Low Carbon Asia Research Network

LoCARNet

Asia is Ready to Stabilise Climate

Synthesis Report of
Third Annual Meeting
Low Carbon Asia Research Network

24-26 November 2014
Bogor, Indonesia

Bogor

Host
Bogor Agricultural University (IPB)
Bandung Institute of Technology (ITB)
State Ministry of National Development Planning (BAPPENAS)
Ministry of Environment and Forestry, Indonesia (KLHK)
National Institute for Environmental Studies (NIES)
Institute for Global Environmental Strategies (IGES)
Ministry of the Environment, Japan (MOEJ)

Ministry of the Environment   Kementerian PPN/Bappenas   IGES Institute for Global Environmental Strategies   NIES JAPAN   INSTITUT PERTANIAN BOGOR   CCROM Southeast Asia and Pacific   INSTITUT TEKNOLOGI BANDUNG 1920

LoCARNet Bogor Declaration
Asia Is Ready to Stabilise Climate

Recognising the huge risk of climate change to human well-being predicted by science communities; welcoming the start of a new global regime to avert it; confirming the growing importance of regional cooperation for low-carbon transition; and drawing upon Asian wisdom to contribute in stabilising climate,

The participants of the LoCARNet 3rd Annual Meeting reaffirm that:

1. Asia has research capacity; Asia has research networks which support policy-making.

2. Asia has potential for low-carbon transition which is adequate to contribute to the two degrees temperature stabilisation target.

3. Asia has the technological, financial and institutional capacity to facilitate low-carbon actions.

4. Many 'good practice' examples exist and their replication is challenging. Continued technological and institutional innovations are needed to support the transition to a sustainable low-carbon society.

5. Asia is ready to make due contribution to global climate stabilisation.

However:

1. Diversity among Asian nations poses challenges for framing uniform policies, but provides opportunities for discovering a range of options. Regional cooperation for low-carbon research is therefore challenging as well as rewarding.

2. Asia houses a sizable fraction of low-income families. Their development needs require special attention to ensure that their welfare is not compromised.

Low-carbon research in Asia shows that timing is critical; lock-ins must be avoided and all 'leapfrogging opportunities' should be seized and realised by positive actions, supported by global climate policies, including technology transfer and incremental finance.

Asia is ready for low-carbon transition and awaits signals from the Paris Climate Change Agreement to deploy actions towards climate stabilisation.

26 November 2014
Low Carbon Asia Research Network (LoCARNet)*

*http://lcs-rnet.org/about_locarnet/

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Presentations

Please refer to the LoCARNet website at: http://lcs-rnet.org/locarnet_meetings/2014/08/130

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 realisation of a low carbon and sustainable society. The Institute for Global Environmental Strategies (IGES) has been serving as the Secretariat of the 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, Malaysia, Vietnam and other Asian countries, 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 Third Annual Meeting of the LoCARNet was held on 24-26 November 2014 in Bogor, Indonesia, co-organised by Bogor Agricultural University (IPB), Bandung Institute of Technology (ITB), State Ministry of National Development Planning (BAPPENAS), Ministry of Environment and Forestry, Indonesia (KLHK), National Institute for Environmental Studies (NIES), Institute for Global Environmental Strategies (IGES), and Ministry of the Environment, Japan (MOEJ).

This year's Annual Meeting began with Keynote Speeches from Prof. Emil Salim and Prof. Yuzuru Matsuoka. Their presentations directed the overall contents of the meeting which highlighted the huge risk of climate change to human well-being as predicted by the science community, as well as welcoming the start of a new global regime to avert this situation and confirming the growing importance of regional cooperation for low carbon transition. The importance was also recognised of drawing on Asian wisdom to contribute to stabilising the climate. Following the highlights, the LoCARNet participants drew up the LoCARNet Bogor Declaration confirming that Asia is ready for low carbon transition and awaits signals from the Paris Climate Change Agreement to deploy actions towards climate stabilisation.

Low carbon research in Asia shows that timing is critical; lock-ins must be avoided and all leapfrogging opportunities should be seized and realised by positive actions supported by global climate policies including technology transfer and incremental finance.

We would like to express our special appreciation to IPB, ITB, BAPPENAS, and KLHK for their generous support for the LoCARNet Third Annual Meeting. We would also like to express our appreciation to the Mayor of Bogor City for the hospitality received in Bogor.

In addition, we would like to express our appreciation to the focal points of LoCARNet, Dr. Sirintornthep Towprayoon (Thailand), Dr. Bundit Limmeechokchai (Thailand), Prof. Priyadarshi R. Shukla (India), Dr. Nguyen Tung Lam (Vietnam), Dr. Jiang Kejun (China), Dr. Toshihiko Masui (Japan) and Dr. Mikiko Kainuma (Japan) for their continuing support.

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

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Edited by Takako Wakiyama with the help of Rizaldi Boer, Ho Chin Siong, Sirintornthep Towprayoon, Priyadarshi R. Shukla, Nguyen Tung Lam, Toshihiko Masui, Shuzo Nishioka, Mikiko Kainuma and Tomoko Ishikawa

Country's Special Correspondent of LoCARNet/LCS-RNet in FY2014

Key Findings

The Third Annual Meeting highlighted and discussed challenges and opportunities which are seized and realised by research collaborations and knowledge sharing, and positive actions supported by global climate policies including technology transfer and incremental finance. The key findings from the meeting lie in five areas: tools and methodology to rationalise target setting and low carbon policies; application of low carbon technologies at the national and local levels and the monitoring of implementation; financing of regional and sectoral research; capacity building through south-north and south-south cooperation and networking; and how to fill gaps among policymakers, researchers and the private sector, and between policies and their implementation.

Effective tools and methods for policy transformation to low carbon development

A coupling model such as the integrated assessment model is a promising tool to perform comprehensive mitigation assessment both for emission reduction and for socioeconomic indicators. Changes in the global economy will be taken into account by the tools in assessing the potential of the sector to reduce GHG emissions. However, it will require careful assumptions with regard to mitigation costs and the areas for implementation of the measures.

Science plays an important role in devising integrated climate actions by using various tools and methods to assess risks, develop solutions, and evaluate their efficacy. Scientific input is essential to sound policy development on climate change because of the very nature of climate change (it is interdisciplinary—it covers many disciplines and sectors). Even without clear political decision, support from the scientific community (scientists, academia) can still provide valuable assistance in terms of climate change adaptation and mitigation (for example, modelling can help allocate responsibilities and resources among sectors).

Low carbon technologies for stabilising climate

To attain a low carbon future scenario for developed and developing nations in Asia, policymakers are encouraged to pay attention to GHG mitigation in the energy sector. This entails reducing energy consumption by introducing advanced technologies to increase energy efficiency and promoting renewable energy to avoid fossil fuel dependency.

Global agreement on emission reduction can lead to the establishment of mitigation programmes and initiate inter-government collaborative action to promote monitoring of GHG emissions. With mitigation actions on such a global scale, technology development can be promoted with the involvement of the private sector to co-finance research on commercial opportunities to attract the business community.

Transfer of technology and technology-related capacity building can address the technology gap between developed and developing countries, particularly in establishing a database to support emission reduction efforts. Focusing on specific problems and applying appropriate technology might overcome any associated limitations, for example in dealing with limited data availability.

Innovative financing for supporting low carbon development

In order to increase funds for low carbon development, an innovative financing system can be established by assessing mitigation potential not only at the national level, but also at the regional level, and identifying feasible financing options through regional collaboration. National-level funds can contribute to enhancing such activities at the regional level through effective collaboration. Developed countries, international organisations, and regional networks can also play an active role in facilitating mitigation activities in developing countries.

For financing with a local approach, it is possible to establish a fully self-funded conservation project with a zero-cut policy using an enterprise management approach. It is more effective to treat funding for activities on a local scale (such as community-based forest management) as an investment rather than a grant. It increases the local community's sense of responsibility for properly managing the money.

Expanding capacity through networking

Capacity for enhancing climate resilience and decarbonisation can be built through close communication with all stakeholders including policymakers, the private sector, and NGOs, and through the process of networking, informing, and encouraging their engagement from the early planning stages and throughout the policy development and implementation.

Some universities are still in the early stages of undertaking dedicated research focusing on climate change, while others have already become involved and are producing advanced research on low carbon development scenarios. Thus, knowledge exchange and mutual learning are necessary for capacity development in Asia. Diversity among Asian nations poses challenges for framing uniform policies, but provides opportunities for discovering a range of options. Regional cooperation for low carbon research is therefore challenging as well as rewarding.

In cooperation and financing, several modelling studies on low carbon pathways exist; however, these are fragmented and 'non-inclusive', especially in terms of developed versus developing country perspective, emphasis and participation. Future research can benefit from cooperation whereby teams of researchers from diverse countries are formed. Cooperation between researchers from different countries can provide support for sharing of data and ensure comparably robust research methodologies across countries and regions. Cooperation between regions for technology transfer will help achieve faster deployment of low carbon technologies in Asian countries. However, researchers will have to work with local implementation agendas and collaborate internationally to take advantage of capacity building opportunities.

Filling gaps to accelerate transformation/transition towards low carbon society

Deep decarbonisation to achieve the global 2 degree temperature stabilisation target is feasible, but challenges remain. Achieving this will require global engagement, shared vision, purposive cooperation and realistic policies. Coordination between researchers, governments and the private sector can mutually support mitigation action based on technology development and deployment, and enforcement of policies.

At present, numerous members of the scientific community are already involved in the area of climate policymaking. However, this alone could be insufficient to make a real contribution to successful low carbon development. As the climate change research field grows, with the additional dimension of implementation to deliver policy on the ground, it is necessary for the scientific community to pursue new knowledge by researching policy implementation in order to address associated issues.

Although communities and cities face many challenges, there are significant opportunities at the local level to benefit from taking integrated action on mitigation and adaptation. Addressing the problems in an integrated manner requires the commitment and coordination of cities that are, for example, located in a similarly affected area, such as a watershed.

Session Key Findings

There are different pathways to science-policy interaction, mostly depending on political situation. Based on the experience of Indonesia and Japan for, instance, science-policy interaction originating from strong political commitment (as in the case of Indonesia) can make better use of scientific information.

