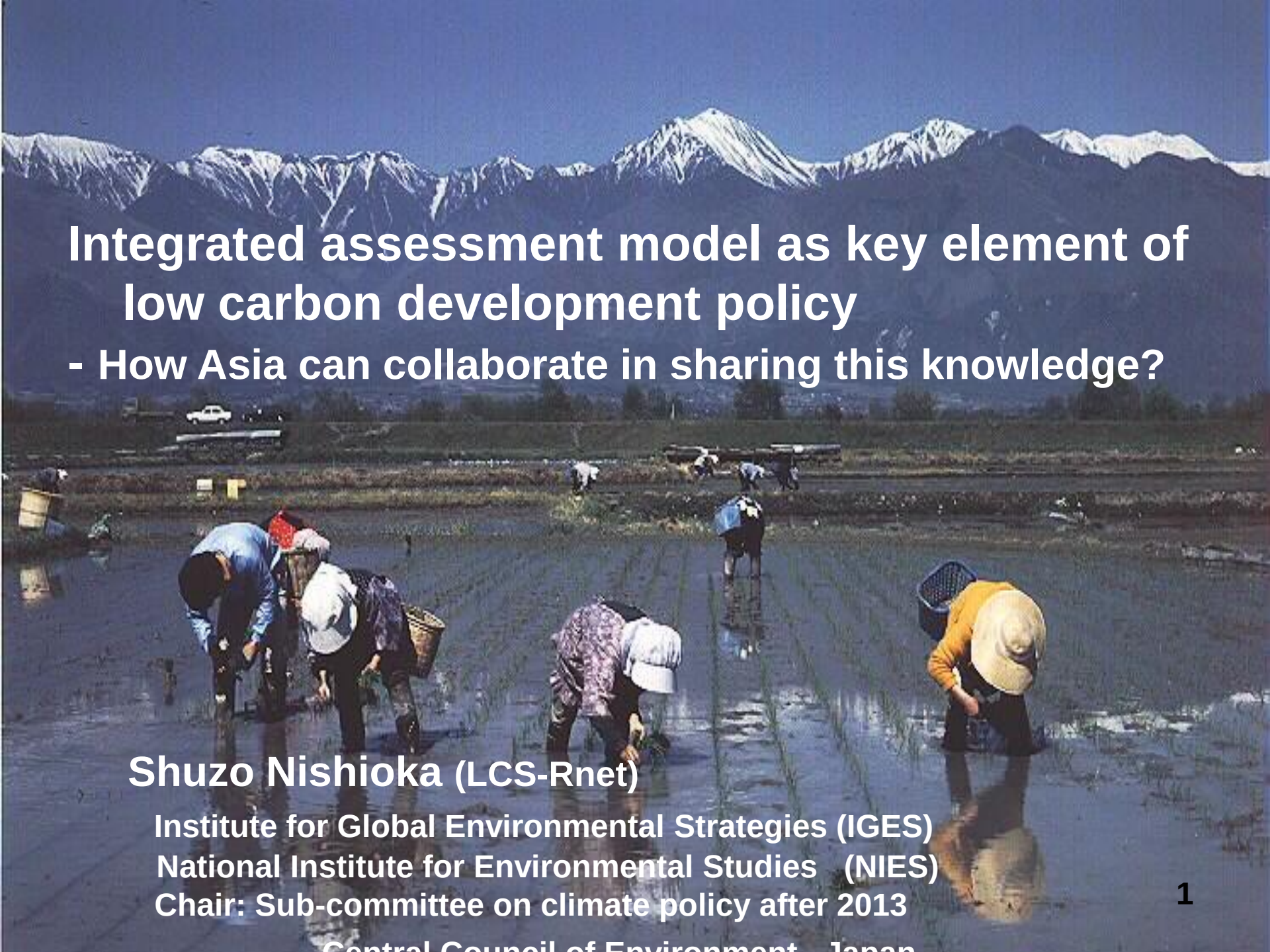


Integrated assessment model as key element of low carbon development policy

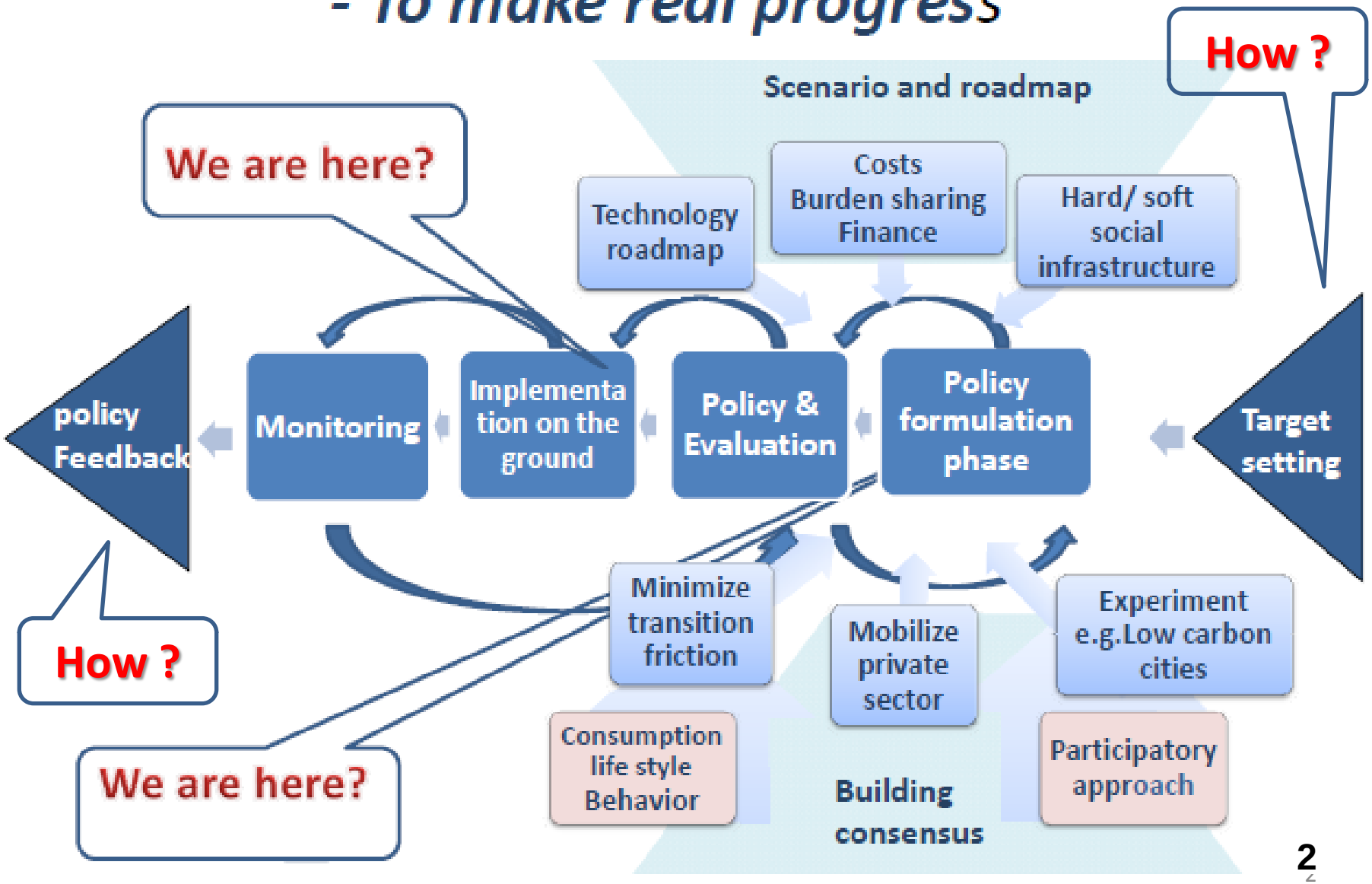
- How Asia can collaborate in sharing this knowledge?

Shuzo Nishioka (LCS-Rnet)

Institute for Global Environmental Strategies (IGES)
National Institute for Environmental Studies (NIES)
Chair: Sub-committee on climate policy after 2013
Central Council of Environment, Japan

LCS·R Net

Formulation of LCS - To make real progress



Challenge

- Science: Low carbon development: unavoidable future for stable climate
- International decision: Urgent request from global society: Copenhagen/Cancun/Durban

・ Asia: High emission share/rapid growth & urbanization/high investment rate
⇒Avoid lock-in to high carbon path

