

Low Carbon Asia Research Network



Asia's low carbon future: Can Asia change the world through leapfrogging?

**Synthesis Report of
Second Annual Meeting**
Low Carbon Asia Research Network

24-25 July 2013
Yokohama, Japan

Yokohama

Host
National Institute for Environmental Studies (NIES)
Institute for Global Environmental Strategies (IGES)
Ministry of the Environment, Japan (MOEJ)



Contents

Preface	ii
Key Findings	1
Synthesis Report	5
Participants List	19
Table of Presentations	21
Acknowledgements	25

Presentations:

*Please refer to the LoCARNet website at:
http://lcs-rnet.org/locarnet_meetings/2013/07/571*

Preface

The Low Carbon Asia Research Network (LoCARNet) was launched as a knowledge-sharing network of research communities and other stakeholders that facilitates the formulation and implementation of science-based policies for low-carbon development in the Asian region. This network reflects an awareness of the importance of facilitating the realization of a low-carbon and sustainable society. The Institute for Global Environmental Strategies (IGES) has been serving as the Secretariat of LoCARNet since 2012. The Secretariat works in cooperation with Japan's National Institute for Environmental Studies (NIES), the Japan focal point of this network, to promote dialogue among researchers and policymakers in Indonesia, Thailand, Cambodia and Malaysia, and has held workshops to support collaboration among researchers. As a result of these activities, the need to share knowledge within the region on low-carbon issues in Asia has come to the forefront.

The second Annual Meeting of the LoCARNet was held on 24-25 July 2013 in Yokohama, Japan, co-organized by Japan's National Institute for Environmental Studies, LoCARNet/IGES, and the Ministry of the Environment of Japan (MOEJ). Last year, at the first Annual Meeting of LoCARNet held on 16-17 October 2012 in Bangkok, Thailand, the discussion focused on developing countries working cooperatively to promote "sustainable low-carbon green growth." In particular, Asia maintains a high economic growth rate and continues to make new investments. If Asian countries are able to move down the pathway to low-carbon development in a farsighted manner, Asia will at the global level lead the way to a low-carbon world. This year's Annual Meeting highlighted the viewpoint that in order to stabilize the climate over the long term, it is imperative for society to break away from the current society-wide dependence on high levels of energy consumption.

Countries are now in the process of formulating long-term strategies in anticipation of the formulation of a new post-2020 framework on climate change. Communities of researchers who are participating directly in the formation of such policies have been organized and these communities have been engaged in various activities. The discussion at the second Annual Meeting focused in particular on how Asian countries can reduce GHG emissions within and across different focal areas and sectors including cities, technology and forestry. The role of knowledge sharing and research was also discussed among researchers, practitioners and policymakers.

This Synthesis Report has been drafted by a voluntary group of Asian researchers. We would like to express our sincere thanks to our colleagues, namely Dr. Sirintornthep Towprayoon, Dr. Bundit Limmeechokchai, Prof. Ho Chin Siong, Dr. Shobhakar Dhakal and Prof. Priyadarshi R. Shukla, Mr. Hak Mao, Dr. Nguyen Tung Lam, Dr. Ram Shrestha, Dr. Junichi Fujino, and Dr. Shuzo Nishioka, Ms. Tomoko Ishikawa and Ms. Takako Wakiyama from the LoCARNet Secretariat. Also, this year there are young researchers from around Asia who are working at the Secretariat to learn about and support LoCARNet activities, namely Dr. Minal Pathak, Dr. Awassada Phongphiphat, Ms. Kristine Garcia, Ms. Eliyan Chea, Ms. Xiao Hu, Mr. Gito Immanuel, Mr. Bor Tsong Teh and Mr. Vu Duc Canh.

We would also like to express our special appreciation to NIES and IGES for their generous support for the LoCARNet Second Annual Meeting. We also would like to express our appreciation to the co-organizers NIES, IGES and MOEJ for their continuing support.

Co-Chairs of the Meeting, representing the Steering Group of the Second Annual Meeting of LoCARNet

Dr. Mikiko Kainuma

National Institute for Environmental Studies (NIES), Japan

Prof. Rizaldi Boer

Bogor Agricultural University, Indonesia

Key Findings

LoCARNet promotes focused and high quality research outcomes which can foster policy making that advances low-carbon growth. It does this by facilitating ample opportunities for dialogue between scientists and policy-makers while also encouraging collaboration among researchers whose scientific knowledge and policy perspectives are firmly grounded in their home countries. The international expert network associated with LoCARNet has expanded the knowledge frontiers and has influenced the policy domains beyond countries and sectors through dialogues and through sharing emerging knowledge on low carbon transformations in Asia. In the process, LoCARNet has made contributions to enhance countries' research capacity. The Second Annual Meeting of LoCARNet discussed the key issues of interpreting and aligning the research findings on low carbon development with practical applications. In the context of the 2020 policy framework, the discussions focused on: a comparison of the reduction potential of Asian countries for achieving the "2°C target," emissions reductions in the agriculture, forestry and land use sectors, the role of cities as pioneers for low carbon societies (LCS), a roadmap of research, development and demonstration (RD&D) for the low carbon technologies in Asia, and the capacity needs in countries to implement the low carbon roadmap.

Asian countries have the capacity and the potential to mitigate greenhouse gas emissions to achieve the global 2°C target

The global low carbon assessments show that, in order to achieve the 2°C target, global GHG emissions in the year 2050 should be halved compared with the 1990 level. In accordance with the global emissions target, Asian countries must also reduce emissions. Asian countries have developed the capacity to estimate their potential for carbon dioxide reduction and achieve the emissions reduction targets while pursuing a green economy.

In the process of preparing IPCC AR5, the global emission pathway toward the 2°C target has been the subject of state-of-the-art modeling results. The majority of modeling assessments suggests that global carbon dioxide emissions must peak before 2020. Even though a smaller number of scenarios allow a later peak, such scenarios also indicate that the peaks should be no later than 2025. These results show the importance and the urgency for the low carbon research community in Asia to develop roadmaps for the Asian emission pathway that is consistent with the global emissions pathway for achieving the 2°C target.

Low carbon technology has implications beyond the technological domain

Although technology is a key element for development, it also poses risks and external costs to society. Low carbon development can be achieved through alternate technological pathways. It is vital to ensure that the technology choices for low carbon development are sustainable and enhance social value.

Among the challenges associated with low carbon investments are relatively low return on investment and high initial costs. Multilateral development banks offer financial instruments, e.g., the green bonds offered by the World Bank. Such instruments enhance the return on low carbon investments and encourage technology investment by private sector entities. However, many low carbon technologies are still far from being economically profitable. Thus, there is a need for a new model of financial instruments that incorporate the multiple co-benefits of low carbon technology that will accrue to a country, beyond the direct energy conservation benefits to the consumer and the global benefits of GHG mitigation.

City and local level actions can make cities into pioneers leading to a low carbon Asia

Low carbon development in cities involves a combination of “hard” options such as changes in infrastructure, waste management, energy systems and “soft” options such as raising awareness and behavioural changes. Therefore, sound research and knowledge should form the basis for the planning and development of cities. Community engagement is also important for city planning and decision-making. Scientific evidence derived through research helps in forming consensus among stakeholders. It is essential to supplement national policies and plans with local actions. Therefore, the transition to a low carbon society should begin at the local level. There are numerous community-based activities such as agro-forestry and ecotourism that have the potential to support the formation of a low carbon society. Barriers such as those related to pricing policy, incentives, access to financing, land tenure and access, and knowledge on low carbon farming also hinder the upscaling and the improvement of efforts to build a low carbon society.

