
Support of Integrated Assessment Modeling for Capacity Development in Asia

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Asia-Pacific Integrated Model
<http://www-iam.nies.go.jp/aim/index.html>



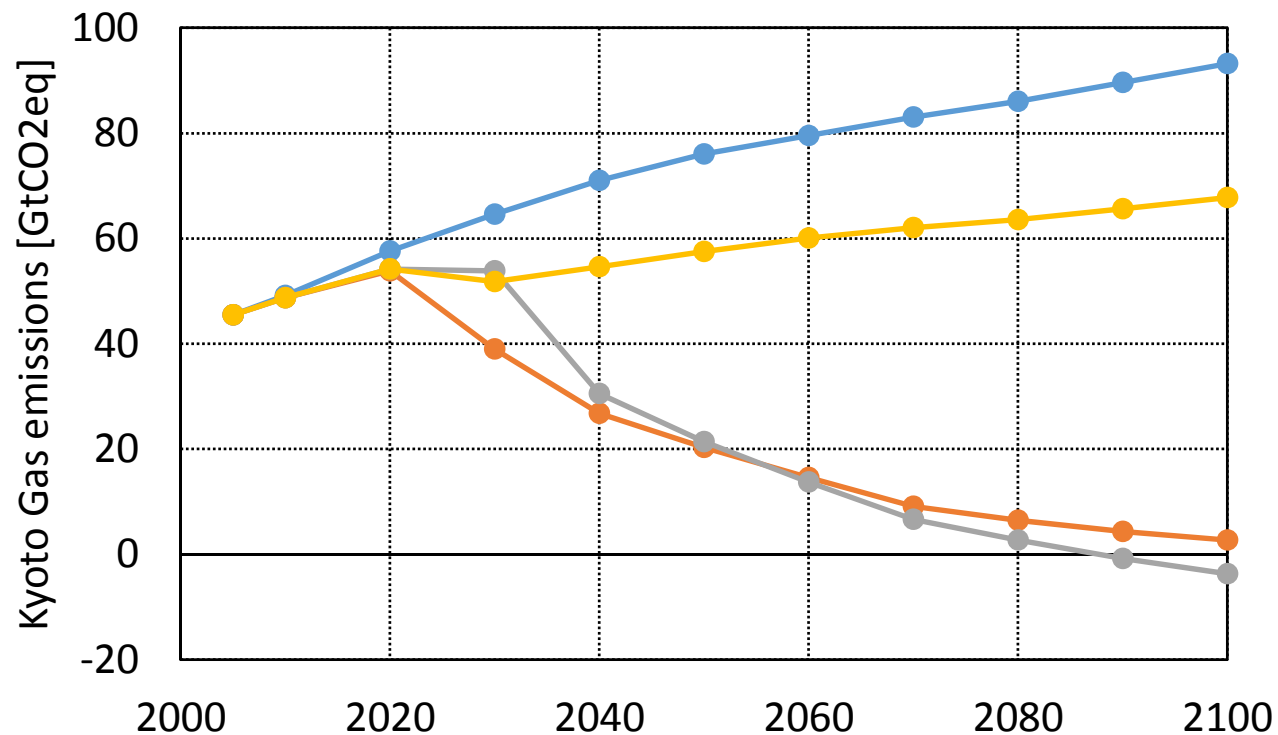
Background

- Paris Agreement mentions ...
 - Holding **the increase in the global average temperature to well below 2° C above pre-industrial levels** and **pursuing efforts to limit the temperature increase to 1.5° C above pre-industrial levels**, recognizing that this would significantly reduce the risks and impacts of climate change.
 - In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach **global peaking of greenhouse gas emissions as soon as possible**, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to **achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century**, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty.
- How to realize the mitigation in each country consistent with the above global goal?

INDCs in some Asian countries

- China: To reduce carbon intensity by 60% to 65% by 2030 below 2005 levels;
- India: To lower the emissions intensity of GDP by 33% to 35% by 2030 below 2005 levels.
- Indonesia: An unconditional 2030 GHG emissions reduction target of 29% below BAU including LULUCF emissions and a conditional 41% reduction below BAU by 2030 (with sufficient international support)
- Japan: To reduce emissions by 26% below 2013 emission levels by 2030.
- Korea: To reduce greenhouse gas emissions by 37% below BAU by 2030.
- Malaysia: To reduce GHG emissions intensity of GDP by 45% by 2030 relative to the emissions intensity of GDP in 2005.
- Thailand: An unconditional 20% reduction in emissions by 2030, compared to BaU levels. This could increase to 25%, conditional upon the provision of international support.
- Vietnam: An 8% reduction in emissions by 2030, compared to BaU. This could be increased to 25% conditional upon international support.
- USA: To reduce economy wide emissions by 26% to 28% below 2005 domestically.
- EU: To reduce greenhouse gases emissions by at least 40% domestic below 1990 by 2030.