Since implementation happens at subnational levels, bottom up good practices can serve as models for replication

Integration of science and policy is vital. Integrated research can delineate insights, assess implications and discover policies and implementation roadmaps.

The proposed actions and resources are available. It is feasible to achieve low carbon societies in Asia. However, more efforts are needed to address the challenges.

Countries in Asia are preparing for low carbon development with specific efforts and are showing willingness to cooperate.

Incorporating socioeconomic aspects into the development of a low carbon scenario will improve the robustness of the results and might be closer to the real-life situation.

Research related to low carbon development is being conducted not only by research institutions, but also by governments.

Potential use of satellite to ensure scientific and effective MRV in connection with global efforts to reduce GHG emissions. Combination of methods and data (satellite and ground-based data) will make information more comprehensive and improve data reliability.

In order to convince policymakers, the outcomes of the projects need to be presented in brief and in a non-technical manner.

Policy briefs should be provided as categorised recommendations that are suitable for policymakers at the city, regional, and national levels.

A mechanism is required to establish links between financing and research development, for example in the form of incentives such as tax reductions, soft loans for environmental investment, etc.

Showing concrete results in the form of co-benefits from low carbon cities' good practices can influence policymakers to take stronger action.

Technology initiatives for low carbon cities are available; however, awareness raising and capacity building for technology uptake to ensure sustainable behaviour changes are essential to move forward.

The role of the private sector is significant and collaboration among the private sector, scientists and political leaders at all levels should be strengthened.

To make low carbon projects sustainable, more attention and effort should be given to advocacy and incorporation of low carbon actions into long term city development planning.

REDD+ and Community-Based Forest Management (CBFM)

A simpler scheme for carbon trading (e.g., direct agreement between emitters [companies] and local communities) is preferable to help CBFM participate in carbon trading.

The voluntary carbon market in Indonesia, for instance, is a promising future market for REDD+ and CBFM.

Low Carbon, Climate-Resilient Society: Integration of Mitigation and Adaptation Policies in Cities in Asia

Improving land-use planning with consideration for the climate (climate-sensitive land-use) can be a successful approach for effectively integrating mitigation and adaptation.

In terms of an ecosystem-based approach, ecosystem-based solutions such as watercourse management (e.g., riverbank rehabilitation) and afforestation/reforestation complement engineering-based solutions such as flood levees and improved drainage to contribute to mitigation and adaptation.

For integrated watershed management, targeting river basins as a whole, rather than communities and cities individually, helps in addressing trans-boundary problems such as flooding and degradation of water quality.

GHG Reduction Potential in Each Country and Role of Research Community

Close engagement and collaboration between diverse groups including the research community, policymakers, and local communities is key for ensuring effective formulation of climate policy and successful implementation of low carbon development. Understanding the local context in socioeconomic and engineering terms will allow these groups to shape a precise vision for a future low carbon scenario well-suited to the particular local environment.

Remote Sensing and Sustainable Forestry Management

INCAS is a good modelling tool to support the development of a reliable MRV system for REDD+. However, this system requires some improvements to enable wider adoption across the country, for example to include measurement of emission from peat fires (especially obtaining the fire activity data and assessing the impact of logging and other forest management practices) and refinement of the model to reduce the uncertainty to an acceptable level.

GOSAT offers the potential to be used for monitoring and verification of GHG emissions in REDD+ projects. However, some challenges exist, such as obtaining absolute values for physical parameters. Collection of good data on emission measurements from the ground is very important to assess the potential use of GOSAT for MRV of GHG emissions.

Wrap-up

The community has been concerned about forests and climate change issues. The community also has a lot to learn from the researchers to measure carbon stocks and to form community groups to reduce emissions.

Asia is home to a sizeable proportion of low income families. Their development needs require special attention to ensure that welfare is not compromised.

Session Reports

Promoting an Integrated Knowledge-Base System for Scientific Low-Carbon Development Policymaking in Asia – Part I

[Chair] Mr. Hideyuki Mori, IGES, Japan
[Rapporteur] Mr. Muchamad Muchtar, IGES, Indonesia

Speakers:

    Prof. Rizaldi Boer, IPB, Indonesia
    Dr. Endah Murniningtyas, BAPPENAS, Indonesia
    Dr. Shuzo Nishioka, LoCARNet/IGES, Japan

How Can a Modelling Approach Be Used to Promote an Integrated Knowledge-Base System for Scientific Low Carbon Development Policymaking in Asia?

As the result of rapidly growing GDP and increased energy consumption, Asia faces the challenges of growing GHG emissions. If the present emissions trend continues, the Asia region will account for half of the global GHG emissions by 2050. By turning its pathway toward science-based low carbon development, therefore, Asia can stabilise global climate change.

In the cases of Indonesia and Japan, the role of science and scientists in climate policy-making processes is to assist in formulating policy, as well as to implement policy and monitor its progress. Climate mitigation policy in Indonesia takes a top-down approach both at national and local levels. In Indonesia, the national government sets up a GHG emission reduction target, and then formulates mitigation actions with scientific inputs. In climate change adaptation, on the other hand, the processes follow a more bottom-up approach. However, in bottom-up approaches, policy direction is not clear. Thus, scientists and practitioners are expected to become involved to assess risk and capacity and to provide leadership in establishing vulnerability maps and key indicators for constructing adaptation strategies.

In the Japanese experience, policymakers formulate GHG emission targets by requesting scientific inputs and assessment of economic and environmental benefits, and conducting dialogues with the scientists and practitioners.

As part of its support for the establishment of Intended Nationally Determined Contributions (INDCs), Japan continually supports scientifically-based climate policy development in Asia by promoting knowledge sharing and capacity development. Joint research initiatives such as the Deep Decarbonization Pathways Project that involves Indonesia, Japan, and 13 other countries aim to highlight how individual countries can also help to find a way to transition to a low carbon economy and for the world to achieve the 2 degree target.

Concrete /practical steps for low carbon transformation

- In Asian developing countries, and in the AFOLU sector in particular, challenges remain with regard to availability and reliability of data and information for modelling analysis and MRV systems to formulate scientifically-based policymaking.

- Levels of knowledge and capacity vary among stakeholders, in particular between local government and the community. Since GHG emission is intangible as compared to other empirical development activities, various stakeholders in energy, water, health, and economic issues are involved. Thus, it is challenging to communicate with these stakeholders, including the scientific community.

- Knowledge sharing and capacity building for scientists at local universities and in local government are essential.

- Introduction of innovative technologies and 'leapfrogging' for Asian countries could lead to low carbon development, particularly in China, ASEAN countries and India.

- The research capacity of local research institutions and universities can be strengthened by implementing joint research providing empirical results for mitigation actions.

- In order to improve collaboration and expand networks for scientific low carbon development, it is necessary to involve not only researchers and policymakers but also other stakeholders such as practitioners and businesses.

Systematic steps for formulating low-carbon development policy
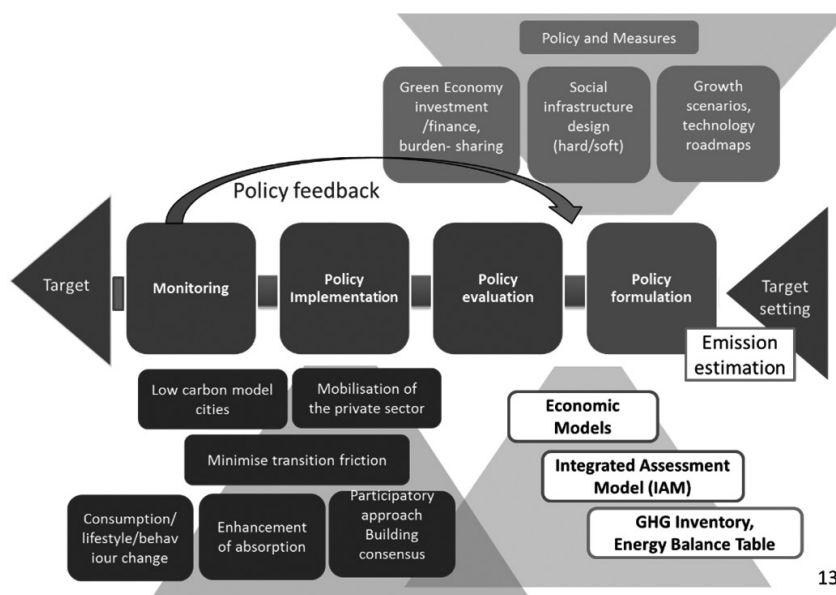
Source: Presentation by Shuzo Nishioka (2014), Integrated effort for INDC: Japan's comprehensive, continuous andsystematic support for science-based climate policy development in Asia

Promoting an Integrated Knowledge-Base System for Scientific Low-Carbon Development Policymaking in Asia – Part II

[Chair] Dr. Mikiko Kainuma, IGES/NIES, Japan
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Prof. Ho Chin Siong, Universiti Teknologi Malaysia (UTM), Malaysia

Dr. Ucok Siagian, ITB, Indonesia

Mr. Noer Adi Wardojo, Ministry of Environment and Forestry, Indonesia

How Can a Modelling Approach Be Used to Promote an Integrated Knowledge-Base System for Scientific Low Carbon Development Policymaking in Asia?

Deep decarbonisation to achieve the global 2 degree temperature stabilisation target is feasible, but challenges remain. Significant potential exists for decarbonisation among countries in terms of supply-side technologies and options as well as end-use measures including energy efficiency. However, these cuts rest on the large-scale deployment of some low carbon technologies that are not yet commercially available or affordable.

Time and space for decarbonisation is limited and this will require quick and deep cuts. About half of the cumulative anthropogenic CO_2 emissions between 1750 and 2010 have occurred in the last 40 years (IPCC AR5). Delayed mitigation will impose significant cost in the later part of the century and this necessitates quick action to avoid high carbon lock-ins. With Asian countries' expected growth in population, economic growth and reliance on fossil fuels, their contribution will be sizeable in future. Available scientific evidence shows that the current national pledges may not be able to achieve the global 2 degree temperature stabilisation target.