Energy conservation on the demand side can be achieved through a multitude of 3R (reduce, recycle, reuse) measures, through dematerialization and through capacity building within local governments. For instance, it is important to enhance local capacity in developing countries to innovate, manufacture, install and maintain low carbon technologies. Effective means of introducing low carbon technologies will be a key issue from both cost and benefit perspectives.

Asian leapfrogging still needs to be catalysed from various aspects

While the concept of “transitioning” is easily understood in developed countries, “leapfrogging” may be a more appropriate concept to be applied by developing countries as they head towards low carbon development through lifestyle and other changes. However, leapfrogging requires leverage from financial, political and social aspects.

Although the path to a low carbon society includes a number of challenges, there are also options to overcome these challenges. It will contribute to meaningful emissions reductions leveraging strong policy support, promoting community-based natural resources management, increasing access to finance through the creation of trust funds via public-private partnerships, expanding joint carbon mechanisms and integrating supporting policies across sectors.

A knowledge platform is an effective way to respond to urgent requests from policymakers

Although greater pressure has come to be exerted on national climate change policies since the Copenhagen climate summit in 2009, policy-research collaboration and research capacity and application have still not been adequately established. In Asian countries, practical activities have been developed and progress has been made on the establishment of a knowledge platform and training center for low carbon development even though research capacity and scientific research have yet to be thoroughly developed. Knowledge sharing across sectors and countries is expected to assist in overcoming existing limitations and delays in low carbon research.

Policy implementation needs an integrated approach to various sectors. Therefore, a knowledge platform such as LoCARNet is effective in catalysing research communities and policymakers across various sectors. In order to address the urgent knowledge and capacity development needs, LoCARNet is facilitating knowledge sharing and enhancement as well as application within the respective areas of the stakeholders.

While progress has been made, a number of research gaps have been identified. These include gaps in the modeling of low carbon development in sectors and the development of integrated policies. In order to accelerate good practices, informed and coordinated programs among governments, civil society groups and other stakeholders are needed. It is also necessary to adopt a synergistic approach while integrating mitigation and adaptation activities towards a sustainable food security system and a low carbon/resilient infrastructure and lifestyle.

Authors of the Synthesis Report

Shobhakar Dhakal (AIT), Minal Pathak (CEPT University), Akio Takemoto (APN), Sirintornthep Towprayoon (JGSEE) and Takako Wakiyama (IGES) with the help of Awassada Phongphiphat, Kristine Garcia, Eliyan Chea, Xiao Hu, Gito Immanuel, Bor Tsong Teh, and Vu Duc Canh

Edited by Takako Wakiyama (IGES) with the help of Shuzo Nishioka (IGES), Sirintornthep Towprayoon (JGSEE), Bundit Limmeechokchai (Thammasat University), Ho Chin Siong (UTM), Shobhakar Dhakal (AIT) and Priyadarshi R. Shukla (IIMA), Hak Mao (Kyoto University), Nguyen Tung Lam (ISPONRE), Ram Shrestha (AIT), Rizaldi Boer, (Bogor Agricultural University), Junichi Fujino (NIES), Mikiko Kainuma (NIES), Tomoko Ishikawa (IGES) and Tara Cannon

Synthesis of sessions

Parallel Session 1: The need for capacity development towards a year 2020 framework

[Chair] Sirintornthep Towprayoon, JGSEE, Thailand

Speakers:

John Bruce Wells, Asia LEDS Partnership / LEAD

Tomoko Ishikawa, LoCARNet / IGES, Japan

Uy Kamal, Ministry of Environment, Cambodia

Savitri Garivait, JGSEE, Thailand

Joyashree Roy, Jadavpur University, India

How can capacity building for developing countries be implemented effectively?

In the very near future, countries will be affected by various new climate change policies. Non-Annex I countries will begin submitting biennial update reports (BUR) in 2014, while new guidelines for calculations of items within greenhouse gas inventories (GHGI) are likely to be implemented from 2015. The process of structuring and defining nationally appropriate mitigation actions (NAMAs) and establishing rigorous and well-harmonized systems for measurement, reporting and verification (MRV) will take place over the next few years. Moreover, new mechanisms for evaluation systems are expected to be settled upon by 2020. In order to keep pace with these new commitments and mechanisms, it will be necessary to raise awareness regarding the need for capacity development and then determine the particular type of capacity development required. Insofar as most Asia-Pacific countries are developing countries, these upcoming climate change mitigation schemes may become a burden, in light of the short amount of time remaining until these various changes come into effect. Therefore, there needs to be effective capacity development across the Asia-Pacific region. Means suggested to bring about the efficient building of capacity include: 1) advocating the establishment of regional based centres to serve as capacity building supporting platforms or act as training nodes for the region; 2) mobilizing capacity, conducting advanced training and collaborating on low carbon development issues across countries/regions; 3) supporting institutional collaboration such as an academic

consortium network and collaborative research projects, particularly projects that involve international organizations, other countries in the region, local communities and those with joint multidiscipline areas of expertise. The outcomes of the resulting studies should be widely disseminated; 4) establishing role model sites or cities with successful low carbon practices to demonstrate “from research findings to policy action;” 5) improving knowledge transfer through inviting experienced and knowledgeable people on board and encouraging continuity of participation; and 6) increasing the participation and involvement of stakeholders such as governments, practitioners, academics and researchers and persons from local communities, especially the private sector.

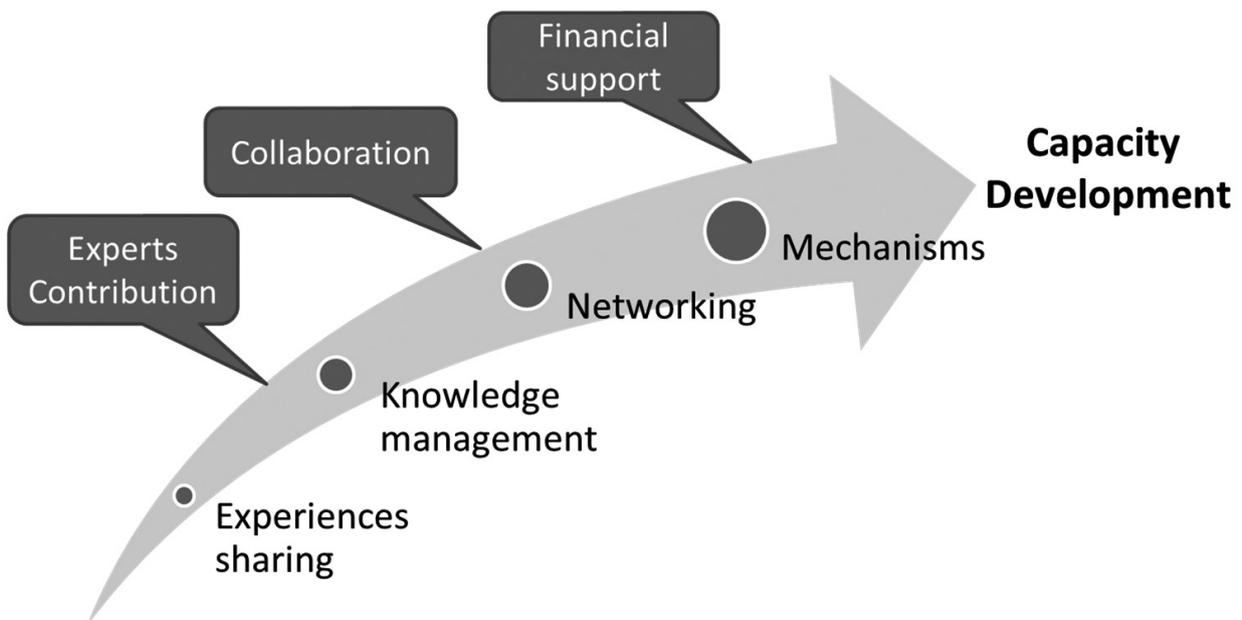
Challenges and opportunities

- Effective capacity building, particularly in developing countries, is necessary in order to keep pace with new commitments and mechanisms.
- Collaboration on capacity building in the Asia-Pacific region must be promoted.
- Capacity can be developed through the sharing of experiences, knowledge management, networking, and suitable capacity building mechanisms, stimulated through support from experts, robust collaboration and sufficient funding.
- Knowledge sharing and an exchange of information across all levels of the community are required in

order to actualize low carbon transitions.

