



# Roadmap toward Low Carbon Development in Asia

**D a t e : October 30, 2012 13:00~18:00**

**Venue : Room A, IINO Hall & Conference Center, Tokyo**



Organized by

- Research Project to Establish a Methodology to Evaluate Mid to Long Term Environmental Policy Options toward Asian Low-Carbon Societies (S-6 Project) supported by Environment Research and Technology Development Fund of the Ministry of the Environment, Japan
- National Institute for Environmental Studies (NIES)
- Institute for Global Environmental Strategies (IGES)



# Program

13:00-13:05	<b>Opening Remarks</b> Soichiro Seki      Director General, Global Environment Bureau, Ministry of the Environment, Japan
13:05-13:10	<b>Opening Remarks</b> Shinichiro Ohgaki      President, National Institute for Environmental Studies (NIES)
13:10-15:10	<b>Low-Carbon Asia Research Project (S-6 Project)</b>
13:10-13:25	<b>Low-Carbon Asia Research Project (S-6)</b> Mikiko Kainuma      Fellow, Center for Social and Environmental Systems Research, NIES Project Leader of Low-Carbon Asia Research Project
13:25-13:55	<b>Overview of Low Carbon Asia</b> -Roadmap in Asia to halve global GHG emissions in 2050 compared to those in 1990 - Toshihiko Masui      Head, Integrated Assessment Modeling Section, Center for Social and Environmental Systems Research, NIES
13:55-15:10	<b>Ten Actions toward Low Carbon Asia</b>  Urban Transport, Interregional Transport      Professor, Graduate School of Environmental Studies, Nagoya University Yoshitsugu Hayashi      Director, International Research Center for Sustainable Transport and Cities, Graduate School of Environmental Studies, Nagoya University  Resources & Materials      Professor, School of Engineering, the University of Tokyo Yuichi Moriguchi      Professor, Graduate School of Frontier Sciences, the University of Tokyo  Buildings, Biomass, Energy System      Researcher, Center for Social and Environmental Systems Research, NIES Shuichi Ashina  Agriculture & Livestock, Forestry & Land Use      JSPS Fellow, Center for Social and Environmental Systems Research, NIES Tomoko Hasegawa  Technology & Finance, Governance      Associate Professor, Graduate School of Decision Science and Technology, Tokyo Institute of Technology Norichika Kanie      Senior Research Fellow, United Nations University - Institute of Advanced Studies  [Commentators] Ryokichi Hirono      Professor Emeritus, Seikei University Masahiro Kawai      Dean & CEO, Asian Development Bank Institute (ADBI) Le Zhidong      Professor, Department of Management and Information Systems Science, Nagaoka University of Technology
15:10-15:30	<b>Coffee Break</b>
15:30-17:55	<b>Toward Sustainable Low Carbon Asia - How to make it happen -</b>
15:30-15:50	<b>East Asia Low Carbon Growth Partnership Dialogue</b> Masami Tamura      Director, Climate Change Division, International Cooperation Bureau, Ministry of Foreign Affairs, Japan
15:50-16:10	<b>Low Carbon Asia Research Network : LoCARNet - Integrating Asian Wisdom -</b> Shuzo Nishioka      Secretary-General, LCS-RNet /LoCARNet Senior Research Advisor, Institute for Global Environmental Strategies (IGES)
16:10-16:30	<b>The "FutureCity" Initiative</b> - Message from Japan towards the resolution of globally common issues - Shuzo Murakami      President, Institute for Building Environment and Energy Conservation
16:30-17:55	<b>Panel Discussion</b> Toward Sustainable Low Carbon Asia - What is the role of Japan ? -  [Moderator] Junichi Fujino      Senior Researcher, Center for Social and Environmental Systems Research, NIES  [Panelists] Masayuki Karasawa      Executive Adviser to the Director General, Head, Office for Global Issues and Development Partnership, Operations Strategy Department, Japan International Cooperation Agency (JICA) Kotaro Kawamata      Director, International Cooperation Office, Ministry of the Environment, Japan Hiroaki Suzuki      Manager, Corporate Citizenship Department. AEON Co. Ltd. Akiko Nakajo      Graduate School of Finance, Accounting and Law, Waseda University Toshikazu Matsuoka      Chief Executive for Environmental Future City, Environment Bureau, City of Kitakyushu
17:55-18:00	<b>Closing Remarks</b> Hideyuki Mori      President, IGES