Even if INDCs are achieved, 2 degree is a still tough target.

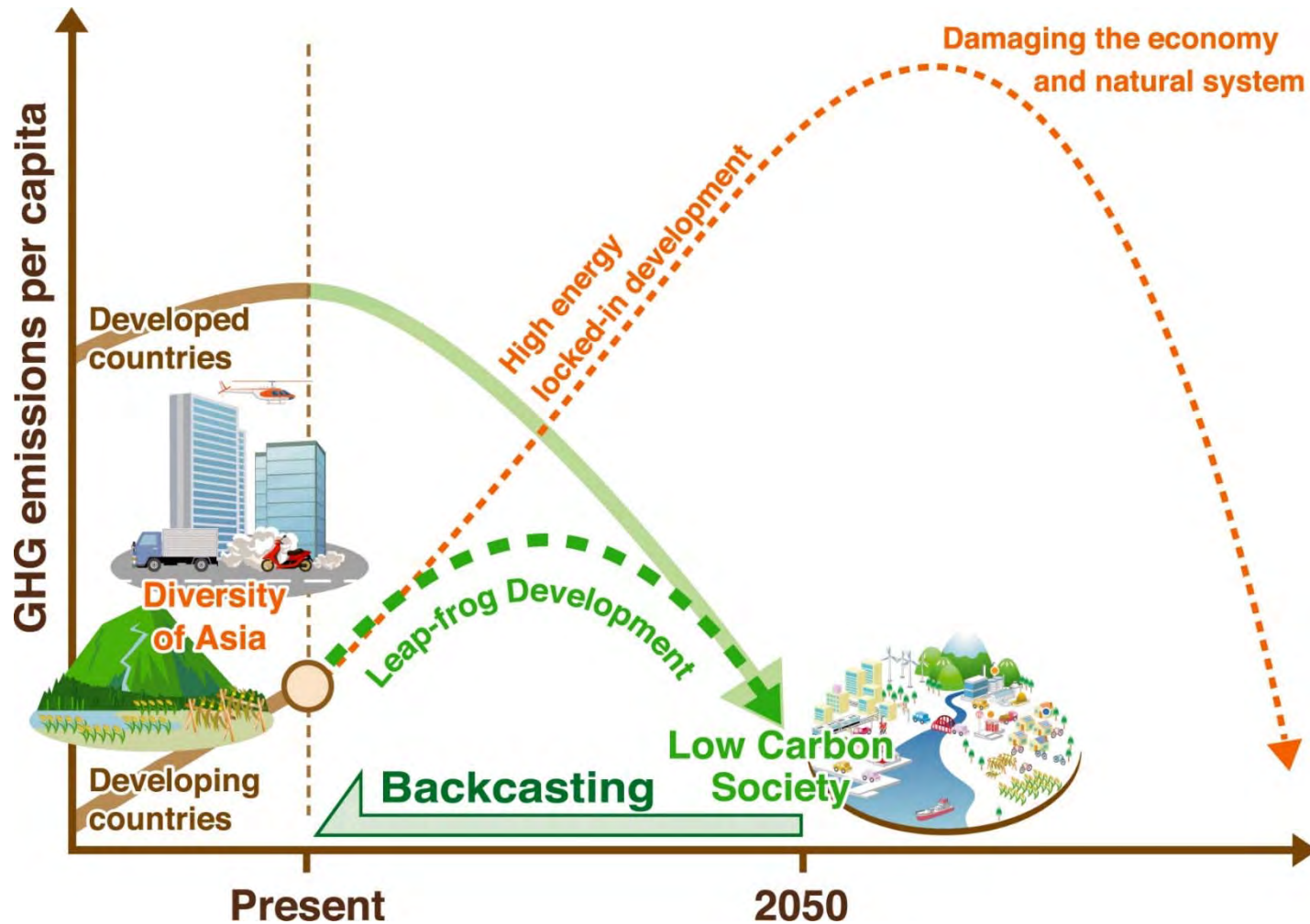


Scenario	Contents
● Ref	No climate policy.
● 2.6W_opt	Mitigation efforts consistent with Cancun pledges until 2020 and then the efforts increase to achieve the long term 2 ° C target.
● INDC_2.6W	Cancun pledges in 2020, INDCs in 2030, and then implementation of mitigation policies to achieve the 2 ° C target. (Cumulative GHG emissions during the 21 st century will be the same as those in 2.6W_opt.)
● INDC_cont	Cancun pledges in 2020, INDCs in 2030, followed by the same carbon price for INDC.