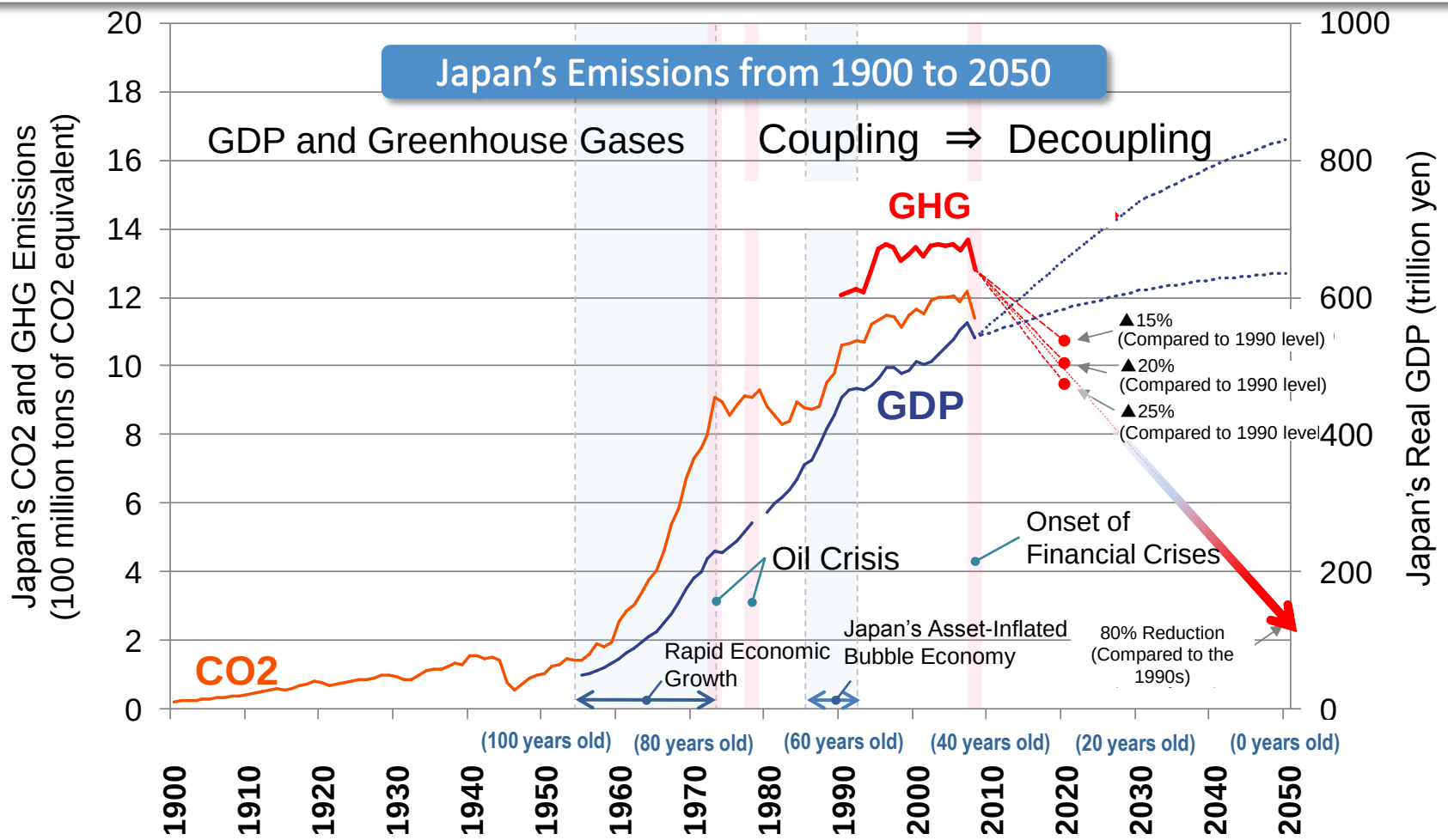
・ Broad scientific knowledge needed to be integrated into LCD policy
⇒ Inter-disciplinary collaboration domestically
Integrated assessment model: good tool for integration

・ Common knowledge, measures practice can be shared among countries, although diversified in situation & development stages

⇒ ・Bridging modeling and policy making toward LCS
・LCS knowledge sharing among Asian countries

(1) Mid- and Long-term Target – Attempting to Build a Never-Before-Seen Society—

An 80% emission reduction by 2050 will create a largely different society from today. It will be critical to strategically move forward under mid-term 2020 and 2030 targets that take into account this eventual 80% reduction.



1) Parenthesis indicates the age of which persons born in each respective year will be in the year 2050
2) Future GDP values are assumed values based on scenarios A and B from the NIES Low Carbon Society Research Project 2050

(5) Review Conducted with Cooperation of Multiple Experts & Specialists

Reviews were held from April to December 2010 involving over 100 experts & specialists from a wide range of fields

Mid- and Long-term Roadmap Subcommittee, Global Environmental Committee, Central Environmental Council

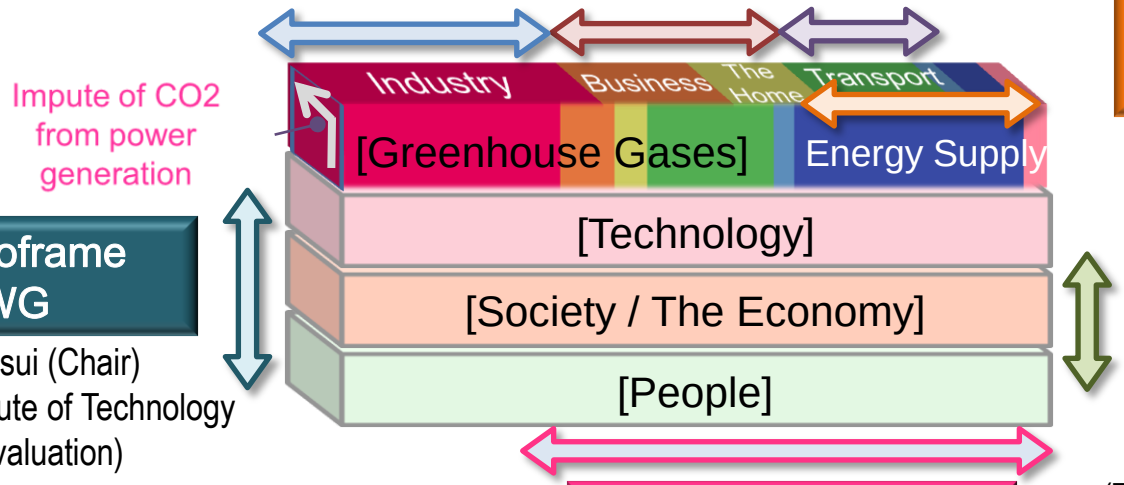
Working Groups for the Mid- and Long-term Roadmap for Global Warming Countermeasures