## Low-Carbon Asia Research Project (S-6)

Mikiko Kainuma Fellow, Center for Social and Environmental Systems Research  
National Institute for Environmental Studies (NIES)

The international community has recognized the need to reduce greenhouse gas (GHG) emissions by 50% until 2050 in order to keep the change in global mean temperature within two degrees centigrade compared to preindustrial times. In order to achieve this target, it is imperative to develop low carbon societies (LCS) in Asia, as the Asian countries will account for more than half of the global population and GHG emissions in 2050.

The objectives of Low-Carbon Asia Research Project are to establish a vision of LCS in Asia, and to develop comprehensive methodologies to design and evaluate policy options based on robust scientific knowledge and the multifaceted needs of each country including resource and energy security, poverty alleviation, and environmental improvement. The project explores and identifies such development pathways through four research perspectives: (1) LCS scenario development, (2) institutional architecture design for LCS, (3) resources management, and (4) low carbon transport systems.

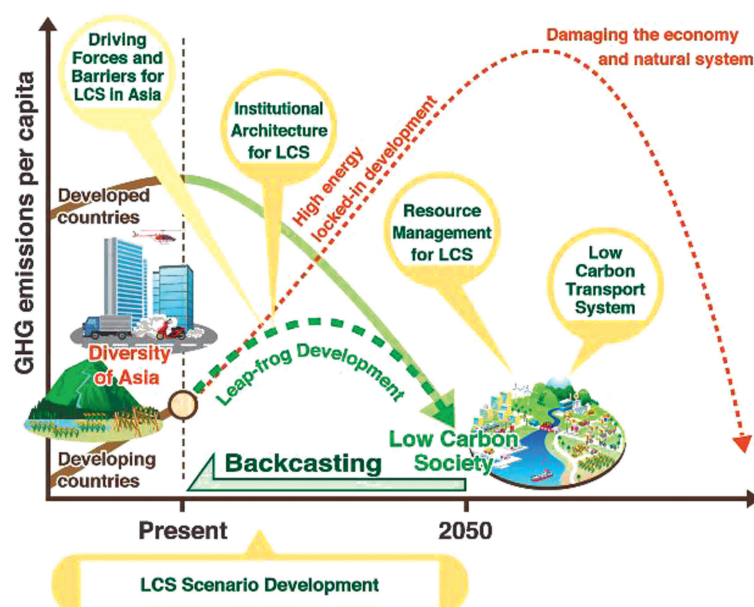
The scenario development team explores leapfrog development pathways to enable a shift to low carbon emissions and low-resource consumption while simultaneously improves living standards through economic growth.

The institutional architecture team explores international cooperation and funding for the investment in new technologies to avoid lock-in high carbon infrastructure in developing countries.

The resource management team estimates greenhouse gas emissions from Asian countries based on the future resource demand and materials production associated with infrastructure development, more general use of durable goods, and enhanced consumption of consumer products.

The low carbon transport team designs the future transport system, by using effective transport measures: to avoid necessary travel (AVOID), to shift transport modes to low-emission one (SHIFT) and to improve emission intensity (IMPROVE).

Through these researches, the project aims to identify feasible and robust pathways over the medium to long-term for the realization of LCS in Asian countries. The project also aims to formulate policy roadmaps through the collaboration with researchers in Asia.



