Low Carbon Asia Research Network

LoCARNet

Stabilising Climate through Low Carbon Actions in Asia: Road to COP21 and Beyond

Synthesis Report of Fourth Annual Meeting

11 – 13 October 2015
Johor Bahru, Malaysia

Host
Universiti Teknologi Malaysia (UTM)
Iskandar Regional Development Authority (IRDA)
Institute for Global Environmental Strategies (IGES)
National Institute for Environmental Studies, Japan (NIES)
Ministry of the Environment, Japan (MOEJ)

UTM Universiti Teknologi Malaysia
ISKANDAR Regional Development Authority
IGES
NIES Japan
Ministry of the Environment

LoCARNet Iskandar Malaysia Declaration

Stabilising climate through low carbon actions in Asia - Road to COP 21 and Beyond

Climate change *is* taking place and its impacts are increasingly felt; tackling climate change is *not* an option and *now* is the time! Everyone on the planet needs to contribute. Being a continent that is called home by over half the world's population, fast urbanising, and experiencing the most rapid economic growth, Asia's positive actions towards stabilising the climate are especially indispensable. Asia must be *included* in any global climate change mitigation and adaptation actions to be meaningful towards the year 2020 and beyond.

We, the participants of the *International Conference on Low Carbon Asia* and the *LoCARNet 4th Annual Meeting* in Iskandar Malaysia, Johor, have thus agreed to produce the Iskandar Malaysia Declaration as stated below:

1. **Asian wisdom** for sustainable development potentially underpins the success of any international and regional climate change mitigation and adaptation efforts. Asian wisdom's holistic and extra-long term world view; espousal of harmony and balance; and emphasis on "mottainai" (frugality), "gotong-royong" (collective actions), sufficiency economy philosophy (SEP) and mutual benefits for all offer effective frameworks for international consensus, advancement and operationalisation of climate stabilisation goals and actions.
2. Transformation of Asian economies into sustainable low carbon economies via embracing **green growth** needs to be accelerated; new opportunities and possibilities for economic growth in Asia arising out of climate change mitigation and adaptation actions need to be emphasised.
3. People are at the centre of any consequential transition into a low carbon society (LCS) and economy, and Asians are a highly diverse people; **inclusive** and enabling climate policies that empower the people to determine and take positive climate stabilisation actions in accordance with their economic, socio-cultural and technological capacities are vital.
4. Asian nations will continue to protect, restore, and promote the sustainable use of terrestrial ecosystems, including **cities, human settlements, and natural environments** (sustainable management of forests through REDD+, combating desertification; halting and reversing land degradation; halting biodiversity loss), as well as ensure sustainable use of the oceans, seas, and marine resources.
5. Bringing 'Science-into-Action' (S2A) is an indispensable dimension of effective climate policies and **low carbon governance** towards ensuring that climate policies are not only formulated based on good scientific evidence but are also implementable. Asia will continue to focus efforts on strengthening well established proactive research networks and communities of researchers, sub-national as well as national policymakers, and implementation agencies to spearhead low carbon transition into a sustainable LCS.
6. Global climate stabilisation goals cannot possibly be achieved without Asian nations' concrete contributions, and Asian nations need variable forms and levels of support and aid from developed economies to transform into an LCS. Global and regional **smart partnerships** in the form of North-South and South-South-North cooperation in capacity building, mutual learning, technology transfer, technical assistance and financial aid will be key success factors of the transition towards resilient LCS that is compatible with an increase in average surface temperatures limited to 1.5° to 2°C compared to the pre-industrial level.

The world can no longer afford any delay in taking real, positive actions to mitigate and adapt to global climate change. Asia is ready to contribute.

Asia positively anticipates desirable outcomes of the Paris Climate Change Agreement that will put in place an *inclusive and enabling* framework for actions which recognises *differentiated capacities and potential* of, and thus is supportive to, all nations in their quest to contribute realistically to mitigating and adapting to global climate change.

13 October 2015
Low Carbon Asia Research Network (LoCARNet)[1]

[1] http://lcs-rnet.org/about_locarnet/

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Please refer to the LoCARNet website at: http://lcs-rnet.org/locarnet_meetings/2015/09/1371

Preface

The Low Carbon Asia Research Network (LoCARNet) was launched as a knowledge-sharing network of research communities and other stakeholders that facilitate 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, Viet Nam and other Asian countries, and has held workshops to support collaboration among researchers. As a result of these activities, the need to share knowledge on low carbon issues within the region in Asia has come to the forefront.