Reviews conducted from a specialist and technological standpoint concerning policies and measures to achieve mid- and long-term targets(101 members / 49 sessions)

Manufacturing WG
Yoshihiro Fujii (Chair)
(Sophia Univ.)

Buildings WG
Shuzo Murakami (Chair)
(Building Research Institute)

Automobile WG
Yasuhiro Daisho (Chair)
(Waseda Univ.)



Energy Supply WG
Tadashi Otsuka (Chair)
(Waseda Univ.)

Macroframe WG
Itaru Yasui (Chair)
(National Institute of Technology and Evaluation)

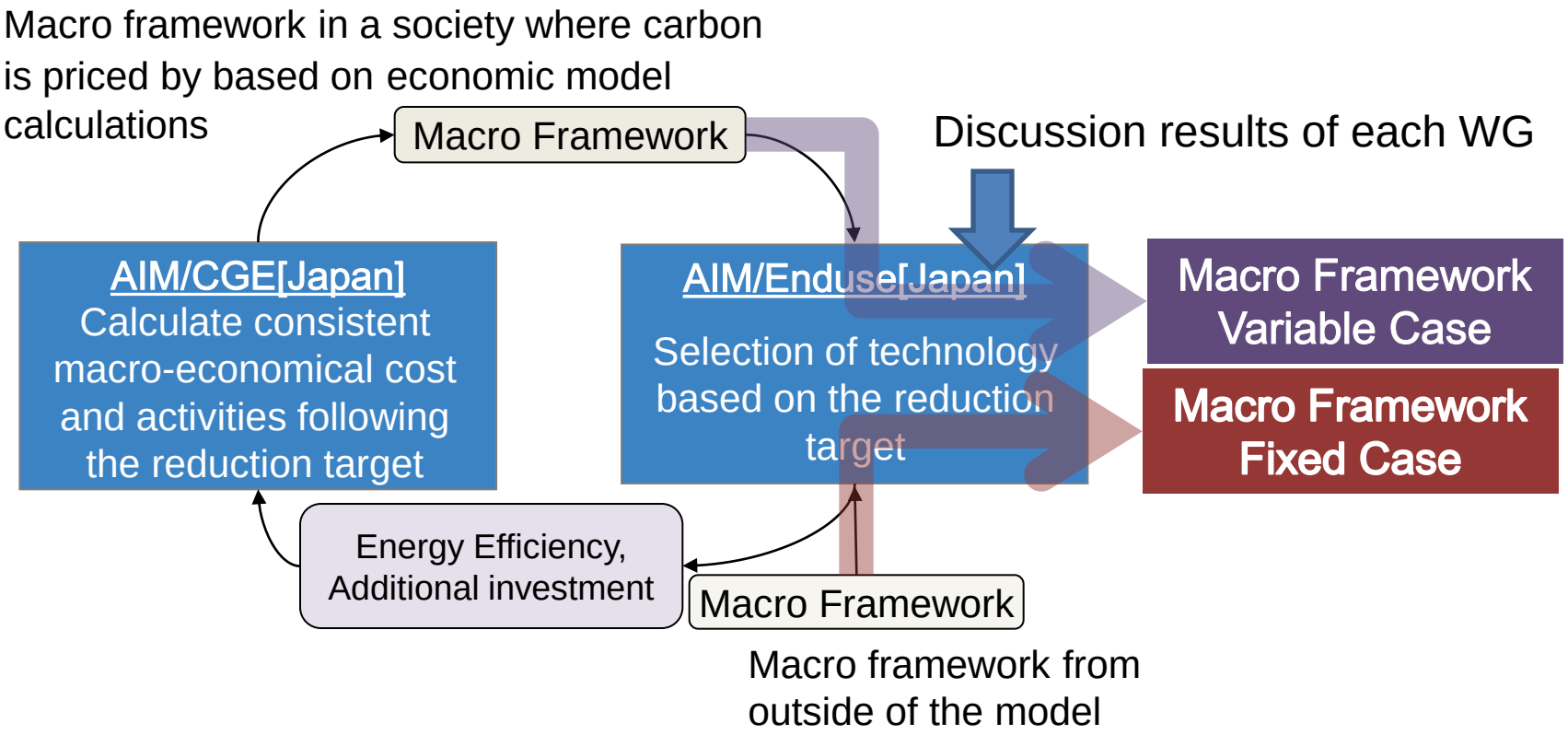
Local Development WG
Tetsuo Yai (Chair)
(Tokyo Institute of Technology)

Communications and Marketing WG
Junko Edahiro (Chair)
(Japan for Sustainability)

(2) How are CO2 Emissions in 2020 and 2030 Estimated?