- Increased involvement of stakeholders and local communities is crucial in low carbon transitions. Capacity building for these two groups would help to change behaviour and mindsets.
- Low carbon policy planning and implementation require the understanding of local communities and stakeholders in methodology and tools for GHG inventory compiling as well as projection modeling.
- Scientific data and systematic data collection are necessary as a base upon which scientific low carbon development policies will be formulated. Each country must have its own robust, scientific research foundation.

A path for capacity development



Source: Sirintornthep Towprayoon, 2013

Parallel Session 2: Comparison of the reduction potentials of key Asian countries towards achieving the “2°C” stabilization target

[Chair] Toshihiko Masui, NIES, Japan

Speakers:

Priyadarshi R. Shukla, IIMA, India

Jiang Kejun, ERI, China/Hancheng Dai, NIES, Japan

Bundit Limmeechokchai, Thammasat University, Thailand

Ho Chin Siong, UTM, Malaysia

Hak Mao, Kyoto University, Japan

Nguyen Tung Lam, ISPONRE, Vietnam

Ram Shrestha, AIT

Retno Gumilang Dewi, Institut Teknologi Bandung, Indonesia

What are the reduction potentials of key Asian countries towards achieving the “2°C” stabilization target?

The Asia-Pacific Integrated Model (AIM) has estimated greenhouse gas (GHG) emissions around the world and in Asia under various socio-economic conditions. In order to achieve the emissions reductions needed to reach the “2°C” stabilization target, the level of global GHG emissions in 2050 will need to be half the level in 1990. GHG mitigation activities in Asia will be quite important, because in the business as usual (BAU) scenario, almost half of the world’s GHG emissions in 2050 are expected to originate in Asia. “Ten Actions toward a Low Carbon Asia” were proposed, taking into account both drastic GHG emissions reductions and economic development across Asia. These actions cover transportation, material use, energy supply and demand, agriculture and land use as well as trans-boundary options such as carbon taxes and improvement of governance.

Examining the potential for GHG mitigation across Asia as a whole, researchers’ findings from each Asian country regarding the 2°C target are as follows.

In order to meet this target, China needs to reduce carbon dioxide emissions in 2050 by 60% from the 2005 level, a decrease of 86% from the BAU scenario. One researcher from China argued that it is possible for China to limit its carbon dioxide emissions so as to peak before 2025, making the global 2°C target feasible. Energy system transition will be key. One

study indicates that the most advanced technologies for low carbon development are considered in the pathway, and so too are the effectiveness of various countermeasures, economic impacts, co-benefits and the near-term challenges of low-carbon transition in Asia.

In India, according to a study, meeting this target under a global scale model requires the assessment of increasing nuclear costs and changing marginal abatement costs.

In Thailand, while taking actions towards an LCS is expected to reduce carbon dioxide emissions, the 2°C target is not expected to be attained unless Thailand cuts its carbon dioxide emissions further. Therefore, there is a need to conduct another scenario analysis that assumes new and strengthened countermeasures, following up on the most recent analysis done by a researcher using the AIM model.

In Malaysia, the importance of green technology is emphasized within the results of GHG reduction scenarios that cover emissions from the energy sector, waste and agriculture, forestry and other land-use (AFOLU).

In Cambodia, while net GHG emissions were negative until the year 2000, Cambodia is currently a net emitter. One researcher’s analysis indicates that under

the BAU scenario, GHG emissions there may well see a 100-fold increase over the current level. Thus, Cambodia needs low-carbon options.

Vietnam stresses the importance of creating GHG inventories and has presented several options for reducing GHG emissions. Vietnam expects enhanced knowledge-sharing and information exchanges as well as receiving support for capacity development for modeling analyses.

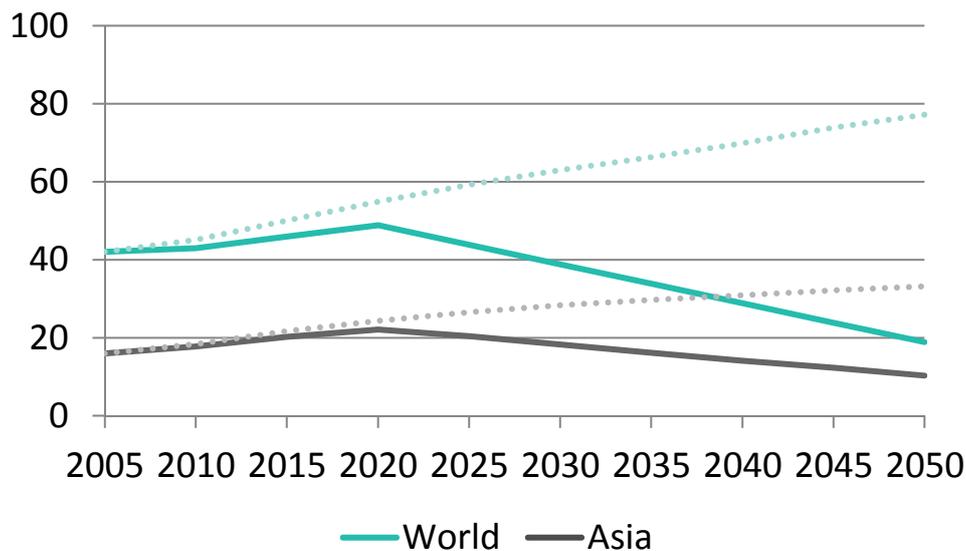
In a study conducted for Nepal case, the result of GHG reduction pathways is affected by a carbon tax. In the analysis, carbon taxes have been set based on expected results, which seek feasible pathways for future GHG emissions in order to meet the 2°C target.

A case study of Indonesia indicates that GHG reduction strategies are important not only in the energy sector but also in AFOLU.

Challenges and opportunities

- Various co-benefits associated with adopting low carbon resource and technology options under the 2°C scenario must be explored.
- The 2°C target will not be achievable if countermeasures are not implemented early on.

GHG emissions reductions in Asia and the world (Provisional results)



solid lines: 2 degree
dot lines: references

(Tentative results)
GHG in Advanced/Conventional Society Scenario (GtCO₂-eq)

Source: Calculations by Shinichirou Fujimori, 2013

Parallel Session 3: The role of cities as pioneers for LCS

[Chair] Junichi Fujino, NIES, Japan

Speakers:

Hikaru Kobayashi, Keio University, Japan

Fong Wee Kean, WRI, USA/China

Ho Chin Siong, UTM, Malaysia

Bambang Setioko, Diponegoro University, Indonesia

Manmohan Kapshe, School of Planning and Architecture Bhopal, India

Yoshiaki Ichikawa, Hitachi Ltd., Japan

Minal Pathak, CEPT University, India

What is the role of cities in achieving a global Low Carbon Society?