The Fourth Annual Meeting of the LoCARNet was held from 11-13 October 2015 in Johor Bahru, Malaysia, co-organised by the Universiti Teknologi Malaysia (UTM), Iskandar Regional Development Authority (IRDA), the National Institute for Environmental Studies (NIES), the Institute for Global Environmental Strategies (IGES), and the Ministry of the Environment, Japan (MOEJ).

This time, at the Fourth Annual Meeting, we discussed our proposal on how research communities in Asia could contribute to Asia's next step, in terms of the upcoming COP 21 in Paris and beyond. Therefore, the main theme of this meeting was "Positive action from Asia - towards COP 21 and beyond."

In keynote presentations during the annual meeting key, global, regional and local figures made speeches based on their insightful views on the future direction of climate policies, including the road to Paris, Sustainable Development Goals (SDGs), climate finance, and Intended Nationally Determined Contributions (INDCs). Industry and business representatives also presented their views.

It is estimated that 70% of total world population will live in cities in the very near future, and it will be the biggest consumer of energy and resources. Cities are one of the most remarkable stakeholders in terms of low carbon societies. The Universiti Teknologi Malaysia has been promoting urban research in Asia as a "Low Carbon Asia Research Centre." In this meeting, we had six breakout sessions on specific themes in terms of policy agendas that cities have to tackle, such as the resilience to climate change, sustainable consumption and production (SCP), and concrete actions by multi-stakeholders. Also, topics on international cooperation including the Joint Crediting Mechanism (JCM), finance mobilising participations from industry, technology transfer, and infrastructure investment for low carbon cities were discussed. The monitoring of policy impacts was highlighted as well.

Taking this opportunity, we would like to express our profound gratitude to all speakers and participants from academia, governments, civil society, and international organisations for their contributions to the meeting. We would like to add our sincere appreciation to the chairs and rapporteurs of the meeting, the steering group of LoCARNet, and the organising committee composed of UTM, IRDA, and the LoCARNet Secretariat for their support to bring this dialogue to fruition. Also, we are thankful to the Japanese Ministry of the Environment for providing us with excellent opportunities to get together. Thank you very much indeed.

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

Prof. Ho Chin Siong
Universiti Teknologi Malaysia (UTM), Malaysia

Prof. Rizaldi Boer
Institut Pertanian Bogor (IPB), Indonesia

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**Country's Special Correspondent of LCS-RNet/LoCARNet in FY2015*

Edited by Mikiko Kainuma (IGES) with the help of Ho Chin Siong (UTM), Rizaldi Boer (IPB), Dr. Ucok Siagian (ITB), Bundit Limmeechokchai (SIIT-Thamasat), Dr. Toshihiko Masui (NIES), Dr. Nguyen Tung Lam (ISPONRE), Prof. Priyadarshi R. Shukla (IIMA), Dr. Sirintornthep Towprayoon (JGSEE), Shuzo Nishioka (IGES), Tomoko Ishikawa (IGES), Takako Ono (IGES), and Michiko Inoue (IGES).

Key Findings of the LoCARNet 4th Annual Meeting

Towards Paris COP 21 and Beyond

Considering the current situation, it is essential to adopt a meaningful post-2020 climate regime at COP 21 to the UNFCCC in Paris. Intended nationally determined contributions (INDCs) submitted from approximately 150 countries, including countries in Asia, are an important and positive step towards the success of COP 21.

However, the aggregated effects of INDCs are not sufficient to meet the 2°C goal.

The Asia-Pacific Integrated Model (AIM) shows that an achievement of the 2°C target will depend on the revision of the INDCs and mitigation measures after 2030, which means that mitigation measures in Asia, where the GHG emissions are expected to increase, become more important.

In the INDCs, a full-fledged approach for the development of "science-based" policies, such as setting targets, ensuring their implementation, and supplementing in a quantitative manner, will be indispensable. As the major point of policies after the setting of quantitative GHG emissions reduction targets, a credible measuring, reporting, and verification (MRV) system becomes increasingly important.