Keywords: climate change, roadmap, low carbon society, scenario, mitigation

## Overview of Low Carbon Asia

-Roadmap in Asia to halve global GHG emissions in 2050 compared to those in 1990 -

Toshihiko Masui Head, Integrated Assessment Modeling Section

Center for Social and Environmental Systems Research, NIES

Today's Asia is expanding in terms of population, GDP and GHG emissions, and the trend will continue in the future. In order to achieve the 2 degree target from the pre-industrial level, it is said that the global GHG emissions in 2050 will have to be halved compared with the 1990 level. In this research project, we define the two future societies: Conventional Society and Advanced Society, and we propose the roadmaps toward the low carbon society in Asia. This project adopts the above global GHG emissions target, and the initial allocation of GHG emissions to Asian countries in 2050 is calculated based on the various schemes such as per capita equal. When we introduce any scheme to achieve the GHG emission reduction target, the Asian countries will have to reduce the GHG emissions drastically compared with those in reference cases, regardless of the type of society: Conventional or Advanced (see Table). The roadmaps toward reduction of GHG emissions are summarized into "Ten actions." Based on the narrative roadmaps, we are now calculating the quantitative future activities in both Asia and the world. Asian countries are diverse from the viewpoints of population size, area size, climate, economic scale, culture and so on, and as a result, the roadmap for each country may be quite unique. The proposed "Ten actions" are the common concepts among the Asian countries, but they should be modified and adjusted when applied to each country based on the socioeconomic background of the society in question as well as the progress of existing GHG mitigation policies.

Table Initial GHG emissions allocation in 2050 (emissions in 1990 = 100)

			Japan	China	India	Asia	World
Emissions in 2005			105	202	155	157	118
Emissions in 2050 (Reference case)	Advanced Society		73	603	682	407	241
	Conventional Society		78	524	536	340	200
Initial allocation in 2050	Allocation by equal per capita		17	64	234	86	50
	Allocation by equal per GDP	Advanced Society	60	84	91	68	50
		Conventional Society	86	79	73	64	50

Keywords : Low carbon society, Greenhouse gas, Asia, Roadmap, Scenario

## Ten Actions toward Low Carbon Asia

Yoshitsugu Hayashi	Professor, Graduate School of Environmental Studies, Nagoya University Director, International Research Center for Sustainable Transport and Cities, Graduate School of Environmental Studies, Nagoya University
Yuichi Moriguchi	Professor, School of Engineering, the University of Tokyo Professor, Graduate School of Frontier Sciences, the University of Tokyo
Shuichi Ashina	Researcher, Center for Social and Environmental Systems Research, NIES
Tomoko Hasegawa	JSPS Fellow, Center for Social and Environmental Systems Research, NIES
Norichika Kanie	Associate Professor, Graduate School of Decision Science and Technology, Tokyo Institute of Technology Senior Research Fellow, United Nations University Institute of Advanced Studies

Greenhouse gas emissions from the Asian region accounted for approximately 36% of global emissions in 2005. Taking into account the rapid economic growth expected in coming decades, the share of emissions from the Asian region is projected to rise further. In order to realize a low carbon society (LCS), in which global GHG emissions are reduced to 50% of the current level, reduction in the Asian region is essential.

However, shifting to an LCS is not an easy task. To realize an LCS, various stakeholders including central/local governments, private companies, NGOs/NPOs, citizens, and the international community need to share their long-term visions of an LCS, be aware of each stakeholder's role, and work together.

"Ten Actions toward Low Carbon Asia" provides an overview of steps that can be implemented in the Asian region to achieve an LCS, taking into account the interrelationships and sequence of introduction of individual policies. It identifies actions to be taken by each of the stakeholders mentioned above, focusing on the actions having higher priority.



**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 Cool 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**  
Spread of Low Emission  
Agricultural Technologies



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



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



**Action 10** **Governance**  
Transparent and Fair Governance  
that Supports LCS Asia



# East Asia Low Carbon Growth Partnership Dialogue

Masami Tamura Director, Climate Change Division, International Cooperation Bureau, Ministry of Foreign Affairs, Japan