It is possible for nations to achieve low carbon transitions, and cities will play a major role in facilitating these transitions. This is especially true for cities in developing nations in Asia where increasing population growth and ongoing economic development are resulting in greater volumes of GHG emissions.

Many cities have recognized that climate change and its consequences are real and, in response, have developed low carbon blueprints by identifying priority areas and drawing up implementation plans. Recent trends show that the focus has shifted from a mitigation-centric to a more linked approach, integrating the economy, environment and climate resilience. There exist several opportunities in the form of synergistic solutions that could help achieve low carbon benefits as well as local sustainability. These include heat recovery and use, transit-oriented development, smart grids, waste management and out of boundary emissions.

Cities are driven by their communities and therefore, local participation (include private sectors) is the most important factor in bringing about low carbon development.

High costs are associated with low carbon projects, necessitating a search for new policies and business models. The business community has an important role to play. Opportunities exist for the private sector to tap business opportunities in emissions reductions. Private companies are taking the initiative to develop benchmarks for new low carbon initiatives such as

smart community infrastructures. The implementation of smart infrastructure could be an effective way to solve environmental issues associated with urbanization and there are expectations towards cities to be both the developers and the users of these standards.

A credible GHG inventory is essential for cities. It serves as an important tool for measuring carbon emissions, identifying reduction opportunities, monitoring progress, benchmarking performance, and providing a basis on which to leverage finance. However there are issues of inconsistency, unclear boundary definition, incompleteness, double counting, and poor transparency.

Challenges and opportunities

- Several sectoral initiatives are underway in cities, including in the transport, building, industry, energy and waste sectors. Significant decarbonization will be required beyond these interventions and therefore scaling up these interventions will remain a challenge. It will be necessary for more and more cities to transition to low carbon.
- Measures that incorporate synergies between mitigation and local sustainability should be prioritized.
- Cities will need to develop reliable and robust greenhouse gas inventories with greater detail especially for “scope 2” and “scope 3” emissions.

Projections for the future entail challenges, especially regarding assumptions of social behaviour and lifestyles in different contexts.

- Public participation, political will and stakeholder consensus and governance will be important determinants for the success of low carbon plans. It is both possible and necessary to overcome obstacles and persuade the public to change its behaviour towards a more low carbon lifestyle by deploying advanced technology on one hand and developing a societal framework to mobilize synergistic power on the other.

- R&D and science and technology will play a key role in ascertaining information that will provide the foundation for feasible policies. In terms of spurring implementation, it will be important to have a platform for an exchange of ideas between policy makers and researchers, between cities, and between countries. To enable low carbon development, new business opportunities will have to be created to attract investment for economic growth.

Mechanisms for the success of Iskandar Malaysia’s Environmental Policy



Source: Boyd Dionysius Joeman and Ho Chin Siong, 2013

Parallel Session 4: Urgent research issues common to the Asian region

[Chair] Akio Takemoto, APN

Speakers:

Priyadarshi R. Shukla, IIMA, India

Janya Sang-Arun, IGES, Japan

Shobhakar Dhakal, AIT

Joni Jupesta, UNU-IAS

Damasa Macandog, University of the Philippines Los Baños, the Philippines

How can research projects effectively be funded and operated to promote a low carbon future in the Asian region?

The Asia-Pacific Network for Global Change Research (APN) aims to promote global change research in the Asia-Pacific region through two core programmes, ARCP and CAPaBLE, which provide funds for research and capacity development activities in the region. In addition, APN projects mainly aim to strengthen interactions between scientists and policy makers. The limited financial support from APN and in-kind contributions from other institutions creates an effective architecture for conducting research projects in an efficient manner. The APN Low Carbon Initiative (LCI) framework, which was designed to enhance mitigation actions across countries in the Asian region, was launched to help achieve a global vision for a low carbon and sustainable future. Under this framework, APN has supported regional research, capacity development and networking activities related to low carbon development.

The projects under the LCI framework have a wide-ranging thematic distribution and clearly highlight the diverse needs for research on low carbon development as well as the need of integrating studies to achieve green growth. For instance, most of the APN LCI-focused research projects are city-level studies. Compiling a synthesis report that incorporates all LCI project outputs can be expected to benefit both communities and policy makers.

Some of the findings from the recent research topics targeting low carbon issues are:

Sharing research outputs and project information is a good platform for project leaders to share their knowledge. It is also effective as a bottom-up

knowledge sharing approach.

Defining a baseline in each sector in each country is important to examine how low carbon development will move forward in the future.

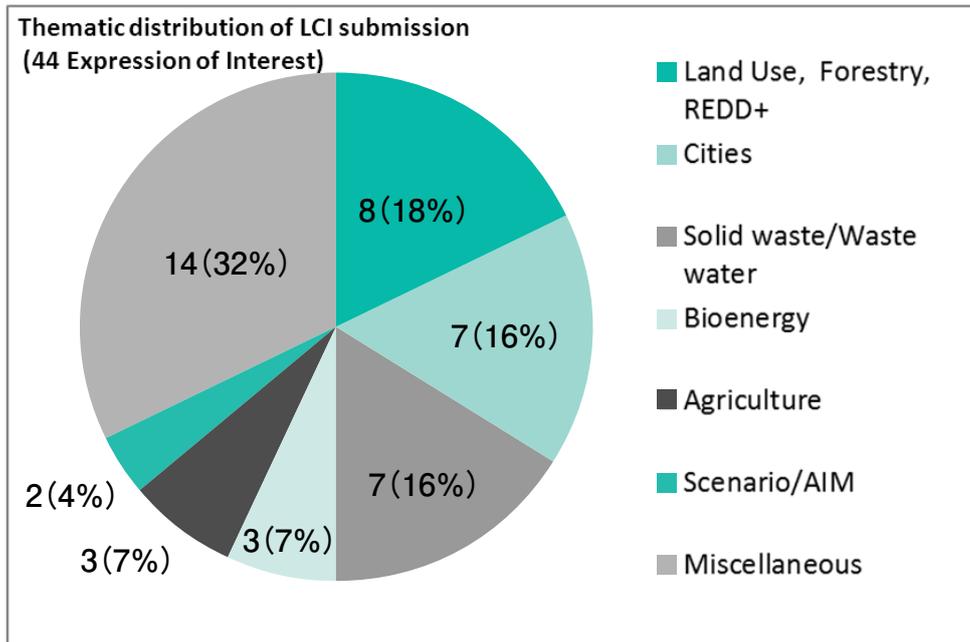
A “change agent”—that is, an entity that can either make changes in implementing policies or who can address low carbon development—needs to be identified in each country through various projects. Such additional information will add value to the projects.

Informing stakeholders about project outputs is important. APN needs to show active awareness of and make provisions for these points.

Challenges and opportunities

- The Asia-Pacific region has diverse but interconnected areas of interest in low carbon development.
- Most of the issues are linked to cities, which play a crucial role in low carbon societies.
- Policy briefs and synthesis reports are important to deliver research output to policy makers and decision-making bodies to drive a real transition of the society towards a LCS.

Thematic diversity on low carbon research in Asia-Pacific



Source: Akio Takemoto, 2013

Parallel Session 5: Green Growth Best Practices (GGBP)

[Chair] Ron Benioff, GGBP

Speakers

Priyadarshi R. Shukla, IIMA, India

Eric Zusman, IGES, Japan

Tomonori Sudo, JICA, Japan

Madoka Yoshino, IGES, Japan

How can the quality, effectiveness and adoption of green growth planning and implementation at all levels and in all regions be improved?