CO2 emissions were estimated based on the following two types of assumed macro framework cases.

- **Macro Framework Fixed Case:** Assumes the same macro framework for all CO2 reduction targets.
- **Macro Framework Variable Case**: Estimates energy efficiency improvement and additional investment based on the CO2 reduction target with AIM/Enduse[Japan], and then input this data into AIM/CGE[Japan] to estimate changes in activities for each sector. These results are then used in AIM/Enduse[Japan] to conduct a re-estimate.



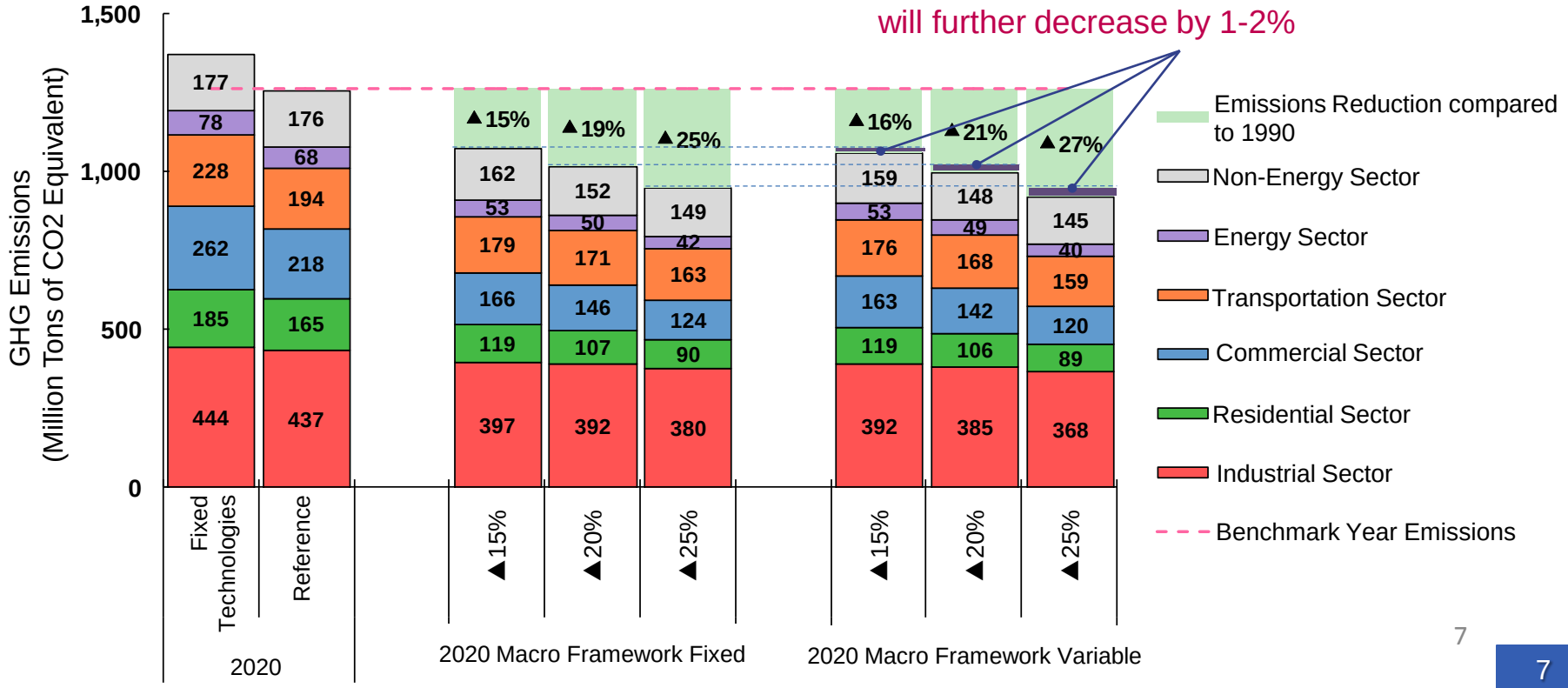
6

(4) How does the Impact Differ Among Scenarios? (Macro Framework)

In the case of a variable macro framework, in which the outlook on the amount of activities such as production volume is not fixed, as the target becomes more stringent (which means an increase in carbon price), the amount of activities in each industry will change by several percent. Subsequently, the emissions of this countermeasure case are expected to decrease by another 1% to 2%. However, in such a case, the pace of change in social structure will speed up, and proper consideration should be given to the resulting friction of such changes.