Integration of science and policy is vital to facilitate low carbon development policymaking. Integrated research can delineate insights, assess implications and discover policies and implementation roadmaps. The idea is to make science policy-relevant; that is, aiming for research to inform policy by addressing the key questions occupying policymakers' minds and using avenues such as policy forums as outreach platforms for research. The research paradigm and methods should follow the 'horses for courses' approach, devising scientific methods and applying them to specific aspects of the policy question.

Align the goals of low carbon scientific research with national and subnational development goals. While converting to low carbon is an important goal, Asian countries are also looking at other development goals. Low carbon development research has to go beyond the conventional options and discover out-of-the-box solutions to achieve local and short term development benefits in alignment with the long term decarbonisation targets. It is important for countries to cooperate for a favourable and successful global negotiation outcome.

In cooperation and financing, several modelling studies exist on low carbon pathways; however, these are fragmented and 'non-inclusive', especially in terms of developed versus developing country perspective, emphasis, and participation. Future research can benefit from cooperation whereby teams of researchers from diverse countries are formed. Cooperation between researchers from different countries can provide support for sharing of data and ensure comparably robust research methodologies across countries and regions. Cooperation between regions for technology transfer will help achieve faster deployment of low carbon technologies in Asian countries. However, researchers will have to work with local implementation agendas and collaborate internationally to take advantage of capacity building opportunities.

Bottom-up good practices can serve as models for replication and contribute to national low carbon and economic development agendas. Successful 'good practice' examples show that policymakers have keen interest in low carbon policy research and would support the knowledge networks. Such examples include Iskandar Malaysia, where carbon policies have been formulated based on strong modelling and have been implemented with linkage from the local to the national level. The policies are also aligned with the national economic policy of the country.

Concrete/practical steps for low carbon transformation

- Identify win-win options that can help to achieve deep decarbonisation cuts. These can include supply and demand side options such as energy efficiency measures, low carbon electricity and fuel switching.

- Ensure cooperation between researchers/scientists and local implementation agencies, as well as international collaboration to take advantage of capacity building opportunities.

- Prepare a low carbon blueprint plan with 'buy in' from stakeholders including local policymakers to guide city managers in making objective decisions.

GHG emissions pathways to 2030: cost-effective mitigation vs. delayed mitigation
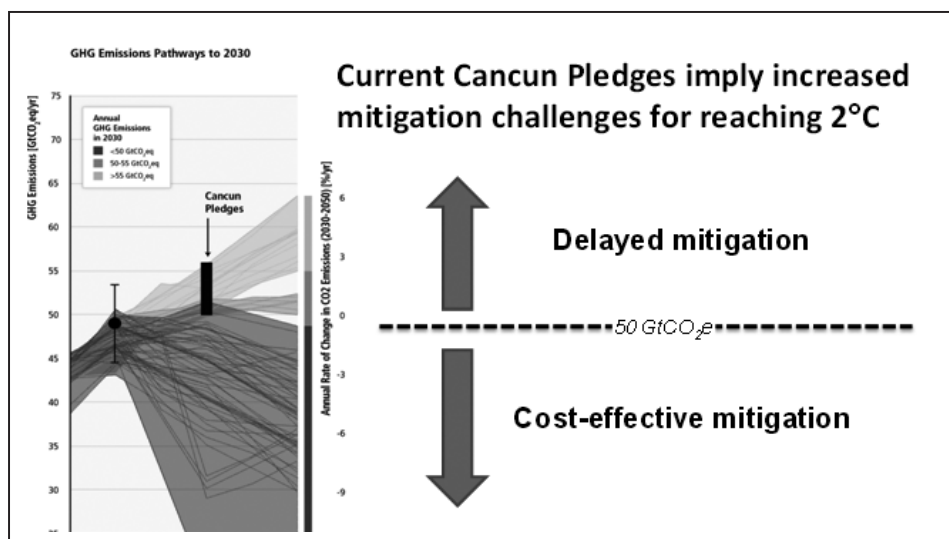
Source: Riahi et al., 2014, Tech. For. & Soc. Change, online first, IPCC WGIII AR5. In presentation by P.R. Shukla (2014), Integrated Knowledge-Based System for Scientific Low-Carbon Development Policymaking in Asia: Focusing on the Big Win-Win

Grand Regional Research Strategies

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Mr. Brett Shields, Spatial Informatics Group, Singapore

How can grand regional research strategies be promoted? What are the roles of grand regional research strategies?

In terms of proposed global/regional strategies and resources, developing and implementing grand regional research strategies in Asia will bring major advantages including the co-benefits of socioeconomic development and environmental sustainability. Challenges still remain, including the difficulty of translating strategies into concrete actions, the different contexts and levels of development of Asian countries, and the need for regional cooperation to ensure consistent regional data collection and integrated modelling, as well as insufficient human and financial resources. To tackle these challenges and move things forward, various proposed strategies and available resources need to be considered. The reduction of emissions in Asia is crucial for the transition to low carbon societies worldwide in order to halve GHG emissions by 2050.

More importantly, if all the actions proposed are applied appropriately and early enough, it is estimated that 69% of the emissions in the reference scenario can be reduced in Asia by 2050. This is in line with the global pathway to achieve a 2 degree target. In reality, the countries in Asia have already been implementing some of these actions at national and subnational levels. In addition, there are existing resources that help enable this process. To give a specific example, there have been significant improvements in terms of technical upgrading and capacity building for the adoption of the Asia Pacific Integrated Model (AIM).

This model can be used to implement GHG mitigation policies not only with regard to climate change mitigation, but also with regard to local air pollutants. The encouraging preliminary results from adopting the model in China, India, Korea and Japan provided important insights and lessons learnt for other countries in Asia. Second, with regard to financial resources and partnership opportunities, various networks and platforms have been formulated which are open and provide free access to tools, knowledge and financing opportunities. Third, an important initiative when it comes to the key factor of human resources is the establishment of training centres such as the Climate Change International Technical and Training Center (CITC). The Center will provide capacity development for Thailand, ASEAN and other countries in Asia on climate change mitigation and adaptation. The Center has designed specific courses on low carbon society development and sustainable GHG management.

Current efforts of Asian countries including proposed strategies and preparation. There is a movement to emphasise important inputs from specific countries in Asia with regard to their proposed strategies and progress in working towards a lower carbon society. Cambodia has developed a comprehensive and well established regulatory framework for green growth, climate change adaptation and low carbon development. It has recently been implementing specific projects under

these policies. Vietnam is aware of the need to adopt good practices not only from developed countries like Japan but also from the countries that share a more similar infrastructure or level of development such as Malaysia. In Thailand, the importance of research-policy-implementation-evaluation linkages and a roadmap to strengthen this are recognised. Malaysia has progressed with implementation of the Low Carbon Society Blueprint for Iskandar Malaysia 2025 and proposal of a research agenda to link science and action. Overall, all countries including Cambodia, Malaysia, Thailand, Indonesia and Vietnam showed strong willingness and support for the development and implementation of grand regional research strategies.

Considerations and challenges to be addressed for moving forward. Specific considerations include (1) promoting researcher and policymaker communication and interaction, (2) addressing social aspects such as integrating local knowledge and wisdom with adaptation, (3) ensuring accessibility and equity, (4) studying social uptake of the technology, (5) conducting regionally integrated modelling, and (6) obtaining shared understanding on a clearly defined low carbon and green growth concept.

Concrete/practical steps for low carbon transformation

- Deepen exchanges of knowledge and information on current progress between countries with similar situations and/or levels of development, and continue strengthening the AIM, particularly by integrating adaptation aspects and regional upscaling.

- Continue reinforcing the role of LoCARNet in promoting grand regional research strategies, and engage and foster the active involvement of the private sector.

- Making a financial mapping for low carbon and green growth to facilitate financial assistance for developing countries.

- Explore and instigate opportunities for universities to conduct regional joint curriculum development on low carbon and green growth at universities, and strengthen capacity building efforts, particularly for young researchers/scientists.

Science into Action – Realizing: Low carbon society: The case of Iskandar Malaysia
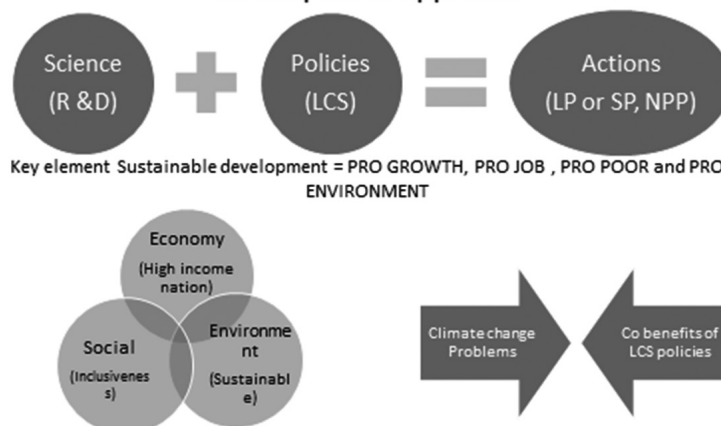
Source: Presentation by Prof. Ho Chin Siong (2014), Science into Action – Realizing Low carbon society : The case of Iskandar Malaysia

Local Research Initiatives for Supporting Strategies

[Chair] Dr. Lawin Bastian, National Council on Climate Change (DNPI), Indonesia

[Rapporteur] Ms. Syahrina D. Anggraini, Carbon and Environmental Research (CER) Indonesia, Indonesia

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Dr. Djoni Hartono, University of Indonesia, Indonesia

Prof. Dedi Hadriyanto, University of Mulawarman, Samarinda, Indonesia

Dr. Ir. Hj. Hidayati, North Sumatera Environmental Agency, Indonesia

Dr. Kei Gomi, NIES, Japan

What kind of local research initiatives on a low carbon scenario have been conducted?

Low carbon development is a relatively new field of research in Asian developing countries such as Indonesia and not every university is at a level that enables their research to influence policymakers.

For example, some of the local universities in Indonesia are still in the early stages of developing research on low carbon development. Such universities are currently in the process of establishing a research center to study mitigation of and adaptation to climate change, and the center is expected to coordinate and integrate the universities' climate change research. The universities conducted a study on planning for low carbon growth in Indonesia, aiming to identify suitable policies to achieve such growth. They conducted research using a CGE model, for instance, and incorporated economic indicators to simulate different scenarios, namely, reduction of energy subsidies, implementation of carbon tax, and implementation of REDD.