Green Growth Best Practices (GGBP) is assessing green growth planning and implementation practices around the world and identifying approaches that work best under differing circumstances to assist policy makers and practitioners in strengthening green growth efforts. GGBP has engaged more than 70 authors representing all regions of the world, levels of government and diverse stakeholder groups in analysis of effective practices for nine priority topics: 1) process design; 2) national and sub-national integration; 3) monitoring and evaluation; 4) benefits assessment and communication; 5) options and pathways analysis; 6) vision, targets, and baselines; 7) policy design; 8) public private partnerships, and 9) financing strategies.

GGBP aims to increase the number of green growth programs around the world, across governments and in partnership with the private sector, and to create an evidence base for best practices and for peer learning that strengthen country programs, especially in developing countries.

Assessment methodology applied by the GGBP first defines questions for the topic the assessment will address, then gathers data and experiences relevant to answering the questions regarding the topic. After identifying relevant experiences, experiences are compared according to defined evaluation criteria, and the findings then written up.

For instance, in “benefits assessment and communication,” the following three questions were raised: 1) what do we mean when we say the benefits of green growth? 2) which analytical and consultative approaches are effective in showing the benefits of green growth? and 3) what is the most effective way to communicate the benefits of green growth? To answer the questions, three methods

were identified: 1) understanding each question from a theoretical perspective; 2) identifying practices undertaken in different countries using a literature review; and 3) comparing theory with practices that can be identified as current ‘best practices’ and ascertaining where major gaps are.

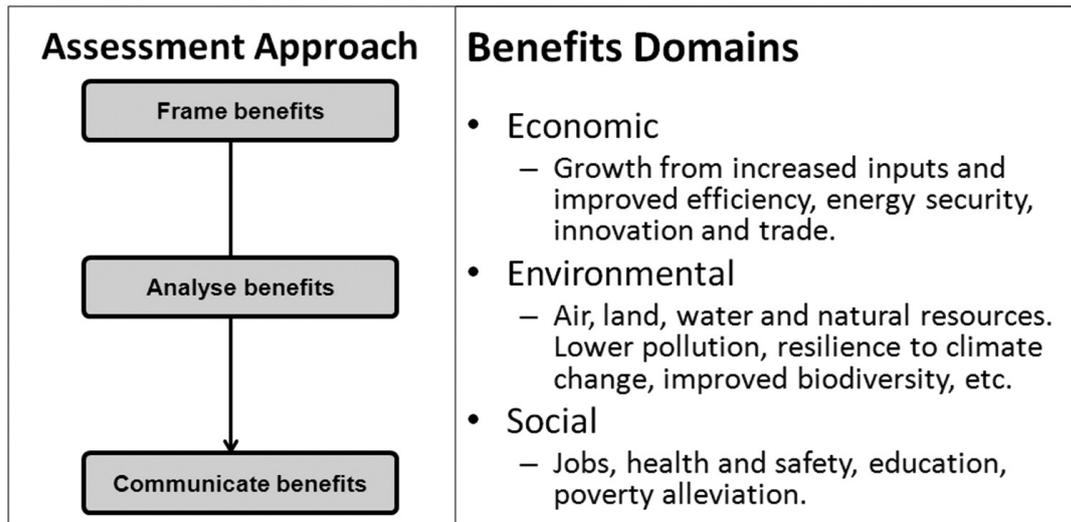
Presentations on the assessment of best practices finance and public private collaboration (PPC) also provided overviews of the frameworks for characterizing different types of financing and PPC approaches for the cases that are under evaluation. The presentations also outlined initial findings. The analysis of these and other topics is currently being completed, with first drafts to be distributed for review in September.

As a next step, GGBP will actively share lessons with the wider communities of practice through tailored outreach activities.

Challenges and opportunities

- The GGBP approach, along with early results, provides an opportunity to share comments on the initiative design and the preliminary results as well as on approaches for collaboration on further assessment, outreach, learning activities and products.
- GGBP is keen to team with other organizations to support broad dissemination and use of the assessment results. This includes partnering on the presentation of results at workshops and conferences, organizing seminars and workshops in specific countries that are interested in the results, developing training resources and delivering such training, and other related activities.

Benefits assessment approach



Best Practice Approach



Source: Priyadarshi R. Shukla and Eric Zusman, 2013

Parallel Session 6: Low carbon technologies required in Asia

[Chair] Shobhakar Dhakal, AIT

Speakers:

Girish Sethi, TERI, India

Abdessalem Rabhi, IGES, Japan

Priyadarshi R. Shukla, IIMA, India

Sergio La Motta, ENEA, Italy

Kazuhisa Koakutsu, IGES, Japan

Roy, Joyashree, Jadavpur University, India

What will it take to facilitate low carbon technology in Asia?

Facilitating low-carbon technology is not an easy process. There are no silver bullets; what it takes varies from place to place and from technology to technology. The technology needs assessment and the prioritization of these needs are fundamental. They comprise the key first step, which needs due process that looks into a range of technologies in different sectors. Experiences show that the matching of demand with supply is a time-consuming process requiring substantial effort, even in cases in which demand and supply are known. Knowledge platforms providing information on technological availability, cost and performance can facilitate this process. While it is necessary to optimize individual technologies and their niches in a low-carbon context, often, technology trajectories (and tech mapping) need to be taken into account to accelerate technology development and diffusion.

The private sector is of vital importance as both providers and recipients of technology. The private sector can also leverage and provide the finance needed for technology development, transfer and diffusion. A multi-stakeholder approach is a prerequisite for addressing technology issues in low carbon development.

The financial barriers for technology development and transfer are evident, especially for the upfront costs. Innovative market mechanisms and financial models need to be devised and lessons from best practices must be highlighted and disseminated.

Lessons from the Clean Development Mechanism (CDM) show that some technology transfer has taken place, but that such transfers have been dependent on the type of technologies, the scale of projects, and the

countries involved. For example, small-scale projects do not necessarily promote technology transfer. There is a need to learn from the lessons gained under the CDM and reflect such learning in the new Technology Mechanism now being facilitated by the Climate Technology Centre and Network (CTCN).

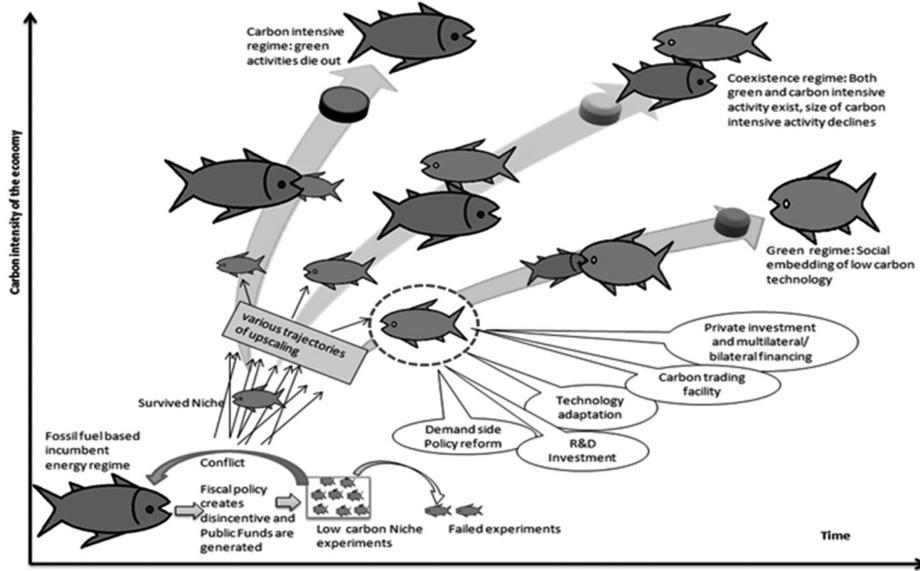
Policy support is crucial for facilitating low carbon technologies. Many countries have already carried out technology needs assessments. It will also be necessary to create technology roadmaps and develop technology action plans that promote low carbon technologies. The policies could 'supply push' and 'demand pull' through various mechanisms. Policies could also enable particular technologies through their social co-benefits.