- Greenhouse Gas Emissions / Indirect / 2020

If the industrial structure is not stabilized, the amount of activities will change in accordance with enhanced countermeasures, and CO2 emissions will further decrease by 1-2%

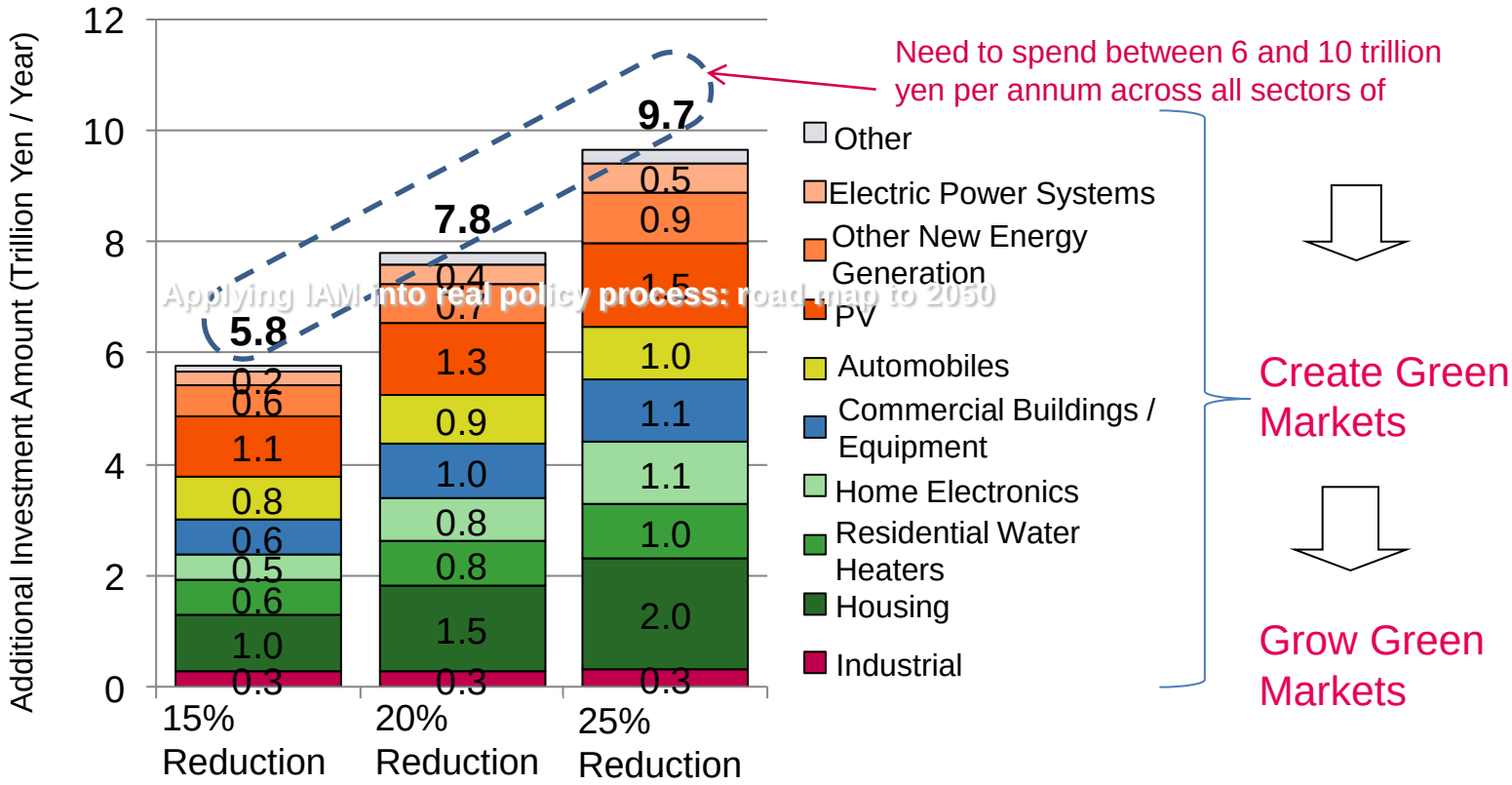


7

(5) How Much does Japan Need to Invest to Achieve its CO2 Reduction Targets

Japan needs to invest on average 6 to 10 trillion yen per annum in additional funds to achieve a ▲15% to ▲25% by 2020. If this spending is not spread across all sectors of society, Japan will face difficulty in implementing the necessary countermeasures to achieve this target. Yet, this also means Japan will need to create new markets on par with this spending.