However, universities are not the only ones with capacity to conduct research on low carbon development. Several local government agencies have also conducted relevant research. An example is research conducted by East Kalimantan Province in collaboration with the Center for Climate Change Studies, Mulawarman University, to identify possible initiatives to reduce carbon intensity in the province.

Another example is research initiated by North Sumatra Province's Environmental Agency on domestic wastewater and municipal waste management, where the results helped the province to develop its GHG inventory and to implement a local action plan to reduce GHG emissions.

In Malaysia, collaboration with Japanese research institutes such as NIES is under way to develop models to support decision making for a low carbon scenario. Researchers are using a backcasting approach (see figure below) whereby the target is set first, then they work backwards to find ways to achieve it.

What are the challenges in conducting local research on a low carbon scenario?
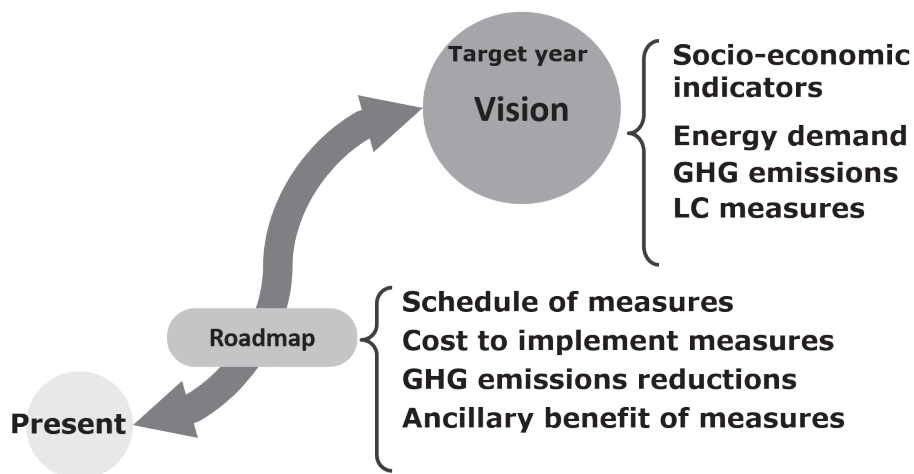
Limited capacity and knowledge among relevant stakeholders, limited availability and accuracy of data, low public awareness, and a lack of coordination are some of the challenges faced in conducting low carbon development research. However, making the research specific might overcome this issue.

Concrete/practical steps for low carbon transformation

- A stronger voice is needed to attain greater influence in policymaking; thus it is important to have a network of research initiatives on similar issues.

- Local application or "localization" methods for low carbon scenario models will help in generating more specific direction .

Backcasting approach in developing a low carbon scenario

Methodology: Backcasting Approach

Target year
Vision

Socio-economic indicators

Energy demand
GHG emissions
LC measures

Roadmap

Present

Schedule of measures
Cost to implement measures
GHG emissions reductions
Ancillary benefit of measures

Source: Presentation by Kei Gomi (2014), Local low carbon development initiatives in Fukushima

Carbon Monitoring System Innovation, toward a Low Carbon Campus, City and Region

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[Rapporteur] Ms. Fitra Aidiella Dachlan, Individual consultant, Indonesia

Speakers:

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Prof. Sachiko Hayashida, Nara Women's University, Japan

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Mr. Toshiaki Ariyama, Fujitsu Limited, Japan

Mr. Bregas Budianto, IPB, Indonesia

Prof. Dr.Azlan Abdul Rahman, UTM, Malaysia

Mr. Rana Yusuf, Green Building Council Foundation, Indonesia

How can carbon monitoring system innovation be enhanced for a low carbon campus, city and region?

Technology and social interventions are two important factors for achieving a low carbon society. Advanced technology such as the Greenhouse Gases Observing Satellite (GOSAT) enables carbon measurement globally as well as at a regional level, while social intervention leads to behavioural changes. Measurement is important to support any claim that society has adopted a low carbon lifestyle.

The measurement can be undertaken at several levels, such as globally or nationally, by province or city, or by smaller unit such as a high rise building or campus. Each level requires different technology. More advanced satellite is able to perform more detailed tasks such as CO_2 and CH_4 accounting. Meanwhile, satellite imagery can be used to monitor changes in land cover to support Indonesia's ground-based emission reduction analysis.

At the city level, the development of the Asian-Pacific Integrated Model (AIM) makes it possible to perform various scenario analyses of GHG emissions. The methodology enables the design of both technology and social systems for sustainable regions and cities.

As an example of measurement at the smaller-unit level, on the other hand, a low-cost monitoring tool in the campus provided a self-assessment tool to measure green building concept application and encouraged various activities to adopt green lifestyles.

Despite sophisticated technology advancement, however, it is also important to think about social interventions that can lead to behavioural and lifestyle changes because this aspect is also crucial to achieving a low carbon society. Raising awareness is important, but it should be followed by providing a strong framework and the enabling conditions to support the action.

Concrete/practical steps for low carbon transformation

● Establish a platform to share among policymakers, research communities and other stakeholders various technologies and financial opportunities, as well as support from different countries in the Asia-Pacific region. Furthermore, policy and regulation will improve data collection, use and sharing among countries in the region, particularly in relation to the use of satellite for GHG emission reduction efforts.

● Conduct further research on GOSAT to address current obstacles in data observation and analysis.
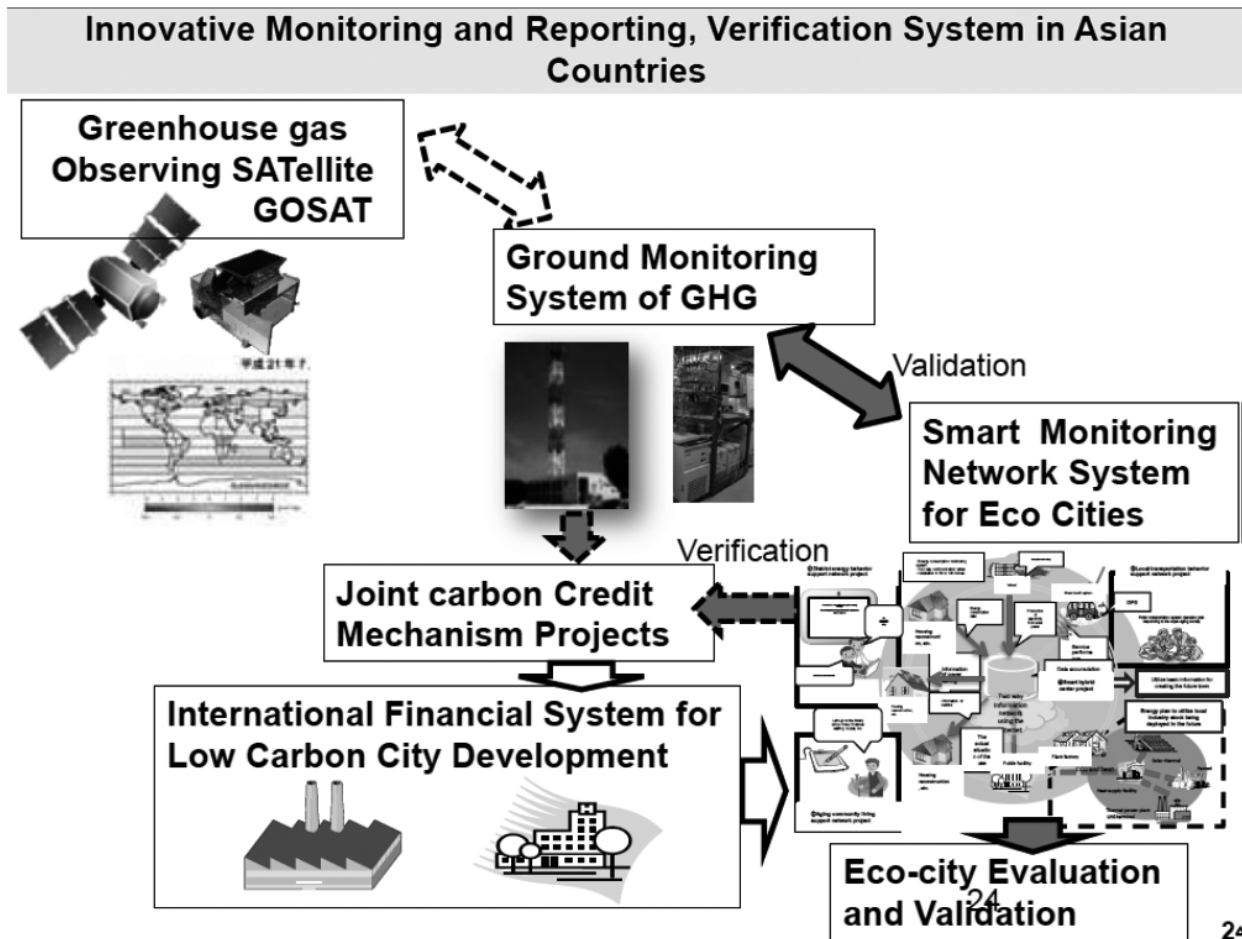
Source: Presentation by Tsuyoshi Fujita et al (2014), Innovative Monitoring and Modeling Research toward Low Carbon Society

APN Low Carbon Initiatives (LCI)

[Chair] Chair/Moderator: Ms. Taniya Koswatta, Asia-Pacific Network for Global Change Research (APN) Secretariat

Speakers:
Ms. Shom Teoh, IGES Regional Center, Thailand
Mr. Kirtiman Sherchan, NTFP Exchange Programme (NTFP-EP), Cambodia
Ms. Kriti Nagrath, Development Alternatives, India
Mr. Ashish Shrestha, Asian Institute of Technology (AIT), Thailand
Prof. Damasa B.M. Macandog, University of the Philippines Los Baños (UPLB), Philippines
Ms. Takako Wakiyama, IGES, Japan

Low Carbon Initiatives (LCI) was developed under the Asia-Pacific Network for Global Change Research (APN) with the aim of providing funding for activities related to low carbon initiatives. The LCI framework was designed with a view to enhancing mitigation actions across countries in the region and helping to achieve the global vision for a low carbon and sustainable future. In order to pursue low carbon development, research is needed to answer the following questions:

• What are the issues requiring further research?