Bridging the Climate Change and SDGs

The United Nations adapted the 17 sustainable development goals (SDGs) and 169 targets that seek the three dimensions of sustainable development: the economic, social, and environmental. The most significant meaning of the adaption is to deliver a clear message of common recognition of synergistic integration of all three dimensions.

It is also characteristic that the SDGs were formulated with a new approach, where we need to identify future paths by taking into account various factors such as economic activities, lifestyles, and environmental conditions; that what an integrated assessment tool called AIM has been aiming for—to assess policy options to realise sustainable development.

The analysis has shown that technology and institutions are key to addressing environmental and developmental trade-offs, that quantitative assessment can provide information and insights for making innovative choices that deliver co-benefits, and that integrated assessment tools link science and policy, and improve the effectiveness of policymaking.

How to fill the gap is a challenge and the policies to meet the SDGs can enhance the possibility of meeting the climate goal at the same time.

Finance and Technologies Beyond

Adequate and sustainable financing is necessary to bridge the immense financial infrastructure gap to achieve low carbon development in Asia. Domestic funding has been an important source of this financing.

Integrated and inclusive development is vital in realising a low carbon society at scale. Meeting the interest of investors in green investment can be incorporated in such development.

Designing a political and economic environment that stimulates public and private investments can contribute to the realisation of a low carbon society. Substantial changes to governance, economic policies, and society could help in achieving low carbon development.

Roles and Actions of all Actors

In order to fill the gap to meet the 2°C goal, local governments and businesses have an increasingly important role to play. Recognising the measures and actions taken by such non-state actors is expected to be one of the important outcomes of the Paris COP 21.

Because cities are composed of stakeholders who share the same environment, city planners and citizens are important actors to respond to low carbon and adapt to climate change. Knowledge sharing amongst cities is also effective.

The role of the private sector is significant. Close collaboration and engagement between the private sector and other stakeholders should be strengthened.

From Theory to Reality and Implementation

> Education, policy, and economic initiatives involving all parties are important from science to action in order to achieve smart energy and better management of household waste.

> The effective implementation of low-carbon measures at the city level by multidisciplinary professional input, together with synergy between researchers and policymakers are indispensable.

> Green technology has contributed significantly to the economic development and reduction of carbon emissions. However, public awareness about green products, the availability of infrastructure and financial sources to support the green technology, are still challenges for its widespread implementation.

> Pathways to decarbonisation should include not only plans at the national level, but concrete actions at the ministerial and public levels as well.

Importance of Capacity Development in Asia

> Asia has an important role to play in the global low carbon transition, given that it will be a significant emitter in the future and also is highly vulnerable to climate change.

> It is necessary to enhance the capacity of researchers in order to reflect the latest scientific knowledge on policymaking appropriately. Still, in some parts of Asia, scientific policymaking is dependent on foreign experts, which results in the lack of accumulated knowledge.

> Pathways towards low carbon societies will determine the future of each country. Therefore, planning and implementation should be made by the people of the country. In this regard, the building of a research community to support the transformation to a low carbon society in each country is indispensable, and cooperation from the developed countries is needed, such as transferring Japan's experiences to developing countries.

> Local authorities tend to lack baseline data and capacities to design "bankable" adaptation projects to secure funds.

> The promotion of a strong knowledge-based economy in Asia should be the focus. This implies improving the education system and more effective investment in research and development (R&D). Specifically, the Asian countries other than Japan, Korea, and Singapore need to strive to achieve the breakthroughs in solar energy, carbon capture, and electric and hybrid vehicles. It is suggested that Asian countries build a centre of excellence that brings together Asian wisdom and unique competitiveness.

To Make the Upcoming "Decade for Accelerating Climate Actions" a Clue to the Solution of Global Challenges

> The upcoming decade is very important for mankind, and we have to turn the next ten years into a "decade for accelerating climate actions." It is vitally important to facilitate multi-layered participation amongst governments, businesses, local governments, citizens, and set up dialogues promoting mutual communication. We cannot stabilise the climate without dialogue based on international mutual trust.

