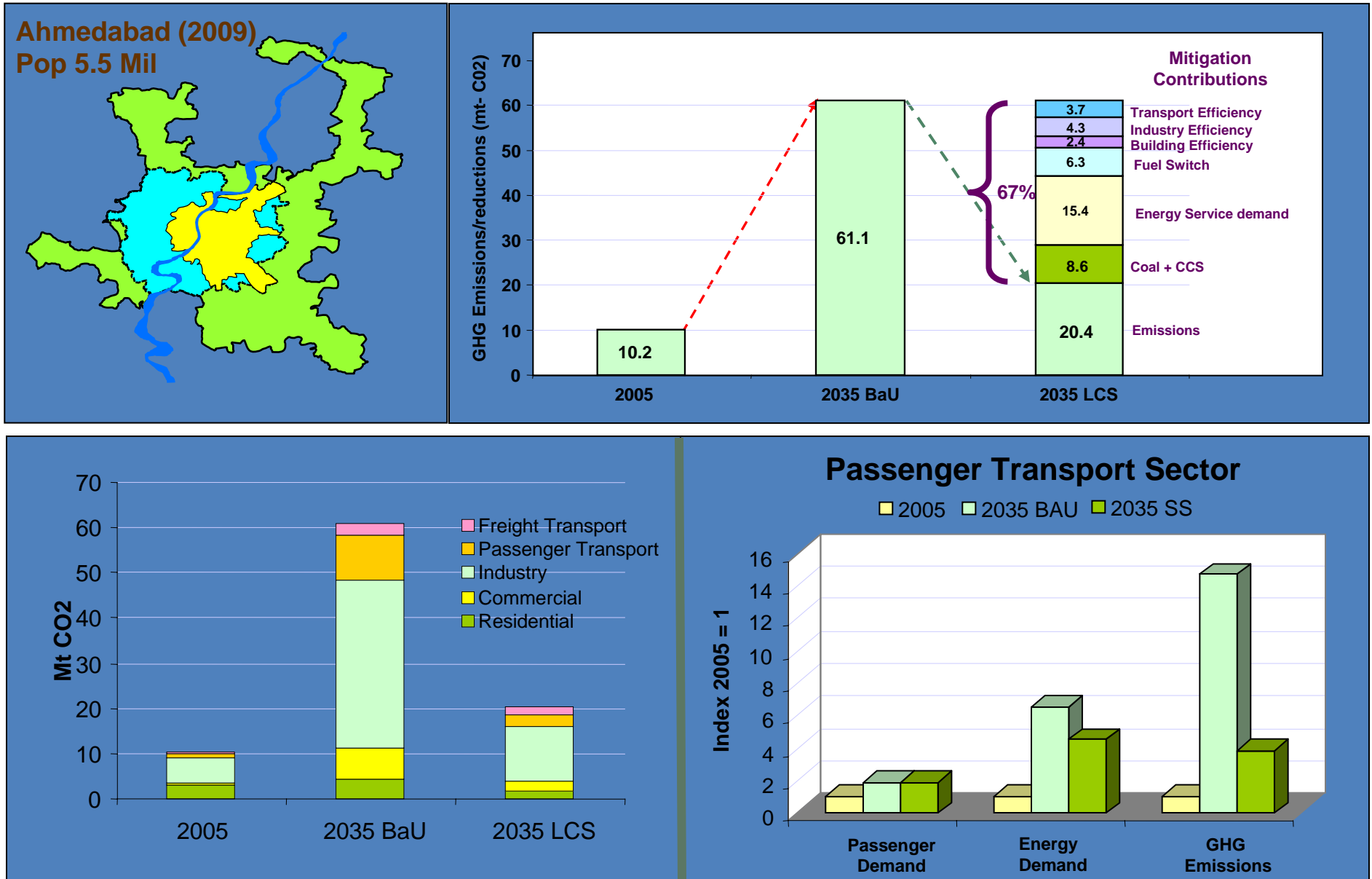
Many of the Asian countries are ready to go toward their targets