• What are the causes of the current situation?

• What are the main outcomes that need to be notified to policymakers?

• What are the suggested revisions or recommendations for policymakers?

• What kind of policy options can we offer?

• How can we present the findings to policymakers?

According to LCI research projects, common challenges and opportunities in the initiation of low carbon research are identified in the areas of capacity building, the forest sector, technology and city infrastructure.

In the case of capacity building and awareness raising, the challenges, opportunities and findings are:

• Capacity building and awareness building should not be limited to local government only

• A 'peer-to-peer' approach can be encouraging or inspiring

• Enhancing existing data management systems will enable collection of GHG data

• GHG data collection should be institutionalised

• Reporting responsibility will help to establish an inventory

• Regular and systematic training with incentives and monitoring is needed.

With regard to the forest sector, it was found that various research is needed and the findings and suggestions from the research to date are:

• The timing, content and understanding of localised context is important in the establishment of REDD+ benefit sharing frameworks

• Community livelihoods as co-benefits to REDD+ are critical and should be consistent with the goals of REDD+ and implemented with equal emphasis and support as for the other components of REDD+

• REDD+ policy strategies, programmes and projects have to be relevant and responsive to the special conditions of each country

In biomass and bioenergy production, the following challenging issues have been identified through the research:

• Balanced sustainability of bioenergy production depends on the choice of biomass feedstock and these choices depend on people's perceptions

• Familiarity with and awareness of bioenergy remains low among farmers; therefore outreach programmes and activities are needed to promote bioenergy

• Some aspects of bioenergy deployment cannot be decided scientifically, therefore the choices of people living on the land have to be considered.

In addition, energy security, climate change mitigation and water security are three key contemporary policy agendas that are globally related to sustainable development. Addressing them in an integrated fashion is useful for local decision makers and also to maximise the benefits from global support mechanisms tailored to each issue.

Having identified the challenges and opportunities above, the proposed action matrix to achieve low carbon and energy efficient technology in the construction and infrastructure sectors can be listed as six main components: 1) generation of awareness (acceptance of technologies by public); 2) quality control–rating and grading; 3) incentives for entrepreneurs; 4) procurement policies; 5) institutional partnerships; and 6) innovation and research.

New Co-Financing Model of Research Partnership in the Asia-Pacific

[Chair] Dr. Akio Takemoto, MOEJ, Japan
[Rapporteurs] Mr. Mohamad Ridwan, CER Indonesia & Ms. Fitra Aidiella Dachlan, Individual Consultant

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Mr. Sabar Ginting, Ministry of Environment, Clean and Renewable Energy, Indonesia

Mr. B.M.U.D Basnayake / Mr. Mahesh Chamara, Ministry of Environment and Renewable Energy, Sri Lanka

Prof. Singgih Riphat, Ministry of Finance, Indonesia

Mr. Brett Shields, Spatial Informatics Group, Singapore

How can a new co-financing model of research partnership be built in the Asia-Pacific?

Emission reduction efforts to achieve a low carbon society require research and development. However, the main problem faced in the area of research and development is lack of access to funding.

In developing countries, environmental and development-related research is facing some obstacles such as the absence of incentives for environmental management activities, limited access to information related to research opportunities, a lack of profit generated by research and development for investing in the environmental sector, as well as limited financial aid available from donor agencies. Furthermore, the complexity of research administration processes, including time constraints and the reporting process, has resulted in researchers hesitating to access funding and submit proposals (in the case of Indonesia).

The Asia-Pacific Network for Global Change Research (APN; membership comprises 22 countries) is promoting research related to global climate change, increasing developing country involvement in that research, and strengthening interaction between the science community and policymakers. One example of co-financing cooperation is between APN and the Sri Lanka Ministry of Environment to develop renewable energy. Considering the strong competition for available funding, APN seeks alternative means of co-financing to support more research initiatives.
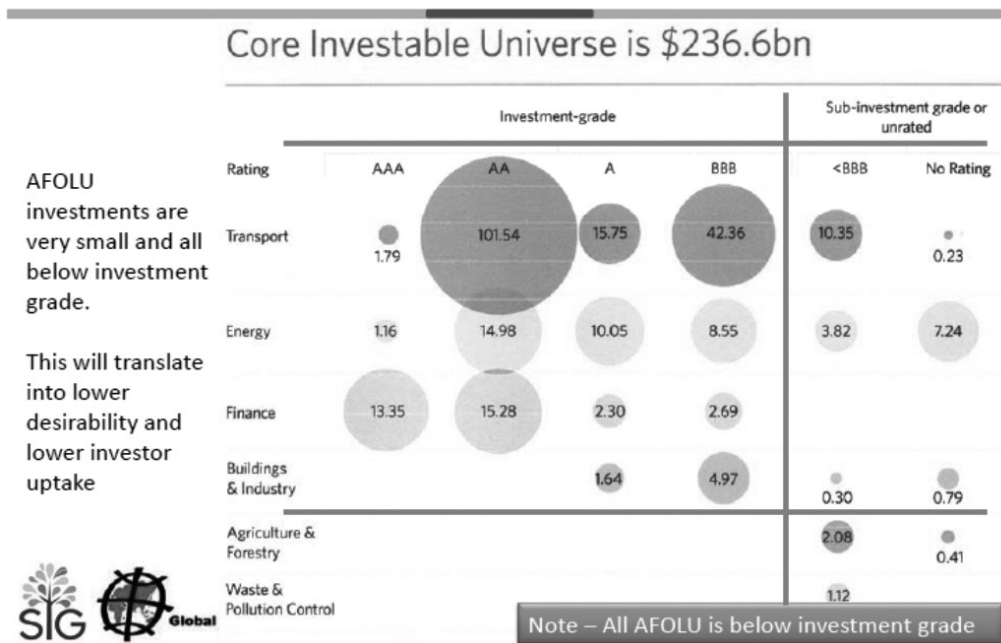
In 2008, the World Bank launched the "Strategic Framework for Development and Climate Change", issuing Green Bonds focusing on sectors such as renewable energy, transmission, energy efficiency, climate change, water and forestry. Green Bonds will comprise an important financing scheme in the future. However, further research is required on establishing a mechanism at the regional level that will need to involve government, the banking industry, researchers and the private sector.

To generate funding, it is necessary to involve the private sector in countries within the Asia-Pacific region. Further work is required to establish a mechanism, a policy and an administrative process to enable researchers to access funding for research in GHG emissions reduction using technology development.

Concrete / practical steps for low carbon transformation

- Co-financing is a highly favourable means of generating more available funding to support more research initiatives. Green Bonds are one alternative to generate funding for financing green technology that will be supporting GHG emissions reduction, as well as generating other benefits. However, further work is required to establish a mechanism that involves policy, regulation and stakeholders.

- Establish joint research cooperation between universities and countries in the Asia-Pacific region.

Greens Bonds Market 2013-2014

Core Investable Universe is $236.6bn

	Investment-grade				Sub-investment grade or unrated	
Rating	AAA	AA	A	BBB	<BBB	No Rating
Transport	1.79	101.54	15.75	42.36	10.35	0.23
Energy	1.16	14.98	10.05	8.55	3.82	7.24
Finance	13.35	15.28	2.30	2.69		
Buildings & Industry			1.64	4.97	0.30	0.79
Agriculture & Forestry					2.08	0.41
Waste & Pollution Control					1.12	

AFOLU investments are very small and all below investment grade.

This will translate into lower desirability and lower investor uptake

Note – All AFOLU is below investment grade

Source: The Climate Bonds Initiative "State of the Market" report 2014, In presentation by Brett Shields (2014), Climate Bonds – a growing source of climate finance

Low Carbon and Resilient Cities – Showcasing Concrete Actions and Good Practices

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[Rapporteur] Mr. Vu Duc Canh, Institue of Environmental Science and Engineering, Vietnam

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Prof. Ranjith Perera, Asian Institute of Technology, Thailand

Dr. Nguyen Dinh Tuan, HCM University of Natural Resources and Environment, Vietnam

Mr. Ignesjz Kemalawarta, PT Bumi Serpong Damai, Sinarmas Land, Indonesia

Dr. Junichi Fujino, NIES, Japan

Ms. Gina Karina, Program Officer, International Council for Local Environmental Initiatives (ICLEI), Indonesia

How can low carbon and resilient cities be built up?

It is estimated that as much as 80% of total GHG emissions comes from cities and their residents. There is no longer any question that cities are major contributors to greenhouse gas (GHG) emissions around the globe. Consequently, sustainable development concepts such as Low Carbon Society (LCS) and Climate-Resilient Cities are now highlighted as significant solutions to minimise GHG emissions and protect the environment.

A number of good practices towards LCS have been introduced, including integrated action plans in individual cities. In particular, optimum transport systems have been developed to reduce emissions from vehicles and increase public transport. Meanwhile, the green development approach provides effective solutions to reduce the disposal of solid waste and wastewater into the environment, as well as saving energy through green building programmes. Moreover, one of the most important practices is the positive change in people's lifestyles. This method can be implemented by increasing awareness, especially among the younger generation (e.g., school pupils and students), and offering education and training to adapt to climate change impacts and to incorporate a low carbon lifestyle into our daily lives. In addition, the role of local government officials and local decision makers is also important to promote the implementation of low carbon resilient city concepts at the local level. And the co-benefits approach is also an appropriate option to get civil society involved in the local authorities' actions to reduce carbon emissions.

One of the difficulties confronted when municipalities conduct carbon mitigation activities is financing. Therefore, providing financial assistance via governments and actively involving the private sector are crucial for GHG mitigation actions. Managerial and social barriers also have an impact on implementation of low carbon policies and plans. However, they are less problematic than financial barriers.

Concrete/practical steps for low carbon transformation

- Allocate budgets, provide more grants and appropriate incentives to the potential investors applying low carbon resilient city concepts.

- Continue paying attention to awareness-raising activities for urban residents whose lifestyles can influence the society's transition towards sustainable development.

- Reach out to the policymakers who play a crucial role in driving the LCS movement.