Keynote Reports

French Government's Expectation for Asia and COP 21 and Beyond

[Rapporteurs]: Sam Kah Chiin, Universiti Teknologi Malaysia (UTM), Malaysia
Minal Pathak, CEPT University, India

[Speaker]:
Christophe Penot, French Ambassador to Malaysia

Disruption of the climate is a common and universal challenge and arriving at an agreement is the most urgent task faced by developed and developing countries alike.

There is a low degree of awareness among policymakers, media, and the public about climate disruption and raising environmental awareness is a serious challenge. Asian countries are experiencing the extreme consequences of climate change including flooding, deforestation, loss of biodiversity and regional haze. At the same time, Asia is expected to play a significant role in addressing these issues since half of the carbon emission is estimated to be produced in this region by 2030. Sustainable low carbon transitions will also offer substantial development dividends.

COP 21 offers a considerable opportunity to reclaim the climate deal and decide on a global agreement. All countries, therefore, realise that this opportunity should not be missed and set up a collective vision in order to reach an agreement at COP 21.

The goal, therefore, should be to build together.

1. A Paris Alliance—a universal, legally binding agreement on climate change to establish rules to meet the target of 1.5 to 2°C relative to the pre-industrial period.
2. Intended Nationally Determined Contributions (INDCs) representing each country should be delivered in order to demonstrate that all countries are moving in the same direction.
3. Climate finance is a decisive component. Efforts directed towards achieving the pledged $100 billion/year by developed nations will establish confidence and support to developing countries and the private sector and therefore, enable the transition to resilient, low carbon societies.
4. Local and regional initiatives are developed by all stakeholders to implement the agreement on the ground, including cities, regions, companies, civil society, as well as governments. Good practices are emerging in several countries. For instance, the efforts like Iskandar Johor in urban development and sustainable cities as well as the efforts of the Ministry of Energy, Green Technology and Water (KeTTHA) in planning, formulating policies and programmes in green technology, will help to deliver future low carbon transitions. These will help demonstrate that low carbon actions can be profitable.

Key Findings of the Session

- Raising environmental awareness is a considerable challenge.
- COP 21 is an important milestone in establishing regulatory and financing requirements to achieve the desirable climate targets.
- Asia has an important role to play in the global low carbon transition, given that it will be a significant emitter in the future and also is highly vulnerable from climate change.

- Cooperation among governments, businesses, and scientists is vital for the successful implementation of these pledges.

Concrete/Practical Steps for Low Carbon Transformation

(1) Develop a universal, legally binding agreement to reach global temperature stabilisation at 1.5 to 2°C.

(2) Ensure that Intended Nationally Determined Contributions (INDCs) representing each country are delivered.

(3) Develop innovative financing mechanisms to reduce risks and facilitate the transition for developing countries.

(4) Develop local and regional initiatives that support the Intended Nationally Determined Contributions (INDCs) with strong and enforceable requirements for measuring, reporting and verification (MRV).

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National Green Technology Master Plan

[Rapporteurs]: Sam Kah Chiin, UTM, Malaysia
Vu Duc Canh, University of Tokyo, Japan

[Speaker]:
Paul Wong, Ministry of Energy, Green Technology, and Water, Malaysia

Currently, the Malaysian government has changed its policies towards the carbon emission reduction based on the green technology master plan (GTMP), which is the national strategic plan and implementation framework towards sustainable development and a high income nation by 2020. It has also supported the implementation of the five key action plans (namely, the energy, transport, building, waste, and water sectors) and acknowledged the implementation of green catalyst projects to the target of 40% carbon emission reduction. In 2013, Malaysia successfully reduced the carbon emission intensity by more than 33% vis-à-vis its pledged 40% carbon intensity reduction by 2020. To meet the target, the national development strategies have identified green technology policies as crucial drivers towards a green economy, which balances between economic growth and environmental sustainability.

The innovatory implementation has achieved a green revenue contribution of MYR 7.9 billion (0.8% of the national GDP), around 61,280 green jobs, and the reduction of carbon emission of 11.6 million tCO_2 in the energy and building sectors.

However, the policy implementation was confronted with multiple challenges including market readiness, a lack of understanding on green technology (GT), a lack of infrastructure to support GT, a lack of innovative financing on GT projects, a lack of GT products in the local market, and a lack of local expertise throughout the value chain.