* RCP2.6 is the lowest emission scenario among the 4 RCPs (Representative Concentration Pathways). In this analysis, the cumulative emissions during 21st century should be the same with those in RCP2.6.

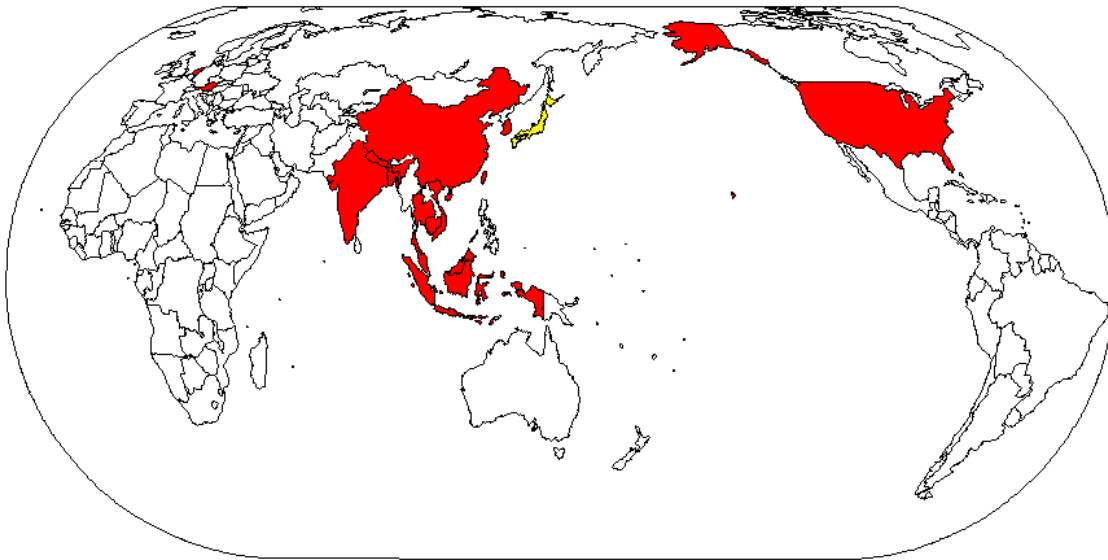
Global GHG emissions using AIM/CGE [Global]

How will Asian countries achieve drastic GHG emission reduction?



Asia Low-Carbon Research Project, 2009-2013 (S-6 of The Environment Research and Technology Development Fund, MOEJ)

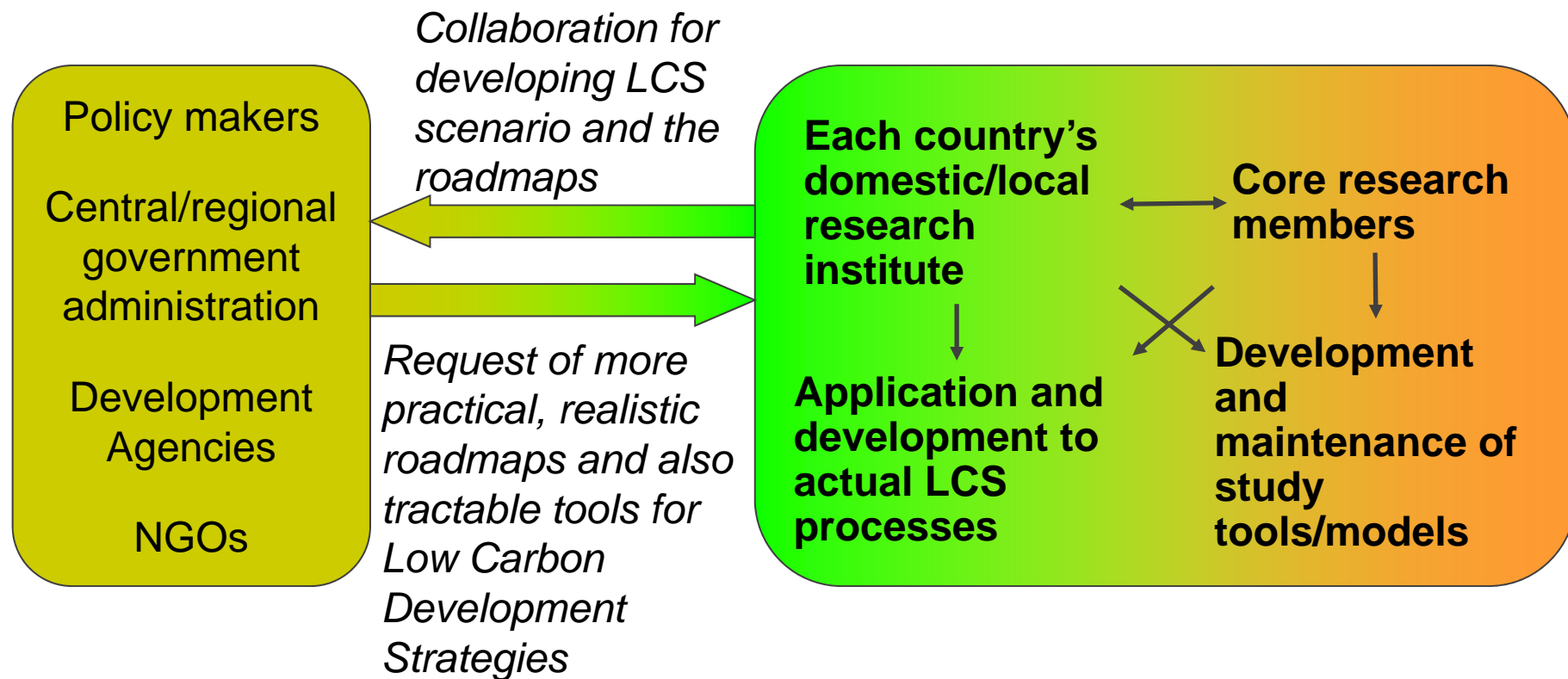
International Network of AIM (Asia-Pacific Integrated Model)