Low Carbon Development
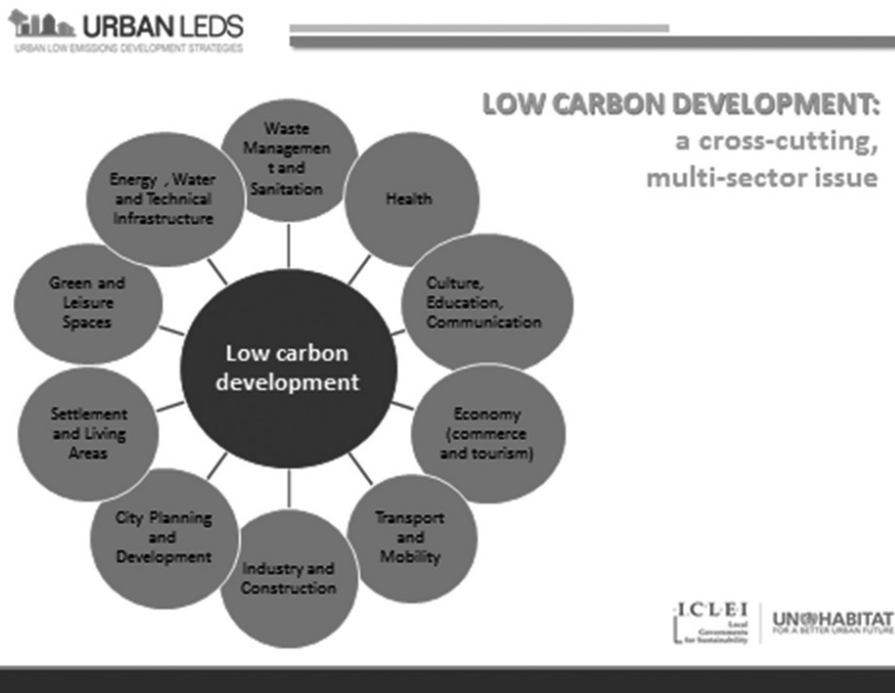
Source: Presentation by Gina Karina (2014), Low Carbon Development: Voices from the Cities

REDD+ and Community-Based Forest Management

[Chair] Mr. Pudyatmoko Satyawan, Univercity of Gadjah Mada, Indonesia

[Rapporteur] Ms. Shintia Dian Arwida, Center for International and Forestry Research (CIFOR), Indonesia

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Mr. Direktur Nurhadi, Sustainable Nature Conservation of Indonesia (KAIL), Indonesia

Mr. Kirtiman Sherchan, Fauna & Flora International, Cambodia

Dr. Tatang Tiryana, IPB, Indonesia

Mr. Ahmad Kusworo, Faith Freedom International (FFI), Indonesia

What progress is being made currently in REDD+ and community-based forest management?

How can community-based forest management be included in (national and subnational) government agendas?

How can accuracy be ensured when the local community is involved in carbon stock monitoring?

REDD+ and community-based forest management (CBFM) strongly embrace the uniqueness of local context and potential, from national parks to coastal mangroves. It is important to create steady income to finance conservation areas. This can be achieved by diversifying the fund raising (including carbon trading and CSR [corporate social responsibility] funds), strategically spreading the cost to several years covered by the fund, or exploring potential market and post-harvest technology to add value for NTFP (Non Timber Forest Products) which were previously undervalued. Carbon trading can bring significant benefits for REDD+ and CBFM. However, the administrative requirements are complicated. The size of a REDD+ project should therefore be big enough to compensate for the effort. CBFM is important for REDD+ development particularly because it can secure tenure or the right to access the forest for the local community. Moreover, there are some new innovations in improving community participation in REDD+ schemes, such as involving the local community in forest patrols using androids and GPS to track illegal logging or encroachment, carbon stock measurement, and MRV. Despite the potential of CBFM, however, there are some gaps that need to be worked out, such as providing capacity building for the local community and developing simple methods and indicators to ease adoption and implementation, thereby ensuring accuracy in measurements performed by the local community.

Concrete/practical steps for low carbon transformation

- Look into several success stories of CBFM at the field level. Government should consider legally acknowledging the role of the community in managing the forest and showing commitment to support the community and become an active player in REDD+, for instance by integrating CBFM in the subnational government development agenda.

- Government support for REDD+ and CBFM is needed, particularly in establishing a legal framework and simplifying the permit application process from the national to the subnational levels.

- A more active intermediary role needs to be promoted at the local level to connect scientists/researchers with the local community, so scientists can assist the local community, particularly in capacity building. local community, so scientist can assist local community particularly in capacity building.

REDD+ and Community-Based Forest Management
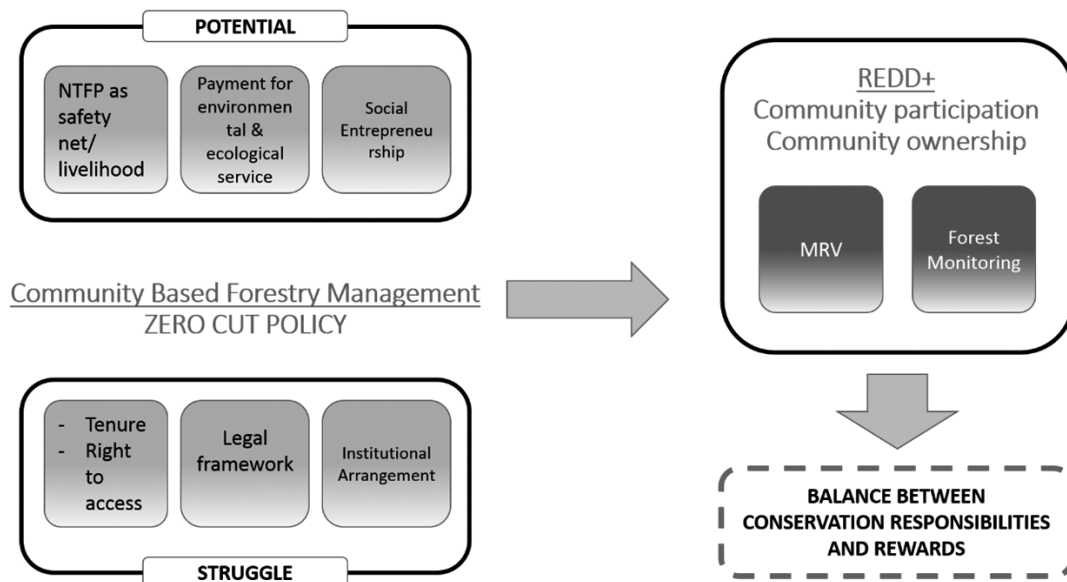
Source: Prepared by Shintia D. Arwida (2014), CIFOR

Low Carbon, Climate-Resilient Society: Integration of Mitigation and Adaptation Policies in Cities in Asia

[Chair] Mr. Isao Endo, IGES, Japan

[Rapporteur] Ms. Regine Evangelista, World Agroforestry Centre (ICRAF), Philippines

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Mrs. Ai Farida, STKIP PGRI West Sumatra, Indonesia

Ms. Erlinda C. Creencia, City Government of Santa Rosa, Laguna, Philippines

Dr. Damasa B.M. Macandog, UPLB, Philippines

Prof. Manabu Kanda, Tokyo Institute of Technology, Japan

How can climate change mitigation and adaptation policy be integrated to promote low-carbon and climate resilient societies in Asia?

According to the IPCC (2014), there are significant synergies between climate change mitigation and adaptation policies, especially in the field of water, energy, land-use, and ecosystem. Integrating both the policies increases the effectiveness and efficiency of measures to address climate change (Shimizu and Yoshino 2014).

Based on the experiences of the government sector, academia, and research institutions, there are several requirements or approaches for integrating mitigation and adaptation. First and foremost is the use of science-based information in the formulation and implementation of climate policy. Science plays an important role in devising integrated climate actions by assessing risks, developing solutions, and evaluating their efficacy. Adopting science-based approaches to policy development can also provide synergistic solutions to climate change problems. For example, ecosystem-based solutions such as watercourse management and afforestation/reforestation can contribute to both mitigation and adaptation objectives. Similarly, the integrated watershed management approach helps in addressing trans-boundary problems such as flooding and degradation of water quality by targeting the river basin as a whole, rather than communities and cities individually. This fosters inter-city/regional cooperation among watershed communities for a cohesive climate change programme.

Another key consideration for an integrated climate change policy is through climate-sensitive land-use planning. Again, scientific information such as hazards, impacts, and vulnerabilities serves as input for effectively integrating mitigation and adaptation in the land-use plan.

Finally, close communication with all stakeholders, including policymakers, the private sector, NGOs, and the local community should be established and maintained by engaging them from the early planning stages and throughout the policy development and implementation. This includes consideration of the initiatives and opportunities at the community level, and taking advantage of the local knowledge on integrated mitigation and adaptation.

Concrete/practical steps for low carbon transformation:

- Close cooperation between the scientific community and policymakers from all stages of policy development to implementation can ensure that co-benefits from mitigation and adaptation are maximised.

- The very nature of climate change impacts transcends political and sectoral boundaries. Adopting holistic approaches to management like the watershed approach, and ecosystem-based approaches can systematically address trans-boundary problems.

- There are significant opportunities from local knowledge and experience on integrated adaptation and mitigation. Governments must recognise community initiative and involvement, and increase their capacity to maximise their potential.