Finally, it is believed that the green master plan might make a significant contribution to the economic growth, an estimated MYR 22.4 billion (1.2% of national GDP) by 2020, and improving the quality of life to the future generations of Malaysia.

Key Findings of the Session

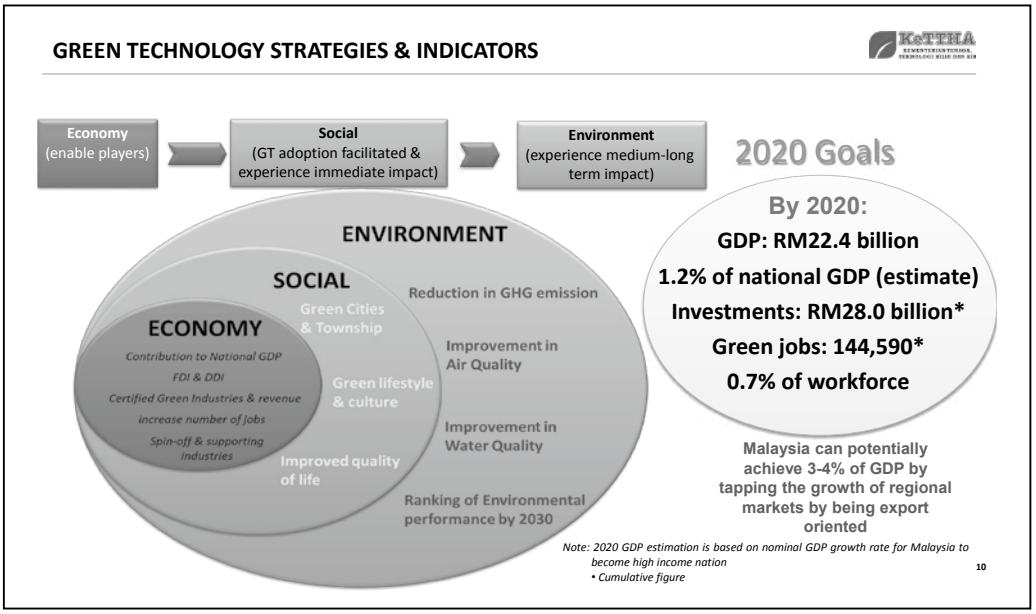
- The Green Technology Master Plan catalyses green growth towards sustainable development and a high income nation by 2020 and positions Malaysia as a green technology hub by 2030.
- The National Green Technology Policy has emphasised three major components including the economy, social, and the environment to achieve the goal of green growth.
- Green technology has contributed significantly to the economic development and reduction of carbon emission. However, public awareness about green products, availability of infrastructure, and financial sources to support the green technology, are still challenges for its widespread implementation.

Concrete/Practical Steps for Low Carbon Transformation

(1) The institutional framework, national policy, and regulations play important roles in the coordination, incentive, and promotion of the successful implementation of green technology projects.

(2) Green technology projects should be implemented as a coalition between the government and the private sector.

(3) Promotion of public awareness of a green lifestyle, green products with green labels and certification, is crucial.



Source: Presentation by Paul Wong, Ministry of Energy, Green Technology, and Water, Malaysia.

Bridging the Climate Change and the Sustainable Development Goals (SDGs)

[Rapporteurs]: Sam Kah Chiin, UTM, Malaysia
Oulavanh Sinsamphanh, National University of Laos, Lao PDR

[Speaker]:
Mikiko Kainuma, IGES, Japan

Climate action is one of the 17 United Nations (UN) sustainable development goals. This issue has been studied at the National Institute for Environmental Studies (NIES) collaborating with Kyoto University and several institutes in Asia under the concept of "sustainable low carbon societies (LCS)". Multiple challenges towards low carbon societies in the sectors of economic development, energy, material, lifestyle, institution, and transportation, are faced by Asia currently. The Asia-Pacific Integrated Model (AIM) has been utilised to quantify the pathways to achieve leapfrog development in Asia with a target of 50% reduction in global GHG emissions by 2050. The idea of "back-casting,"—the drawing up of a target image and investigating measures needed for achieving the target, is being used in the study. Bottom-up and top-down models are used to analyse different points of view; the former focuses on technologies used for achieving LCS and the latter estimates the economic impacts. AIM tools can be used to tackle various country-specific environmental and developmental problems, for example the Beijing city air management as well as the sanitation developments in Asia-Pacific countries.