| Category 1                         | Category 2  | Category 3                         | Category 4   |   |  |
|------------------------------------|---|------------------------------------|--|---|--|
| Enabling Conditions                | Projects, Programs and Sectoral Measures  | Carbon Neutrality                  | Emission Reduction Targets   |   |  |
| Afghanistan<br>Botswana<br>Georgia | Armenia<br>Benin<br>Central African Republic<br>Republic of Congo<br>Cote d'Ivoire<br>Ethiopia<br>Eritrea<br>Gabon<br>Ghana<br>Cameroon<br>Jordan<br>Madagascar<br>Mauritania<br>Mongolia<br>Peru<br>San Marino<br>Sierra Leone<br>Macedonia<br>Togo<br>Tunisia | Bhutan<br>Costa Rica<br>Maldivesma | Intensity target (GDP)   | Absolute target   |  |
|                                    |   |                                    |  | Base Year   | BAU  |
|                                    |   |                                    | China<br>India   | Antigua Barbuda (1990)<br>Marshall Islands (2009)<br>Moldova (1990) | Brazil<br>Indonesia<br>Israel<br>Mexico<br>Papua New Guinea<br>South Korea<br>Singapore<br>South Africa) |
|                                    |   |                                    | Categorization of the Annex II of Copenhagen Accord (40 Countries) | Fukuda IGES 2010  | 11   |

# Low-Carbon Asia Scenario cooperative project



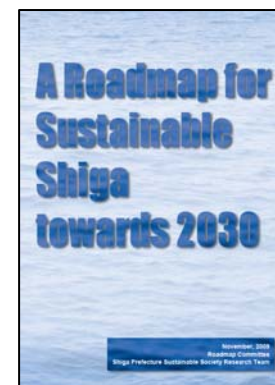
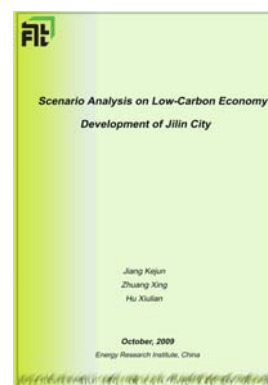
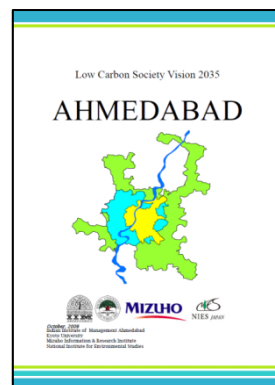
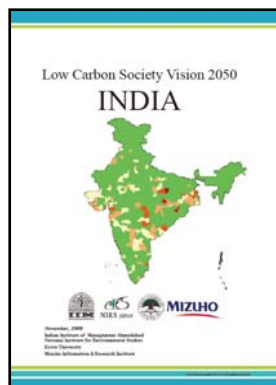
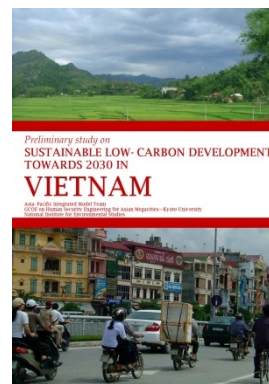
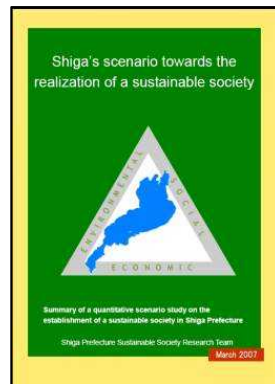
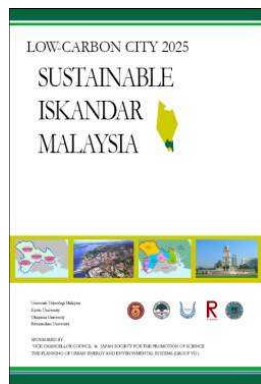
# Sustainable Low Carbon Cities: Ahmedabad