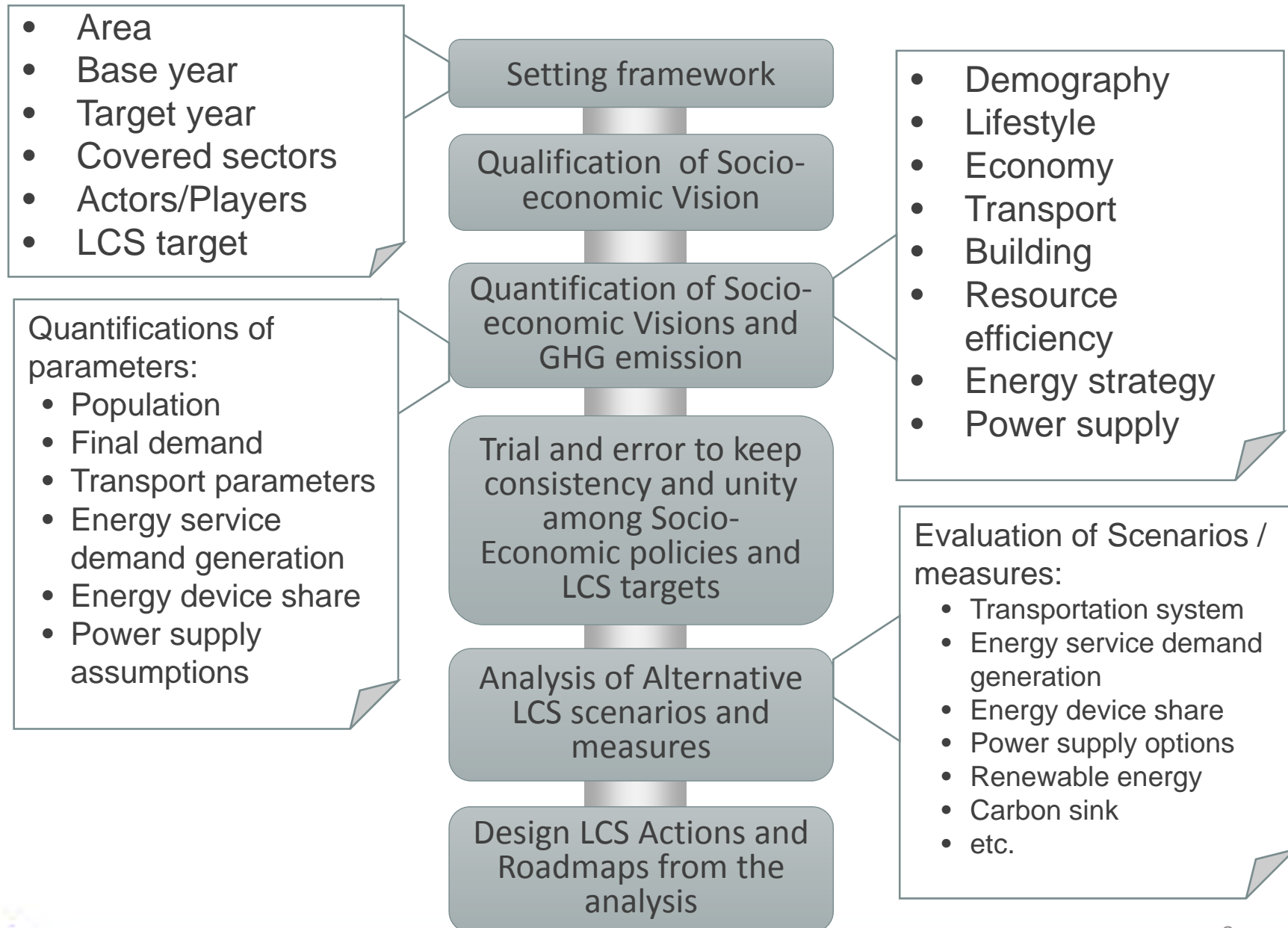
- Asian countries will make their mitigation target and roadmap to achieve the 2/1.5 degree target reflecting their issues to be solved and the resources to be endowed.
- Model can be a collaboration tool between science and decision making process. From the long-term viewpoint, each country will need the capacities to develop model and scenarios by itself.
- AIM (Asia-Pacific Integrated Model) has supported Asian countries to develop the integrated assessment model and their long-term low carbon scenarios.