[Additional Investments Required to Achieve CO2 Reduction Target]



Applying IAM into real policy process: road map to 2050

Comments from the Roadmap Subcommittee

- Japan needs to develop policies that reward consumers who chose and companies that manufacture low-carbon products.
- Japan needs to proactively move forward with investments that contribute to green innovation.

An idea for establishing the

Asia Research Network for Low Carbon Development (ARNLCD)

by research organisations dedicating to LCD policy formation

Rationale: In order to strengthen Asia's fundamental and sustained capacity in formulating science-based policies for low-carbon development, and to carry out "leapfrog" development in Asia for global climate stabilisation, launching a network called the "Asia Research Network for Low Carbon Development" can be considered.

Mechanism: A platform for knowledge sharing and capacity building of in-country researchers, composed of research communities deeply involved in low-carbon development policy processes. Active researchers in-country will work together with Japanese researchers on practical matters—not reports for the bookshelf.

Objective: To strengthen the scientific base for LCD policies by proactively exchanging the knowledge rooted in the region between policy makers and researchers.

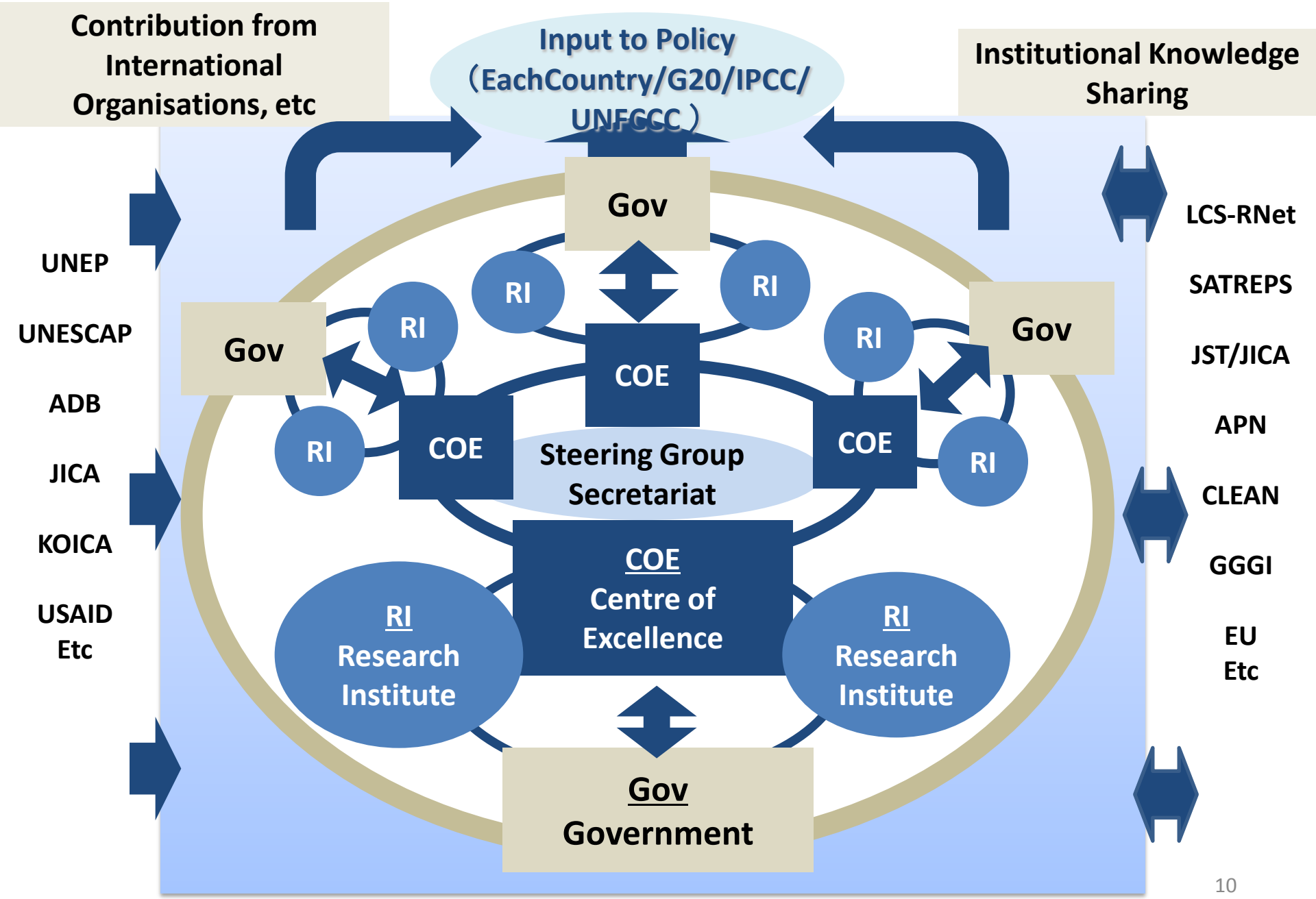
Characteristics: A self-independent, autonomous research network, operated through voluntary initiatives by researchers in each country.