Source: Shukla

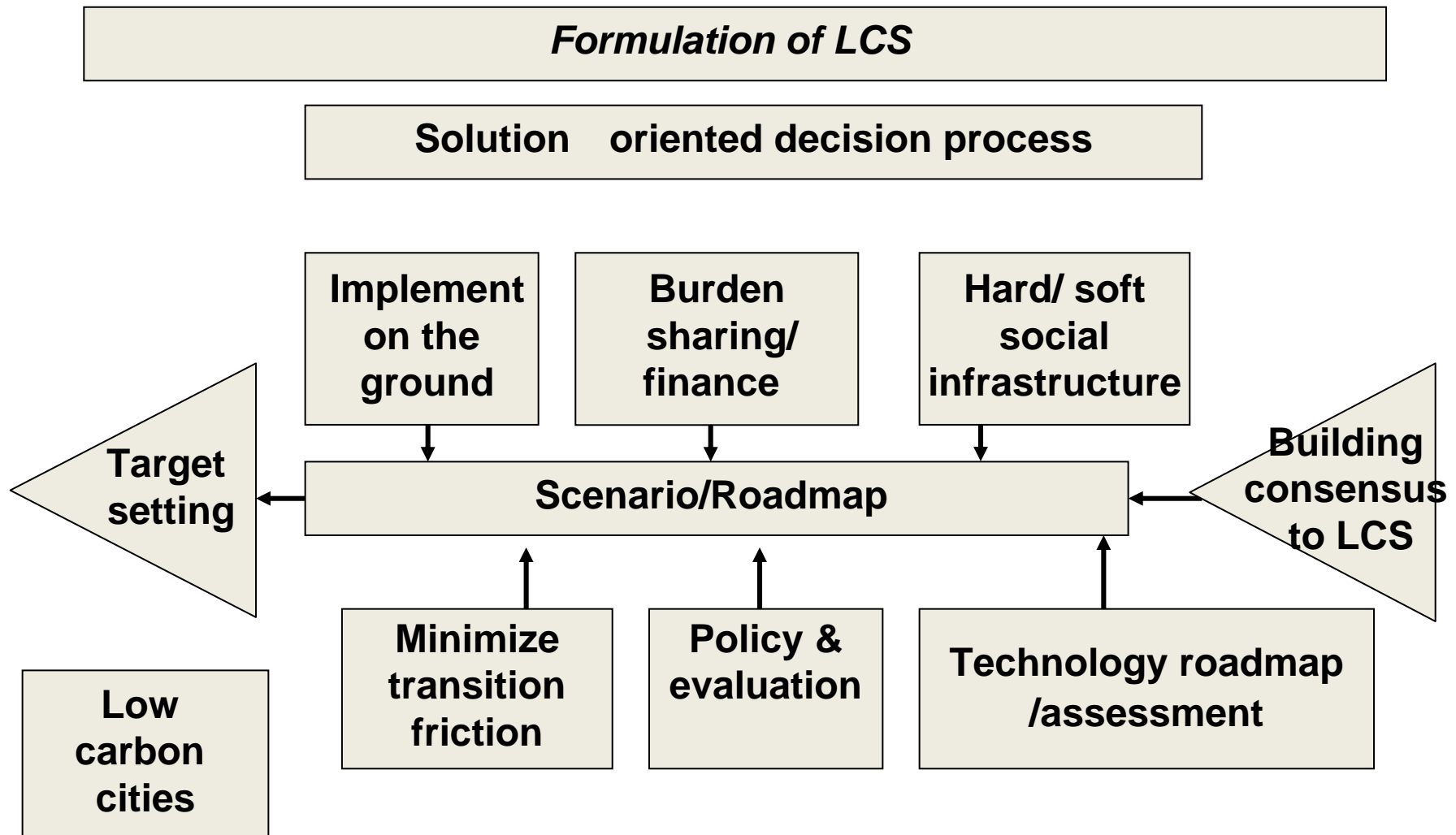


# Examples of cooperative studies of Low Carbon Cities





# 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