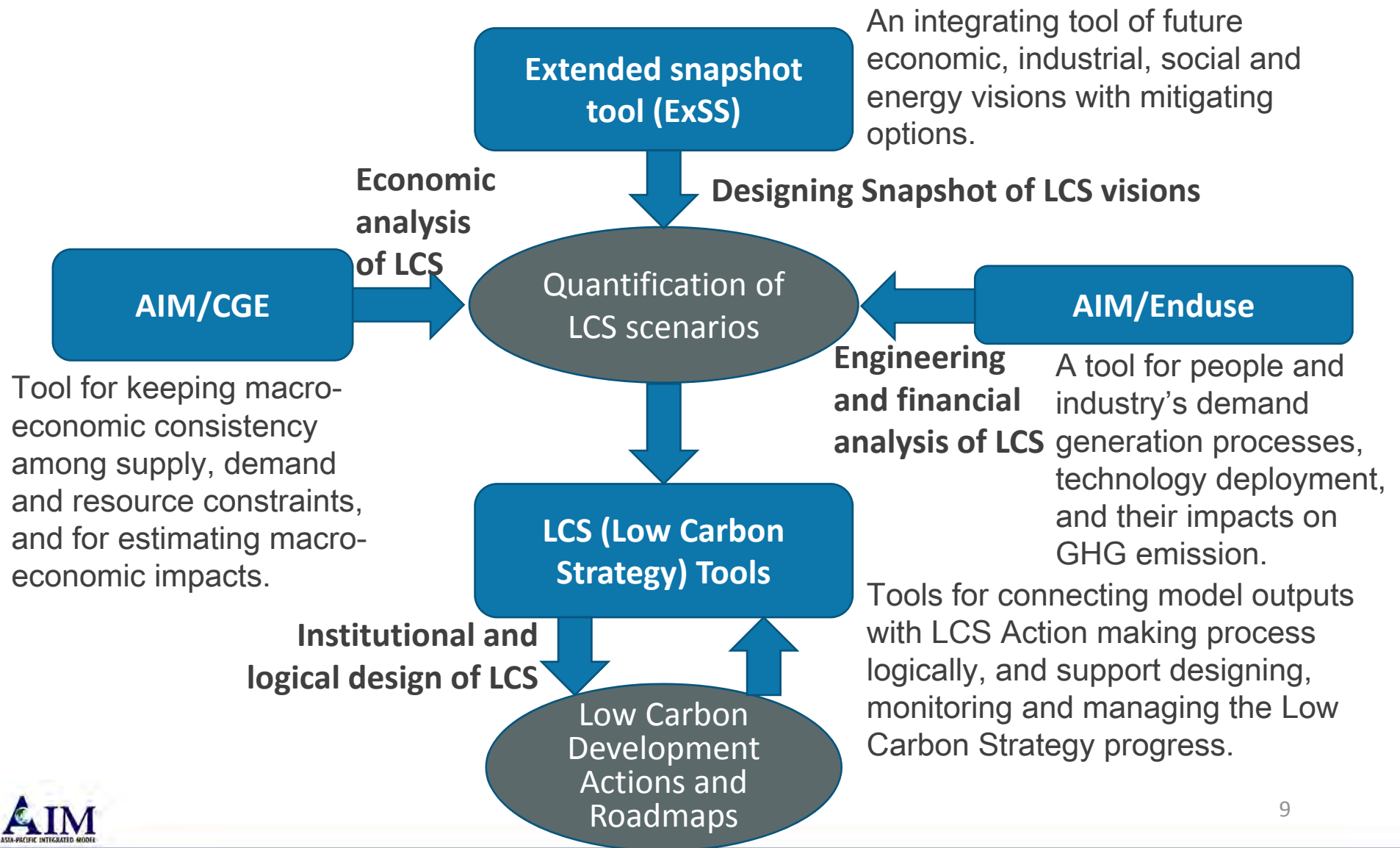
Collaboration with Asian countries; Scenario approach towards Low Carbon Society in Asia