Challenges and opportunities

- In any effort to facilitate low carbon technologies, understanding the bottom-up reality and context is important. The value proposition of low carbon technologies locally is important to consider. Local needs must be supplemented with local capacity building to bring about effective results, most importantly the sustainability of the technology application and diffusion.
- The role of research networks such as LoCARNet lies in developing knowledge platforms and pools, fostering the private sector, and conducting research policy dialogues, especially dialogues for documenting knowledge and disseminating the lessons from innovative and successful models of policies and finance.



Managing Technology Trajectory



Source: Roy, Joyashree et al., *Current Opinion in Environmental Sustainability*, 2013

Parallel Session 7: Emissions reductions in the agriculture, forestry and land-use sectors

[Chair] Rizaldi Boer, Bogor Agricultural University, Indonesia

Speakers:

Taiji Fujisaki, IGES, Japan

Chisa Umemiya, IGES, Japan

Mihee Kang, Seoul National University, Republic of Korea

Timotheus Lesmana Wanadjaja, ISSP, Indonesia

Florencia B. Pulhin, University of the Philippines Los Baños, the Philippines

Le Thi Hoa Sen, Hue University of Agriculture and Forestry, Vietnam

How can the potential for emission reductions be realized in the forestry, agriculture and land-use sectors?

The agriculture, forestry and land use sectors are expected to play an important role in GHG emissions reductions in Asia over at least the next 15 to 20 years. Experiences related to conservation and sustainable management of forests indicate that environmental outcomes will be more sustainable if local needs and meaningful community participation are given greater attention. This understanding is reflected in the decision on REDD+ taken at the 16th Conference of the Parties to the UNFCCC in December 2010, which recognises multiple functions of forests in the context of sustainable development and poverty reduction. In recent years this has now become an important part of the policy agenda of many countries in the Asia-Pacific region. Community-based forest monitoring supports meaningful participation in forest management and REDD+. It is also an approach that empowers communities to make informed decisions about forest management. There is a need for strong policy support, infrastructures and technology and partnerships among governments, stakeholders and NGOs.

Many countries in the region are now developing their national REDD+ strategies, including designing REDD+ safeguards systems and implementing REDD+ demonstration activities.

The Joint Crediting Mechanism (JCM) is another emerging option for realizing sustainable forest management and a low carbon society. It is still in the early stages of implementation. Ecotourism also offers a good opportunity as an alternative development model for securing ecological, economic, and socio-cultural

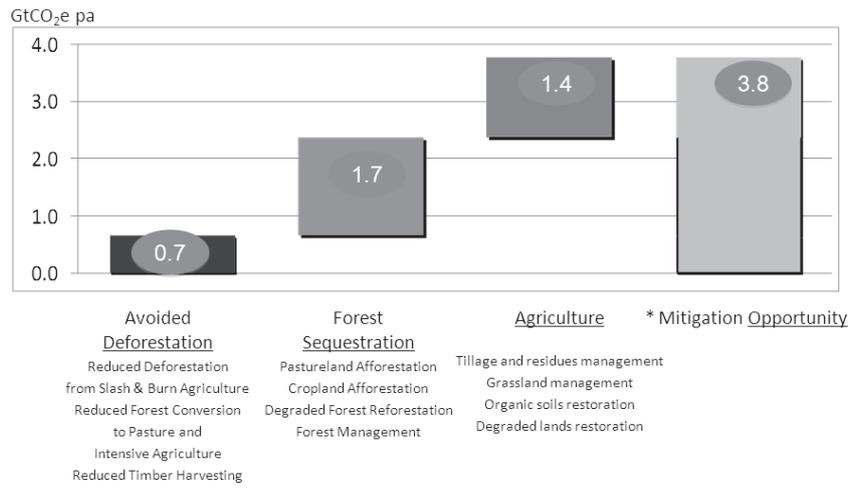
sustainability potential, especially in areas rich in natural assets. In order to develop ecotourism successfully, there needs to be strong leadership, sustainable financial support and participation by the local community.

Challenges and opportunities

- There are many cases in which communities in developing countries are implementing land-based economic activities towards low carbon development. Some barriers restrain the up-scaling, replication and improvement of these practices towards a low carbon society. These barriers may include pricing policy, incentives, access to finances, land tenure and access, and knowledge on low carbon farming.
- Involvement of the private sector in supporting the community in low carbon land-based economic activities is still limited. There is also a substantial need for developing the capacity of local communities in terms of leadership, partnership, technology access and use.
- The full potential for emissions reductions will not be realized without strong policy support, the promotion of community-based natural resources management, increased access to finance through the creation of trust funds via public-private partnerships, an expansion of the Joint Crediting Mechanism, and an integrated policy framework.

GHG mitigation potential from land use (South & South East Asia)

What is GHG Mitigation Potential from Land Use (South & South East Asian) *?



2030 - Forest carbon; agricultural sequestration; and avoidance of N₂O and CH₄ emissions, mainly from livestock (< 0.1 Gt).

Smith et al., 2007; Nabuurs et al., 2007; Climate Change 2007, WG III, AR4 IPCC

Source: Rizaldi Boer, 2013

Participants List

Asayama Yumiko NIES, Japan	Hanaoka, Tatsuya NIES, Japan	Kodama, Takayuki INFLAX.net for Sustainable Community, Japan
Ashina Shuichi NIES, Japan	Hayashi, Yuri Ministry of the Environment, Japan	Koswatta, Taniya APN
Boer, Rizaldi Bogor Agriculture University, Indonesia	Ho, Chin Siong UTM, Malaysia	Kubota, Rieko NIES, Japan
Benioff, Ron GGBP	Hoshino, Yuko Ministry of the Environment, Japan	La Motta, Sergio ENEA, Italy
Canh, Vu Duc National University of Civil Engineering (HUCE), Vietnam	Hu, Xiao Fudan University, China	Le, Sen Hue University of Agriculture and Forestry, Vietnam
Chea, Eliyan Royal University of Phnom Penh, Cambodia	Ichikawa, Yoshiaki Hitachi, Ltd, Japan	Limmechokchai, Budit Thammasat University, Thailand
Cheol Son, Hee Korea Business Environment Institute, Japan	Iida, Yoshichika NEC Corporation, Japan	Macandog, Damasa University of the Philippines Los Baños, the Philippines
Dai, Hancheng NIES, Japan	Ishihara, Koji Ministry of Land, Infrastructure, Transport and Tourism, Japan	Masui, Toshihiko NIES, Japan
Dewi, Retno Gumilang Institut Teknologi Bandung, Indonesia	Ishikawa, Tomoko IGES, Japan	Nguyen, Tung Lam ISPONRE, Vietnam
Dhakal, Shobhakar AIT	Jeoungin, Kim Chung-ang University, Republic of Korea	Nishioka, Shuzo IGES, Japan
Dixit, Ajaya Institute for Social and Environmental Transition-Nepal, Nepal	Jupesta, Joni UNU-IAS	Ogura, Shinji NEC Corporation, Japan
Fong, Wee Kean WRI, USA/China	Kainuma, Mikiko NIES, Japan	Pachauri, Rajendra Kumar TERI, India
Fujino, Junichi NIES, Japan	Kamal, Uy Ministry of Environment, Cambodia	Pathak, Minal CEPT University, India
Fujisaki, Taiji IGES, Japan	Kamei, Miho NIES, Japan	Phongphiphat, Awassada JGSEE, Thailand
Fujiwara, Kazuya Mizuho Information & Research Center, Japan	Kang, Mihee Seoul National University, Republic of Korea	Pulhin, Florencia B. University of the Philippines Los Baños, the Philippines
Garcia, Kristine Bernardino World Agroforestry Centre, the Philippines	Kapshe, Manmohan School of Planning and Architecture, Bhopal, India	Rabhi, Abdessalem IGES, Japan
Garivait, Savitri JGSEE, Thailand	Kawamata, Kotaro Ministry of the Environment, Japan	Roy, Joyashree Jadavpur University, India
Gendatsu, Kyoko NHK, Japan	Koakutsu, Kazuhisa IGES, Japan	Sahara, Juichiro JICA, Japan
Hak, Mao Kyoto University, Japan	Kobayashi, Hikaru Keio University, Japan	Sang-arun, Janya IGES, Japan
		Sethi, Girish TERI, India