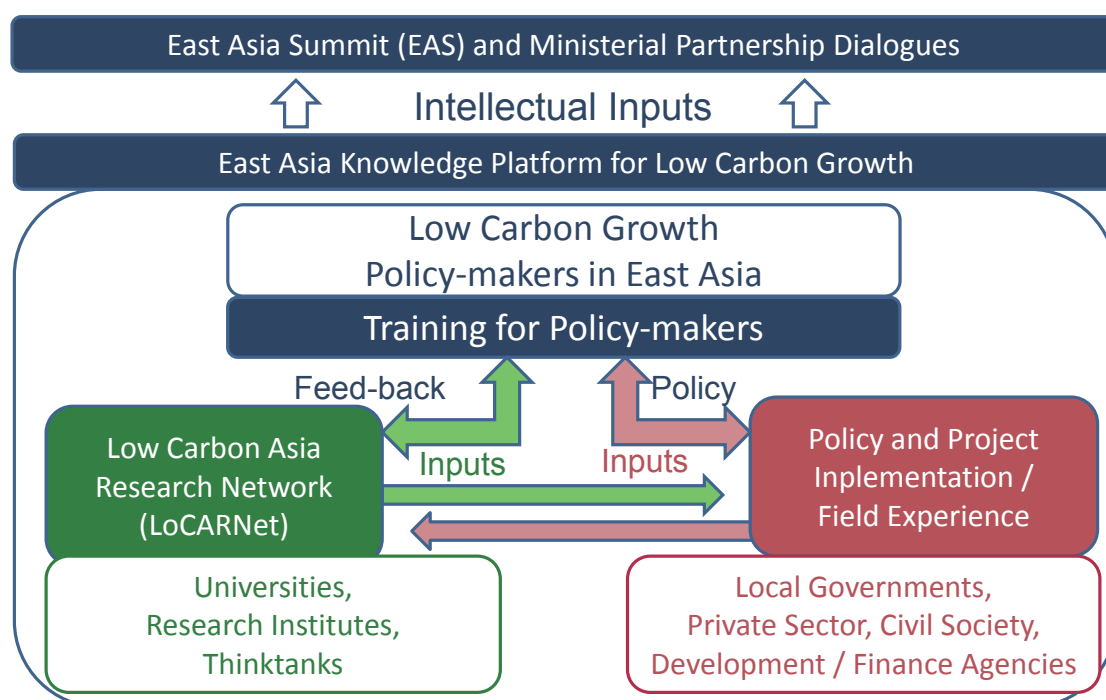
The East Asia Low Carbon Growth Partnership was introduced in the “Japan's Vision and Actions toward Low-Carbon Growth and a Climate-Resilient World” which Japan proposed in COP17.

The East Asia Summit (EAS) area is a centre of the world economic growth as well as the area of the world's largest greenhouse gas emission. In fact, EAS participating countries alone constitute 63% of the world CO<sub>2</sub> emissions. Hence, development of cooperation towards low carbon growth in East Asia is beneficial both to the area and to the world. The Partnership initiative aims to promote regional cooperation for preventing global warming, complementing the United Nations system, and to promote low carbon growth which achieves both economic growth and prevention of global warming by sharing experiences and environmental technologies among EAS countries.

Japan and Indonesia co-chaired the first East Asia Low Carbon Growth Partnership Dialogue in Tokyo this April. The participants from EAS countries and international/regional organizations had lively discussions and recognized the importance of actively promoting cooperation in accordance with the following three points:

1. Cooperation for formulation and implementation of low carbon growth strategy
2. Utilization of market and technologies
3. Enhancement of network among various stakeholders

The results of the Dialogue will be reported by co-chairs to the EAS related ministerial meetings and the East Asia Summit to be held in this coming November. The second Dialogue is going to be held at an appropriate time in 2013, co-chaired by Japan and Cambodia.