Overall research procedure of our LC Society Scenario approach



How to combine the tools in order to keep consistency and unity among Socio-Economic policies and LCS actions



10 Actions toward Low Carbon Asia

- NIES and other collaborating universities and institutes have proposed the 10 Actions to halve global greenhouse gas emission in 2050 compared to 1990 level.



Action 1 **Urban Transport**
Hierarchically Connected
Compact Cities



Action 2 **Interregional Transport**
Mainstreaming Rail and Water in
Interregional Transport



Action 3 **Resources & Materials**
Smart Ways to Use Materials that
Realize the Full Potential of Resources



Action 4 **Buildings**
Energy-Saving Spaces Utilizing
Sunlight and Wind



Action 5 **Biomass**
Local Production and
Local Consumption of Biomass



Action 6 **Energy System**
Low Carbon Energy System
Using Local Resources



Action 7 **Agriculture & Livestock**
Low Emission Agricultural
Technologies



Action 8 **Forestry & Land Use**
Sustainable Forestry Management



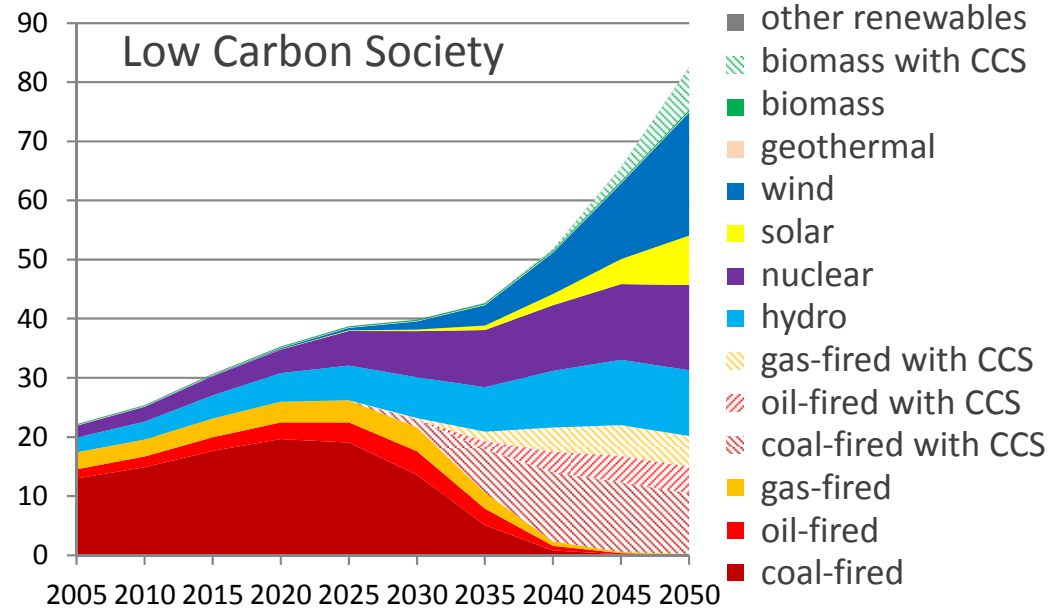
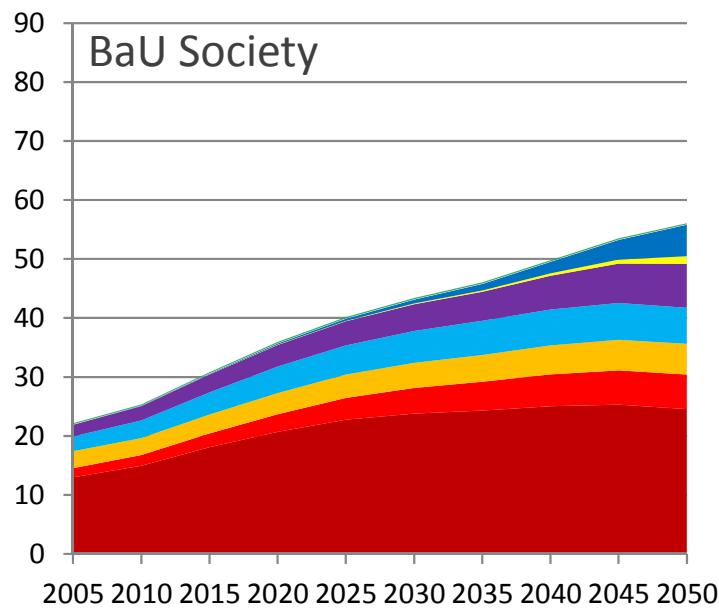
Action 9 **Technology & Finance**
Technology and Finance to
Facilitate Achievement of LCS