Setioko, Bambang
Diponegoro University, Indonesia

Shimada, Koji
Ritsumeikan University, Japan

Shrestha, Ram
AIT

Shiraishi, Junichi
Ministry of the Environment, Japan

Shukla, Priyadarshi R.
IIMA, India

Sudo, Tomonori
JICA, Japan

Sueyoshi, Takejiro
UNEP, Japan

Takahashi, Gen
JFE Engineering Corporation, Japan

Takemoto, Akio
APN

Teh, Bor Tsong
UTM, Malaysia

Tsujihara, Hiroshi
Ministry of the Environment, Japan

Umemiya, Chisa
IGES, Japan

Wakiyama, Takako
IGES, Japan

Wanadjaja, Timotheus Lesmana
Indonesian Chamber of Commerce and
Industry, Indonesia

Wells, John Bruce
Asia LEDS Partnership

Yoshino, Madoka
IGES, Japan

Zakri, A.H.
Science Adviser to the Prime Minister of
Malaysia. IPBES

Zusman, Eric
IGES, Japan

Table of Presentations

Day 1	
Opening Ceremony and LoCARNet Plenary 1	
	Opening Remarks Junichi Shiraishi, Ministry of the Environment, Japan
	Keynote Speech Bindu N. Lohani, Asian Development Bank (ADB)
Parallel Session 1. The Need for Capacity Development towards a Year 2020 Framework Sirintornthep Towprayoon, Joint Graduate School of Energy Environment (JGSEE), Thailand	
	The Need of Capacity Development towards a Year 2020 Framework Sirintornthep Towprayoon, Joint Graduate School of Energy Environment (JGSEE), Thailand
	Asia LEDS Partnership Advancing Climate-Resilient Low Emission Development Across Asia John Bruce Wells, Asia LEDS Partnership / Low Emissions Asian Development (LEAD) program
	LoCARNet Activities to Strengthen Research Capacity in Asia Tomoko Ishikawa, Institute for Global Environmental Strategies (IGES), Japan
	Climate Change Implementing and Capacity Building in Cambodia Uy Kamal, Ministry of Environment, Cambodia
	Mechanism of capacity building through collaborative research projects Savitri Garivait, Joint Graduate School of Energy Environment (JGSEE), Thailand
	Capacity Development: Need Assessment Joyashree Roy, Jadavpur University, India
Parallel Session 2. Comparison of Reduction Potential in Key Asian Countries for the Two Degree Stabilisation Target Toshihiko Masui, National Institute for Environmental Studies (NIES), Japan	
	Asian activities toward two degree target Toshihiko Masui, National Institute for Environmental Studies (NIES), Japan
	Nationally Appropriate Mitigation Actions in India towards achieving 20C global stabilization target Priyadarshi R. Shukla, Indian Institute of Management Ahmedabad (IIMA), India
	Energy Transition in China towards 2 degree global target Jiang Kejun, Energy Research Institute (ERI), China/Hancheng Dai, National Institute for Environmental Studies (NIES), Japan
	Thailand LCS Scenarios: A Roadmap to Peak CO ₂ Bundit Limmeechokchai, Thammasat University, Thailand
	Developing Malaysia's Low Carbon Society (LCS) Vision 2020 and 2030 Ho Chin Siong, Universiti Teknologi Malaysia (UTM), Malaysia
	A Designing of Low Carbon Development Plan in Cambodia toward 2050 Hak Mao, Kyoto University, Japan
	Potential of low carbon development in Vietnam Nguyen Tung Lam, Institute of Strategy and Policy on Natural Resources and Environment (ISPONRE), Vietnam
	Greenhouse Gases Emission Mitigation in Nepal: Low Carbon Options Ram Shrestha, Asian Institute of Technology (AIT)
	Indonesia Low Carbon Development Strategy Scenario 2050 for Energy Sector Retno Gumilang Dewi, Institut Teknologi Bandung, Indonesia

Day 2	
LoCARNet Plenary 2	
	Keynote Speech Abdul Hamid Zakri, Science Advisor to the Prime Minister of Malaysia, Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)
	LoCARNet Future Plan Shuzo Nishioka, LoCARNet Secretariat /Institute for Global Environmental Strategies (IGES), Japan
Parallel Session 3. The Role of Cities as Pioneers for LCS Junichi Fujino, National Institute for Environmental Studies (NIES), Japan	
	Session plan of “The Roles of Cities as Pioneers for LCS” Junichi Fujino, National Institute for Environmental Studies (NIES), Japan
	Cities and Local Governments in Low Carbon Development Hikaru Kobayashi, Keio University, Japan
	Global Protocol for Community-Scale Greenhouse Gas Emissions (GPC) Fong Wee Kean, World Resources Institute (WRI), USA/China
	Implementation of Low Carbon Society (LCS) Blueprints Ho Chin Siong, Universiti Teknologi Malaysia (UTM), Malaysia
	Country Report - Indonesia Bambang Setioko, Diponegoro University, Indonesia
	City Level Low Carbon Actions: Case Studies from Indian Cities Manmohan Kapshe, School of Planning and Architecture Bhopal, India
	Smart community infrastructures Yoshiaki Ichikawa, Hitachi Ltd., Japan
	Cities as Pioneers of Low Carbon Society: Comments on Session Presentations and Suggestions for an integrated Approach Minal Pathak, Center for Environmental Planning and Technology (CEPT) University, India
Parallel Session 4. APN’s “Rapid Audience-Interactive” Session at LoCARNet 2nd Annual Meeting Akio Takemoto, Asia-Pacific Network for Global Change Research (APN)	
	Introduction and Overview of APN LCI Framework Akio Takemoto, Asia-Pacific Network for Global Change Research (APN)
	Priyadarshi R. Shukla, Indian Institute of Management, Ahmedabad (IIMA), India
	Promoting sustainable use of waste biomass in Cambodia, Lao PDR and Thailand Janya Sang-Arun, Institute for Global Environmental Strategies (IGES), Japan
	Understanding and quantifying the water-energy-carbon nexus for low carbon development in Asian cities Shobhakar Dhakal, Asian Institute of Technology (AIT)
	Low Carbon Urban Infrastructure Investment: Case of China, Indonesia and Japan Joni Jupesta, United Nations University- Institute of Advanced Studies (UNU-IAS)
	Integrated sustainability assessment of bioenergy potentials in Asia: An application of a hybrid approach on trade-offs and pathways Damasa Macandog, University of the Philippines Los Baños, the Philippines