Keyword: East Asia Low Carbon Growth Partnership

# Low Carbon Asia Research Network : LoCARNet

- Integrating Asian Wisdom -

Shuzo Nishioka

Secretary-General, LCS-RNet /LoCARNet

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

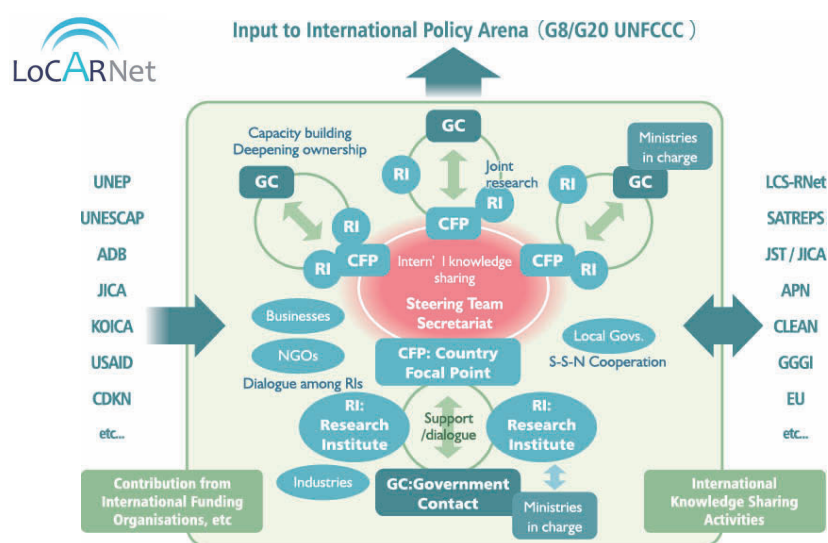
Low Carbon Asia Research Network is an open network of research communities and stakeholders that facilitates the formation and implementation of science-based policies for low-carbon development in the Asian region

Based on the observations in the series of preparatory workshops in the ASEAN region, growing importance of scientific policy formulation was recognized and Japanese Government proposed the establishment of LoCARNet at ASEAN+3 EMM in October 2011 in Phnom Penh and launched it at the "East Asia Low Carbon Growth Partnership Dialogue" in April 2012. Asian leading researchers with representatives of IPCC, ADB, UNEP, APN discussed in July at Yokohama discussed on plan of activities of LoCARNet. On October 16-17 in Bangkok, LoCARNet First Annual Meeting was held and discussed the forefront of seven major research areas with participation of 124 academic members and policy makers from 14 countries.

The focused research areas were: Policy making process and use of integrated assessment model, Land use and forestry, GHG inventory, Technology needs & enabling policies in Asia, Low carbon city, Local level practices, decisions and initiatives and Institutionalisation of low-carbon green growth. The next annual meeting is planned to be held in July 24-26 at Yokomama.

The Networks main activities are: Enhancing research output, Strengthening research capacity, Identifying key research area, Funding to research work, Promotion of science - policy integration, Capacity development of practitioners and Dissemination of scientific knowledge.

The Network emphasizes importance of science-science-policy dialogue, ownership of knowledge by countries and regional South-South-North collaboration.



**Framework of "Low Carbon Asia Research Network (LoCARNet)"**  
LoCARNet is a multi-layered, flexible network for researchers and stakeholders to contribute to low carbon policy making.

Keywords: LoCARNet, low carbon development, science-science-policy dialogue, ownership of knowledge by country, South-South-North collaboration



# The “FutureCity” Initiative

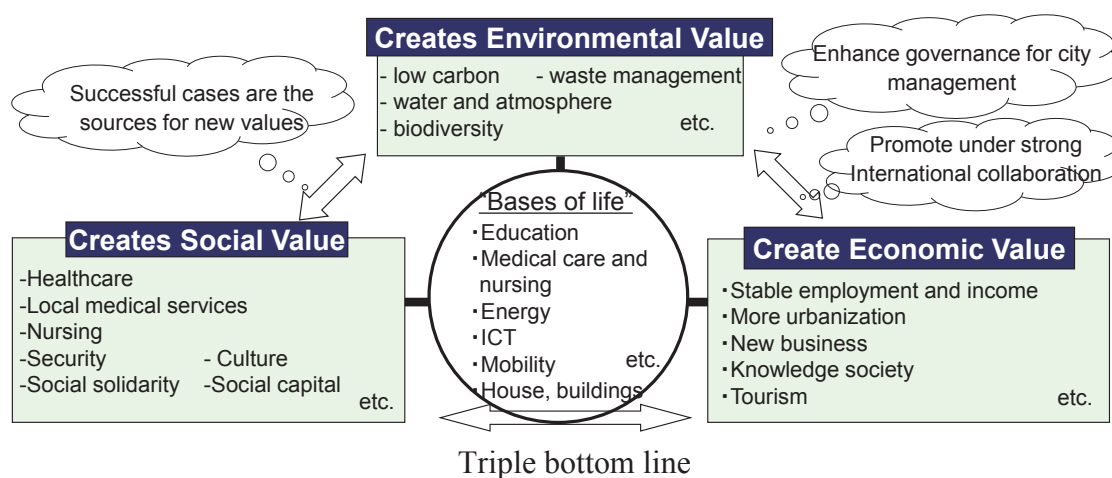
## - Message from Japan towards the resolution of globally common issues -