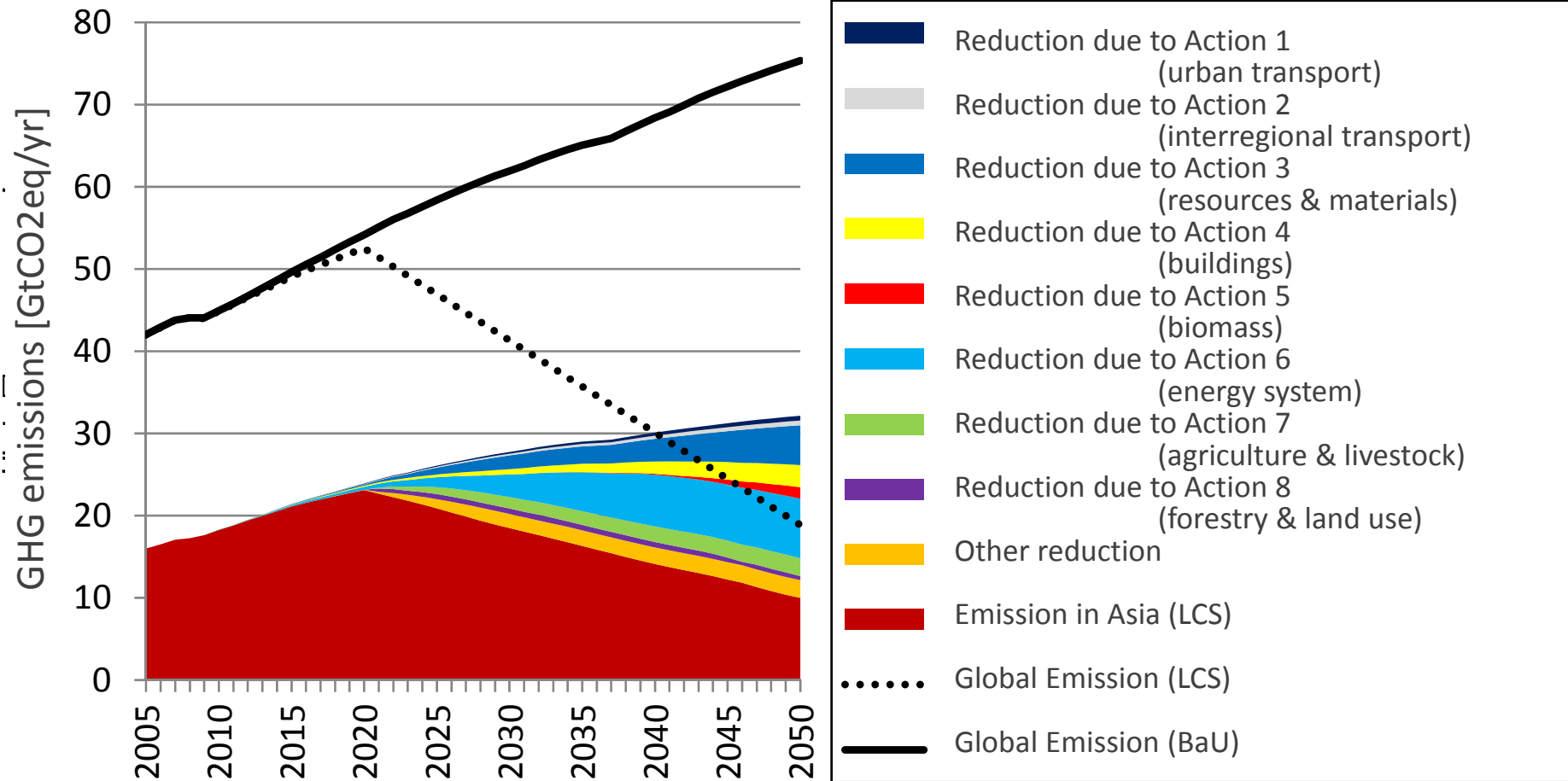
Action 10 **Governance**
Transparent and Fair Governance
that Supports Low Carbon Asia