Parallel Session 5. Green Growth Best Practices (GGBP) Side Event Ron Benioff, Green Growth Best Practices (GGBP)	
	Green Growth Best Practices (GGBP) Initiative Ron Benioff, Green Growth Best Practices (GGBP)
	Green Growth Best Practice (GGBP): Benefits Assessment Priyadarshi R. Shukla, Indian Institute of Management, Ahmedabad (IIMA), India Eric Zusman, Institute for Global Environmental Strategies (IGES), Japan
	Green Growth Best Practices (GGBP) Finance Chapter Tomonori Sudo, Japan International Cooperation Agency (JICA), Japan
	Public-Private Collaboration Madoka Yoshino, Institute for Global Environmental Strategies (IGES), Japan
Parallel Session 6. What It Takes to Facilitate Low Carbon Technologies? Lessons and Opportunities Shobhakar Dhakal, Asian Institute of Technology (AIT)	
	What it takes to facilitate low carbon technologies? Shobhakar Dhakal, Asian Institute of Technology (AIT)
	Low Carbon Technology Adoption in India – Policies and Programs Girish Sethi, The Energy and Resources Institute (TERI), India
	Promoting low carbon technology transfer: Lessons and opportunities Abdessalem Rabhi, Institute for Global Environmental Strategies (IGES), Japan
	Avenues for Low Carbon Technology Co-operation: A Perspective Priyadarshi R. Shukla, Indian Institute of Management, Ahmedabad (IIMA), India
	An Alice in the wonderland voyage of a newly appointed NDE focal point Sergio La Motta, Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), Italy
	CDM and Technology Transfer: lessons learned from Asia Kazuhisa Koakutsu, Institute for Global Environmental Strategies (IGES), Japan
	How can we facilitate implementation of technologies to promote low carbon development? Mikiko Kainuma, National Institute for Environmental Studies (NIES), Japan
	What it takes to Facilitate Low Carbon Technologies? Lessons and Opportunities Joyashree Roy, Jadavpur University, India
Parallel Session 7. Asian Issues: Emissions Reduction in the Agriculture, Forestry and Land-Use Sectors Rizaldi Boer, Bogor Agricultural University, Indonesia	
	Enhancing Policies for Supporting Community Actions toward Low Carbon Farming Rizaldi Boer, Bogor Agricultural University, Indonesia
	Community-based Forest Monitoring in REDD+ Taiji Fujisaki, Institute for Global Environmental Strategies (IGES), Japan
	Exploring the potential of a Joint Crediting Mechanism (JCM) in the forest sector Chisa Umemiya, Institute for Global Environmental Strategies (IGES), Japan
	Ecotourism for Low Carbon, Green Growth Mihee Kang, Seoul National University, Republic of Korea
	Enhancing Policies for Supporting Community Actions toward Low Carbon Farming Timotheus Lesmana Wanadjaja, International Society of Sustainability Professionals Indonesia (ISSP), Indonesia
	Emissions Reduction in Agriculture, Forestry and Land Use Sectors in the Philippines Florescia B. Pulhin, University of the Philippines Los Baños, the Philippines
	Low Carbon Farming Practices in Vietnam Le Thi Hoa Sen, Hue University of Agriculture and Forestry, Vietnam

LoCARNet Plenary 3 and Closing. Report from Each Breakout Session, Main Messages, Recommendations, A Way Forward...

	Parallel Session 1. The Need for Capacity Development towards A Year 2020 Framework Sirintornthep Towprayoon, Joint Graduate School of Energy Environment (JGSEE), Thailand
	Parallel Session 2. Comparison of Reduction Potential in Key Asian Countries for the Two Degree Stabilisation Target Toshihiko Masui, National Institute for Environmental Studies (NIES), Japan / Shuichi Ashina, National Institute for Environmental Studies (NIES), Japan
	Parallel Session 3. The Role of Cities as Pioneers for LCS Junichi Fujino, National Institute for Environmental Studies (NIES), Japan
	Parallel Session 4. APN's "Rapid Audience-Interactive" Session at LoCARNet 2nd Annual Meeting Akio Takemoto, Asia-Pacific Network for Global Change Research (APN)
	Parallel Session 5. Green Growth Best Practices (GGBP) Side Event Ron Benioff, Green Growth Best Practices (GGBP)
	Parallel Session 6. What It Takes to Facilitate Low Carbon Technologies? Lessons and Opportunities Shobhakar Dhakal, Asian Institute of Technology (AIT)
	Parallel Session 7. Asian Issues: Emissions Reduction in the Agriculture, Forestry and Land-Use Sectors Rizaldi Boer, Bogor Agricultural University, Indonesia / Florencia B. Pulhin, University of the Philippines Los Baños, the Philippines
Closing Remarks. Hideyuki Mori, Institute for Global Environmental Strategies (IGES), Japan	

Acknowledgements

This Synthesis Report was developed with the aim of highlighting cross-cutting conclusions emerging through the panel discussions held during the Second Annual Meeting of Low Carbon Research Network (LoCARNet), held in Yokohama, Japan on 24-25 July 2013.

The objectives of the meeting were to exchange up-to-date scientific knowledge on common topics for research on low carbon growth in the Asian region; to exchange views on research needs between policymakers and the research community through dialogue; to explore potential collaboration areas for joint research in the region; to develop plans for LoCARNet's future activities; and to extract recommendations from research communities in this region, addressed to world leaders regarding climate change and low carbon development.

The issues covered in this report are the following, which are expected to be of great interest to policymakers and researchers in making the transition towards sustainable low carbon development in Asia:

- The need for capacity development towards a year 2020 framework
- Comparison of the reduction potentials of key Asian countries towards achieving the "2°C" stabilization target
- The role of cities as pioneers for LCS
- Urgent research issues common to the Asian region
- Green Growth Best Practices
- Low carbon technologies required in Asia
- Emissions reduction in the agriculture, forestry and land-use sectors

I would like to take this opportunity to express my profound gratitude to all speakers and participants from academia, government, civil society and international organizations for their contributions to the meeting. I would also like to add our sincere appreciation to the Chairs and to the Steering Group of LoCARNet for their support to bring this dialogue to fruition. Special gratitude goes to Dr. Mikiko Kainuma at NIES for her guidance in planning this dialogue and her considerable efforts to coordinate this meeting.

Shuzo Nishioka



Secretary General
LoCARNet Secretariat

Published by the Institute for Global Environmental Strategies (IGES) on behalf of the Low Carbon Research Network (LoCARNet)
© Low Carbon Research Network (LoCARNet) 2013

Referencing this report:

Asia's low carbon future: Can Asia change the world through leapfrogging?
Synthesis Report of the LoCARNet Second Annual Meeting 2013

Prepared by the LoCARNet Secretariat (ed). Published: IGES, Japan

All rights reserved. No part of this publication may be reproduced or transmitted for commercial purposes in any form or any means, electronically or mechanically, including photocopying, recording or any information storage or retrieval system, without prior written permission from the publisher or a licence permitting restricted copying.

LoCARNet Secretariat

c/o Institute for Global Environmental Strategies (IGES)
2108-11, Kamiyamaguchi, Hayama, Kanagawa, Japan, 240-0115
Website: <http://lcs-rnet.org>
Email: lcs-rnet@iges.or.jp

Whilst advice and information in this report are believed to be true and accurate at the date of going to press, neither the authors nor the publisher can accept any legal responsibility or liability for any errors or omissions that may be made.

Printed in Japan