Organisation: A network of COEs (Centers of Excellence) designated as country focal points. Managed by a steering group and secretariat.

Funding: Contributions are expected not only from donor countries but also from international organizations and from ASEAN countries themselves.

Action Schedule: **Proposed** at the ASEAN+3 EMM on 19 Oct. 2011: plan to be launched at East Asia Climate Dialogue early April 2012 at Tokyo

Asia Research Network for Low Carbon Development (ARNLCD)



Existing mechanisms …

International/Regional:

- ADB: RDTA: Strengthening Planning Capacity for Low Carbon Growth in Developing Asia: 2011-2013
- World Bank: Low Emission Development Policy Implementation:
- EU ASEM: ASEM Green Growth Forum: 3-4 Oct. 2011 Hanoi
- Asia-Pacific Network for Global Change Research: 1997-
- USAid:2012-
- GGGI: Green Growth Initiatives:

Japan:

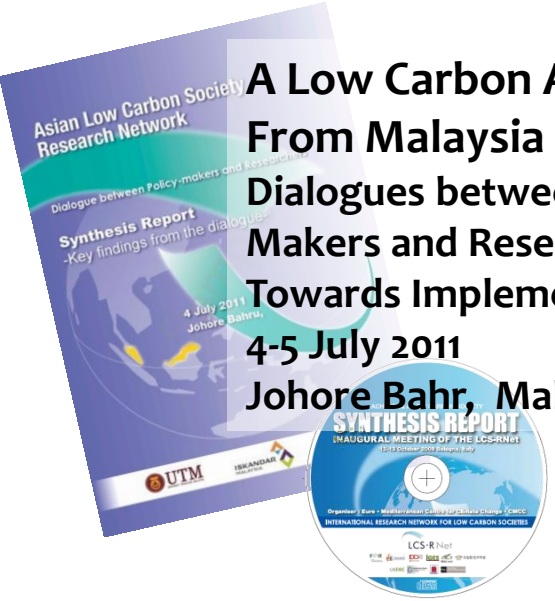
- Asia GHG inventory workshop: 2002-
- Training WS of Integrated Assessment Model for CC policy: 1996-
- JICA/JST SATREPS Program (Malaysia): 2011-
- Asia Low Carbon Society Research: 2009-2013
- International Research Network for Low Carbon Societies (LCS-RNet): 2008- (Held 5 WSs in 2010-21 in the region)

Other than the above, there are lots of similar mechanisms operated by IOs / other countries, etc.

Activities and Publications

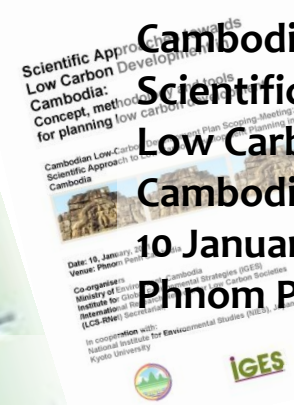
Series of policy-research dialogue workshops on Asian Low Carbon Development

LCS·R Net **Asia**



A Low Carbon Asia: From Malaysia to Asia
Dialogues between Policy-Makers and Researchers: Towards Implementation
4-5 July 2011
Johore Bahr, Malaysia

Policy Dialogue:
Sustainable and Low-Carbon Development in Indonesia and Asia
16-17 February 2010
Bogor, Indonesia



Cambodia workshop:
Scientific Approaches towards Low Carbon Development in Cambodia
10 January 2011
Phnom Penh, Cambodia

Dialogue:
Transition towards Low Carbon Societies in Thailand and Asia
17-18 November 2010
Bangkok, Thailand

Stakeholder Dialogue:
Low Carbon Development and Research Need
18-19 April 2011
Hanoi, Vietnum

Series of LCS-RNet G8 Annual Meetings

1st Annual Meeting
12-13 October 2009
Bologna, Italy

2nd Annual Meeting
Sept. 2010, Berlin, Germany

3rd Annual Meeting
Oct. 2011, Paris, France

Dialogue between Policy makers and Researchers in ASEAN countries (2010-)

Min. of Natural Resources and Environment

VietNum

University of Hanoi

Thailand Greenhouse Gas Management Organization

Thailand

Joint Graduate School of Energy and Environment

Ministry of Environment

Cambodia

LCS·R Net

LCS-RNet Secretariat/IGES

Malaysia Iskandar Authority

Malaysia

University of Technology Malaysia

Ministry of Environment

Indonesia

Bogor Agricultural University

ASEAN

13

10th ASEAN Plus Three Environment Ministers Meeting

A proposal for establishing the Asia Research Network for Low Carbon Development (ARNLCD)

Dr. Shuzo Nishioka

Senior Research Advisor, Institute for Global Environmental Strategies (IGES)

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