Action 6: Low Carbon Energy System Using Local Resources (Energy System)

6.1 Promotion of sustainable local energy systems with renewables	6.1.1 Use of solar and wind power energy
	6.1.2 Use of hydrogen energy
	6.1.3 Incentives for introducing renewable energy
6.2 Creation of smart energy supply and demand systems	6.2.1 Introduction of smart energy systems
	6.2.2 Introduction of demand response systems
	6.2.3 Introduction of power management systems
	6.2.4 Introduction of incentives for managing demand
6.3 Enhanced energy security with collaboration between low carbon energy sources and fossil fuels	6.3.1 Enhancement of the efficiency of power-supply equipment
	6.3.2 Use of carbon capture and storage (CCS) equipment
	6.3.3 Promotion of international cooperation



GHG Emissions in Low Carbon Asia



Examples of brochures introducing Asian Low Carbon Scenarios

Communication and feedbacks of LCS study to real world

Malaysia

- Putrajaya
- Cyberjaya
- Iskandar Malaysia

India

- Bhopal
- Ahmedabad

Japan

- Kyoto
- Shiga

China

- Guan Zhou
- Dalian

Thailand

- Ratchaburi
- KhonKaen

S. Korea

- Kyonggi-do

Other countries and cities:

- Vietnam
- Bangladesh
- Indonesia
- Cambodia
- Guangzhou

Brochure covers shown include: MALAYSIA 2030, SUSTAINABLE ISKANDAR MALAYSIA, Low Carbon Society Blueprint for Iskandar Malaysia 2025, Putrajaya Green City 2025, Towards Putrajaya Green City 2025, Cyberjaya Digital Green City 2025, Low Carbon Society Vision 2050 INDIA, Bhopal 2025, A road map towards Low Carbon Ahmedabad 2050, Low Carbon Society Scenario Towards 2050, A Roadmap towards Low Carbon Kyoto, A Roadmap for Sustainable Shiga towards 2030, Economic Analysis on Low Carbon Economy Development of Jilin City, Low Carbon Society Scenario Towards 2050 Guangzhou, A Low Carbon Society Development towards 2050 in VIETNAM, Low-Carbon Society Development towards 2025 in Bangladesh, Low Carbon Society Scenario, Target 2050 INDONESIA Energy Sector, Low Carbon Development Strategy for Cambodia toward 2050, Preliminary feasibility study on Low Carbon Development Towards 2050 in Gyeonggi Province, Roadmap to Low Carbon Thailand towards 2050, and Khan Kaen Towards Low Carbon Society.

Contribution of AIM to INDC and other low carbon development

- Japan
 - Since COP3 in 1997, AIM has been in charge of decision of GHG mitigation target in Japan.
 - For INDC, models including AIM did not contribute directly, but the numerical results from AIM/Enduse model (technology selection model) and AIM/CGE model were provided to MOEJ.
- Thailand
 - Prof. Bundit Limmeechokchai (SIIT) contributed Thailand's INDC process using AIM/Enduse model. Now he is using AIM/CGE model to assess the economic impacts.
- Indonesia
 - Prof. Rizaldi Boer (IPB) and Prof. Ucok Siagian and Prof. Retno Dewi (ITB) used AIM/Enduse model and AFOLU model. By the end of this year, Indonesia team will provide the concrete results to the government.
- Ho Chi Minh City
 - AIM team has been supporting to establish low carbon action plan of HCMC.
- Iskandar Malaysia
 - AIM team supported to publish Low Carbon Society Blueprint for IM 2025.

Toward 2/1.5 degree target

- Each country's policymakers/researchers/business sectors/general public know their country's situation, and they will have to discuss and decide their own future toward the low carbon society.
- Model is a collaboration tool to discuss the roadmap to implement the mitigation actions among the stakeholders.
- From the long-term viewpoint, model and future scenarios will have to be developed by the stakeholders in each country by their own efforts.
- AIM will continue to support your activities to develop model and low carbon scenarios in your countries.