Shuzo Murakami President, Institute for Building Environment and Energy Conservation

Japan is known as a “forerunner in addressing global challenges” such as those of both a rapidly decreasing birthrate and rapid aging. It is projected that in 2050 seniors over age 65 will comprise 40% of the population. Realizing cities and regions where senior citizens can live a fruitful, healthy and secure life in a society is an imminent challenge. In the near future, many countries, starting in Asia, are expected to experience this challenge. Therefore, Japan is in a position to first tackle this problem and to offer solutions to these common human challenges.

The Government of Japan identified the “FutureCity” Initiative (hereinafter “Initiative”) as one of the National Strategic Projects in its “New Growth Strategy” in June 2010. The objective of this initiative is to challenge common human problems and to try to propose model solutions as a forerunner.

The basic concept of the Initiative is to achieve “human-centered cities creating new value while tackling the environmental issues and aging.” In so doing, it is also important to establish sustainable socioeconomic systems and recover social solidarity. Through projects improving the quality of life, the Initiative aims to build cities where “everybody wants to live” and “everyone has vitality” and where the value of environment, society and economy is innovatively created.



11 cities and regions are selected as follows in Dec 2011;

disaster area: Ofunato City (Iwate Pref.) Kamaishi City (Iwate Pref.) Iwanuma City (Miyagi Pref.) Higashimatsushima City (Miyagi Pref.) Minami Soma City (Fukushima Pref.) Shinchi Town (Fukushima Pref.)

non-disaster area: Shimokawa Town (Hokkaido), Kashiwa City and others (Chiba Pref.) Yokohama City (Kanagawa Pref.) Toyama City (Toyama Pref.) Kitakyushu City (Fukuoka Pref.)

"FutureCity" Initiative is a tool to overcome such challenges and could disseminate and share model solutions with the world.

"FutureCity Initiative" homepage;

<http://futurecity.rro.go.jp/en/> (English version)

<http://futurecity.rro.go.jp/zh/> (Chinese version)

<http://futurecity.rro.go.jp/> (Japanese version)

- Research Project to Establish a Methodology to Evaluate Mid to Long Term Environmental Policy Options toward Asian Low-Carbon Societies (Low-Carbon Asia Research Project) : S-6 Project supported by Environment Research and Technology Development Fund of the Ministry of the Environment, Japan  
<http://2050.nies.go.jp/>
- Ten Actions toward Low Carbon Asia  
[http://2050.nies.go.jp/file/ten\\_actions.pdf](http://2050.nies.go.jp/file/ten_actions.pdf)
- East Asia Low Carbon Growth Partnership Dialogue  
[http://www.mofa.go.jp/policy/environment/warm/cop/ealcgpd\\_1204/index.html](http://www.mofa.go.jp/policy/environment/warm/cop/ealcgpd_1204/index.html)
- Low Carbon Asia Research Network (LoCARNet)  
[http://lcs-rnet.org/about\\_locarnet.html](http://lcs-rnet.org/about_locarnet.html)
- “FutureCity” Initiative  
<http://futurecity.rro.go.jp/en/>



**Contact:**

Center for Social and Environmental Systems Research  
National Institute for Environmental Studies (NIES)

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Tel: +81-29-850-2422

Fax: +81-29-850-2572

E-mail: [lcs\\_sympto@nies.go.jp](mailto:lcs_sympto@nies.go.jp)

Website: [http://2050.nies.go.jp/sympo/121030\\_e](http://2050.nies.go.jp/sympo/121030_e)