The Indonesian Adaptation Framework and the Different Level of Actions
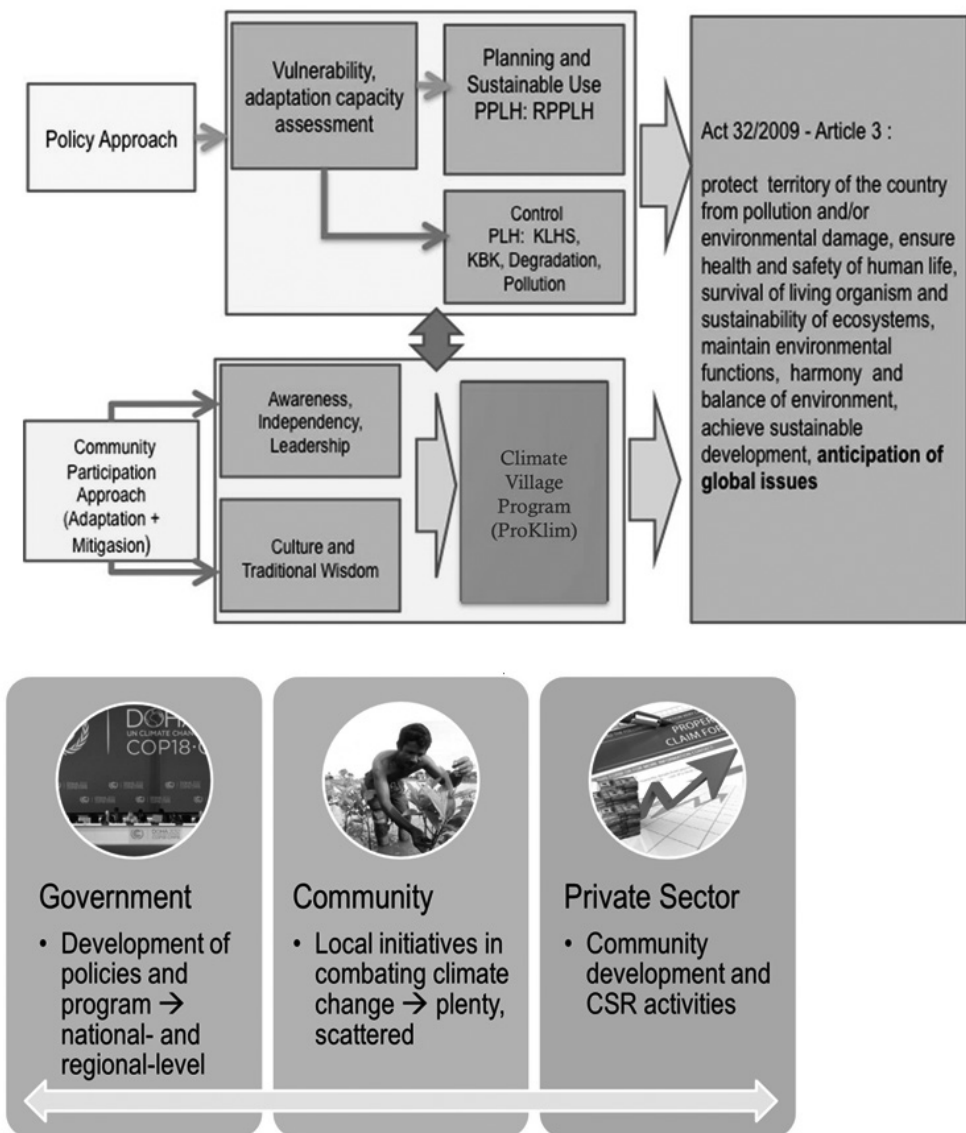
Source: Presentation by Yulia Suryanti (2014), Program Kampung Iklim (ProKlim): Local Action to Respond Climate Change

GHG Reduction Potential in Each Country and Role of Research Community

[Chair] Dr. Junichi Fujino, NIES, Japan
[Rapporteur] Mr. Teh Bor Tsong, UTM, Malaysia

Speakers:
> Dr. Retno G Dewi, ITB, Indonesia
> Dr. Toshihiko Masui, NIES, Japan

What is the GHG reduction potential in each country and the role of the research community?

Drawing from the cases of two different countries, Indonesia and Japan, the energy sector has been highlighted as an area offering GHG reduction potential to achieve the low carbon development scenario at the national level.

Indonesia is a fast-developing country with high population growth; rapid industrialisation and economic development consume large volumes of energy for industry and the transportation sector. In addition, Indonesia's energy is heavily dependent on fossil fuels. Therefore, the energy sector has contributed to a significant volume of GHG emissions. Introducing cutting edge technology (offering high energy efficiency and low emissions) and harnessing renewable energy (biomass, geothermal and hydro) are essential for Indonesia to cut GHG emissions in the energy sector.

On the other hand, Japan's developmental situation is different from that of Indonesia. Japan is a developed nation with low population growth, slow economic growth, and a society that is highly environmentally aware. Climate change policy in Japan was established back in the 1990s and energy efficient technologies are widely employed by the community. Room for improvement in Japan's case lies in the energy supply (power) sector. The application of advanced CCS (carbon capture and storage) technology in electricity generation is crucial.

Presently, the research communities in Asia are playing a significant role by providing scientific knowledge to support policymakers in the formulation of climate change policies. For instance, the application of robust assessment instruments (the AIM Asia-Pacific Integrated Model) is needed to account for GHG emissions as well as evaluate and design appropriate climate mitigation policy options for the respective countries.

Given the varying time scales resulting from changes of direction at the national level or shifts in social preferences (e.g., new mitigation targets or public acceptance of nuclear power plants), these instruments need to be redesigned in accordance with diverse contexts for better policymaking. In addition, to enhance the quality and validity of scientific evidence for policy design in a specific local context, it is necessary to incorporate local information. This shows that it is necessary for the research community to involve themselves with local communities (stakeholders from the public and private sectors as well as the general public) in formulating climate change policy.
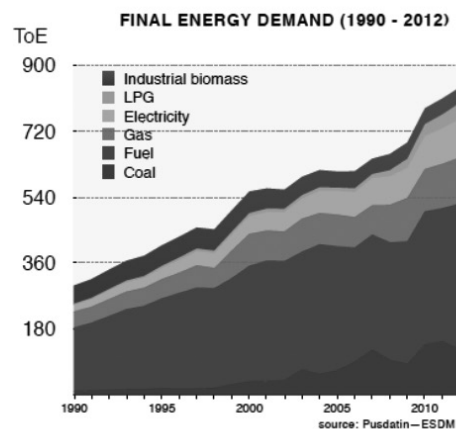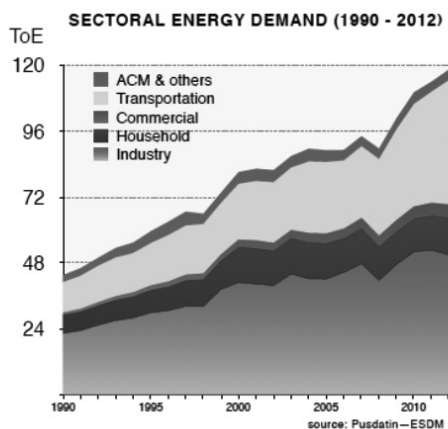
The new challenge emerging for the climate change research community—and in particular for those who engage on the local level at the moment—is evolving from policymaking to include policy implementation, bringing action down to ground level.

Concrete /practical steps for low carbon transformation

- The energy sector is one of the key potential areas for GHG emission reduction in developing and developed countries. Promotion of highly energy efficient technologies and discouragement of fossil fuel use are important measures to mitigate GHG emissions in the energy sector.

- The research community has to work closely with local communities for better understanding to provide more appropriate and effective scientific evidence to assist policymakers in designing climate policies.

- Recent trends indicate that the paradigm for research areas in the climate change field is now evolving from policymaking to policy implementation. The research community has to prepare by equipping itself with new knowledge to face the new challenge.

Source: Presentation by Retno G Dewi, Iwan Hendrawan, Bintang Yuwono and Rias Parinderati (2014), Low Carbon Development Path of Energy Sector and Role of Research Community

Remote Sensing and Sustainable Forestry Management

[Chair] Prof. Rizaldi Boer, IPB, Indonesia

[Rapporteur] Ms. Fitra Aidiella Dachlan, Individual Consultant, Indonesia

Speakers:

Dr. Tatsuya Yokota, NIES, Japan

Dr. Haruni Krisnawati, Ministry of Environment and Forestry, Indonesia

Dr. Makoto Ooba, NIES, Japan

Dr. Muhammad Ardiansyah, ITB, Indonesia

Dr. Tomoko Hasegawa, NIES, Japan

How does remote sensing technology help with monitoring forest and land cover?

Remote sensing technology has various applications in relation to sustainable forest management, GHG emissions reduction and the use of modelling in developing mitigation programmes. In land cover and land-use change, remote sensing provides the most reliable data source for accurately and objectively estimating change in forest over a large area, particularly in remote, difficult to access areas. Meanwhile, modelling is useful for creating different scenarios from both emissions reduction and socioeconomic perspectives.

The Greenhouse Gases Observing Satellite (GOSAT), launched in 2009, is a joint effort of the Ministry of the Environment, Japan (MoEJ), NIES and the Japan Aerospace Exploration Agency (JAXA). It enables GHG emissions and absorption to be estimated on both a global and a regional level to predict future climate change and assess its impact.

Although GOSAT operates consistently and with high accuracy in areas of clear sky, it works less effectively in cloud-covered areas. It requires on-ground-based observational data which are not widely available. Further technology development and research are therefore required in the future to continue improving the effectiveness of GOSAT operation.

In the land-use sector, the Indonesian National Carbon Accounting System (INCAS) is a systematic approach to improve MRV for forest management. It enables detailed planning for rehabilitation and reforestation efforts. However, some improvements are required for wide adoption of this system across the country.

The combined method employing AIM/CGE and an AFOLU model showcased a new climate change mitigation assessment developed by NIES and Kyoto University. The coupling model enables assessment of the impact of implementing mitigation measures on emission reduction, as well as indicating the implications of economic impacts in terms of welfare and GDP loss, for example. The model is able to perform comprehensive mitigation assessment in the contexts of both emission reduction and socioeconomic indicators.

In Japan, plant-based forestry will promote the use of renewable energy and will improve forest conservation. Research on conversion from plantation to wood biomass production took place in Japan's Asahi and Inabu regions. Researchers developed a forest ecosystem model, a forestry cost calculation and an ecological-footprint-like index, with the aim of creating a long term simulation to provide a model for different scenarios of forest management and impacts. However, some questions also arose about the sustainability of supplying wood without disturbing the forest ecosystem and the high cost of forest management and biomass production, while an integrated assessment is required for production and usage of domestic wood biomass.

Concrete /practical steps for low carbon transformation

- The use of various different satellites for remote sensing has caused inconsistencies in the results of image analysis and the use of terminology and categorisation, as well as discrepancies among the various products used. It will require development of a comprehensive and reliable operational monitoring concept for forest and land cover change needs, involving harmonisation of data such as spectral, spatial and temporal fitting and integration of a single mapping approach. It also requires a data use policy for existing and planned multi-spectral satellite systems and development of a multi-sensor.

- New approaches are urgently needed to capture regional variations in CO2 concentration and to bridge a major gap between field and satellite observations. These efforts to observe GHG concentrations and to analyse the causes of their variations at some locations are currently in progress, though still limited.
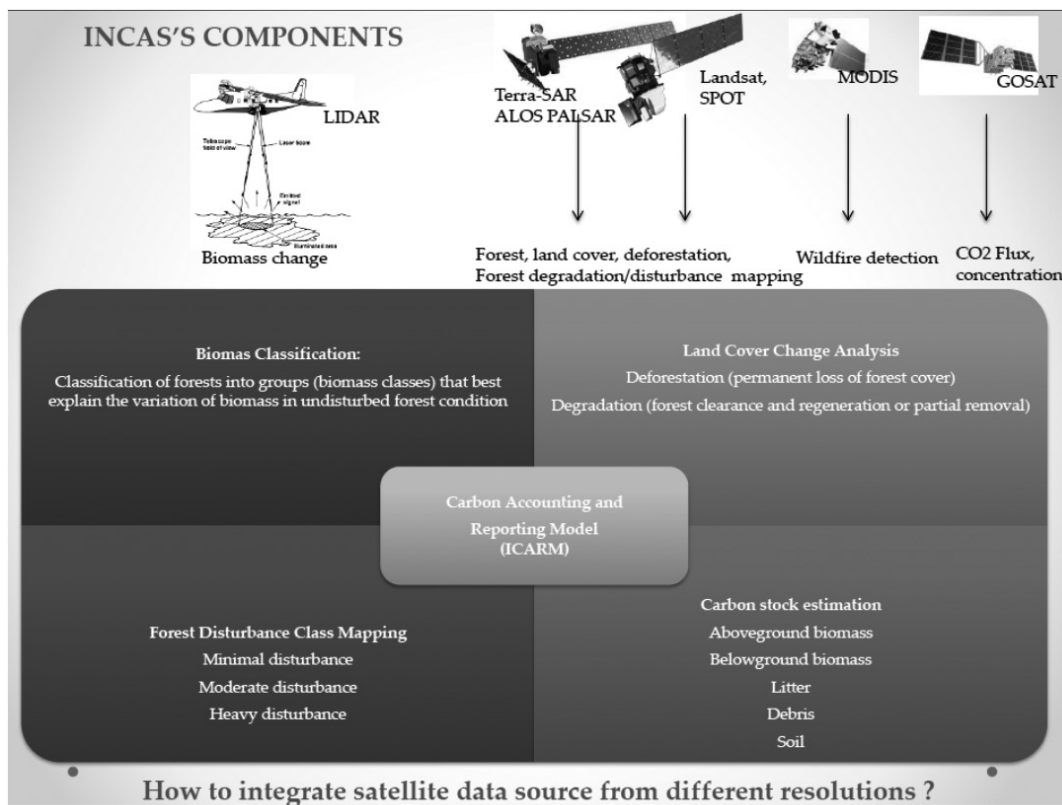
Source: Presentation by Muhammad Ardiansyah (2014), Forest and Land Cover Monitoring by Remote Sensing Data Analysis

Wrap-up Session

[Chair] Dr. Mikiko Kainuma, IGES/NIES, Japan
[Rapporteur] Mr. Mohamad Ridwan, CER Indonesia, Indonesia

Speakers:
　　All Chairs

Is Asia ready to reduce global emissions?

Scientists around the world have agreed to limit the increase in global average temperature to less than 2 degrees. The questions are how the countries in the world collaborate with each other and help each other to achieve these targets, and what models are used to assess mitigation options.

Asia currently has the Asia-Pacific Integrated Model (AIM). AIM is an integrated assessment model to assess options for mitigation to reduce GHG emissions and impact and for adaptation to avoid severe climate change damage. Various types of models have been developed since 1990, and nowadays the research field has been extended to include research on sustainable development by Asian researchers.

Research communities play an important role in providing the scientific basis to support mitigation policy formulation. Competent research scientists should be independent and neutral, and their scientific findings should not be biased towards any party (whether a governmental, private sector or personal interest). Various universities in Asia have undertaken a lot of research related to issues of climate change, generating a variety of approaches to low carbon development.

On the other hand, in many countries in Asia, local communities already have an awareness of climate change issues, but they explain it in a different way. At some sites, communities around forests can measure carbon stocks with high accuracy and have been able to build a group of people concerned about the issue of climate change.

The challenge facing REDD+ now is to work with communities located around forests to tackle the issue of climate change. However, REDD+ and other carbon trading mechanisms are very complex and require a large investment. They are only suitable for large-scale projects and are not suitable for small scale projects. Therefore, creative approaches are required to ensure that small-scale emission reduction projects remain viable.

Although the scientific and practical methods used still require improvement, in principle, the public and researchers in Asia already have the necessary capacity and Asian researchers already have a research network that supports emission reduction policy. In addition, Asia has the technological capabilities and financial institutions to facilitate low carbon development. With the ability of its researchers and policymakers and the support of its communities, Asia has considerable potential to contribute to global climate stability and ensure a temperature rise of less than 2 degrees. With the cooperation of researchers, policymakers and the public, Asia is ready to make the required contribution to global climate stabilisation.

Concrete /practical steps for low carbon transformation

- Developing countries require international and regional cooperation in order to increase their contribution to the reduction of global emissions.

- There needs to be international and regional cooperation between researchers and universities in relation to climate change mitigation action plans.

- There needs to be active cooperation between governments and international and national research institutions, as well as inviting the private sector and the community to be active in climate change issues.
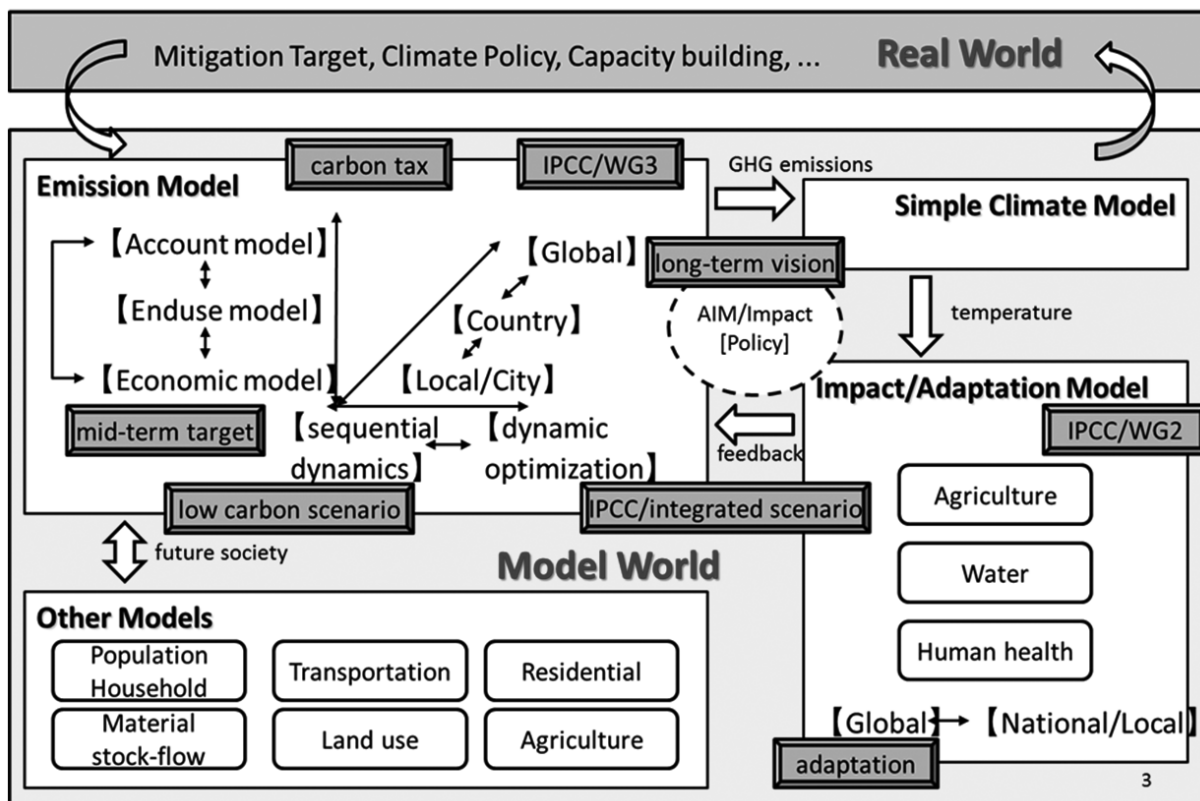
Source: Presentation by Toshihiko Masui (2014), Previous GHG mitigation options in Japan and discussion toward 2 degree C target

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This Synthesis Report was developed with the aim of highlighting cross-cutting conclusions emerging through the panel discussions held during the Third Annual Meeting of LoCARNet, held in Bogor, Indonesia on 24-26 November 2014.

The objectives of the meeting were: to exchange up-to-date scientific knowledge on common topics for research on LC 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; to extract recommendations from research communities in this region; and to address 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:

- Promoting an Integrated Knowledge-Base System for Scientific Low Carbon Development Policymaking in Asia
- Grand Regional Research Strategies
- Local Research Initiatives for Supporting Strategies
- Carbon Monitoring System Innovation, toward a Low Carbon Campus, City and Region
- Relevant Synthesis of Low Carbon Initiatives in Asia
- New Co-Financing Model of Research Partnership in the Asia-Pacific
- Low Carbon and Resilient Cities – Showcasing Concrete Actions and Good Practices
- REDD+ and Community-Based Forest Management
- Low Carbon, Climate-Resilient Society: Integration of Mitigation and Adaptation Policies in Cities in Asia
- GHG Reduction Potential in Each Country and Role of Research Community
- Remote Sensing and Sustainable Forestry Management

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I also appreciate to the Universiti Teknologi Malaysia to host next LoCARNet Annual Meeting. We are looking forwards to meeting researchers, policymakers and other stakeholders in the Meeting in Iskandar, Malaysia.

Shuzo Nishioka

Secretary General
LoCARNet

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