Targets proposed in Intended Nationally Determined Contributions (INDCs) are significant and indispensable to develop a low carbon society. In 2030, INDCs will be able to lead the decrease of the greenhouse gas emissions through energy saving, and the switch from fossil fuels to non-fossil energy. However, the current INDCs are not enough to achieve the 2°C target. For this, it is very important to revise the INDC from time to time. Mitigation of climate change can also reduce other pollutants and improve the standard of living. To consider the benefits of climate change mitigation can help to implement INDCs and enhance their targets.

Key Findings of the Session

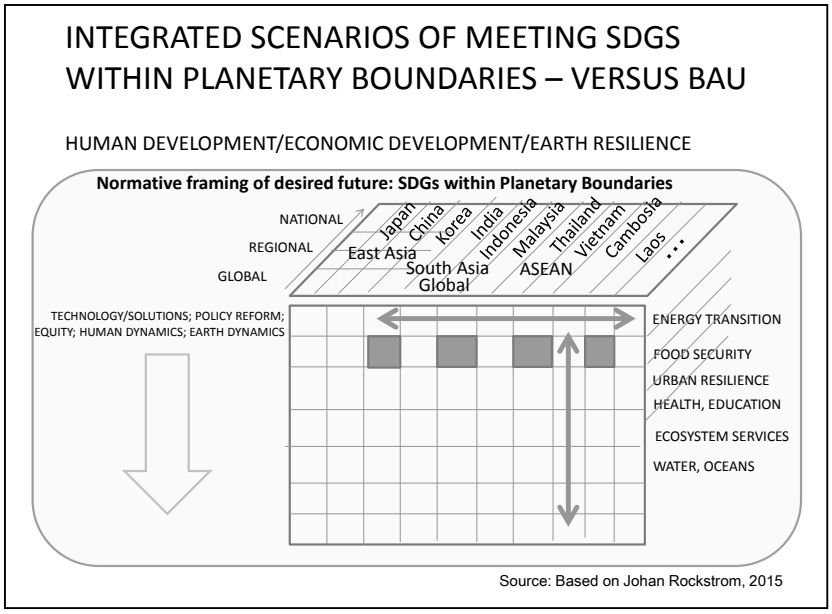
- AIM tools can assess policies to achieve SDGs & national targets, link science and policy, and assist in improving the effectiveness of policymaking.
- Quantitative assessment can provide information and insights for making innovative choices for delivering co-benefits.
- Technology and institutional innovations are key to extending the frontier of environment and development.
- There is a gap between the 2°C target and the INDCs. How to fill the gap is a challenge, and the policies to meet SDGs can enhance the possibility of meeting the climate goals.
- There are great opportunities in Asia to achieve sustainable development by leap-frogging.

Concrete/Practical Steps for Low Carbon Transformation

(1) The research team has applied the Asia-Pacific Integrated Model (AIM) and proposed policy packages as well as estimated GHG reduction potentials in several countries in Asia. This research will continue to contribute to clarifying the importance of climate change mitigation.

(2) INDC is assessed by AIM to show its significance and also the gap to achieve the 2°C target. The enhancement of INDCs is important to narrow the gap.

(3) Showing the benefits of mitigation of climate change quantitatively can contribute to the achievement of other SDGs as well.



Source: Presentation by Mikiko Kainuma, IGES, Japan

Pursuing Green Growth for Sustainability and Resilience in Malaysian Cities

[Rapporteurs]: Hoo Poh Ying, UTM, Malaysia
Teh Bor Tsong, UTM, Malaysia

[Speaker]:
Ho Chin Siong, UTM, Malaysia

Malaysia is one of the Asian countries committed to carbon mitigation and adaptation efforts. The Malaysian government believed that the promotion of green technology as a strategic approach, could decouple economic development and environment protection. As urban areas functioned as economic nodes and home to major populations, the governments recognise and emphasise low carbon and resilient development in cities.

Sustainable development has long been introduced in Malaysia. The National Environmental Policy was established in 1992. Today, the government is moving into something more comprehensive. Policy direction provided by the government is essential to every community in combating climate change. According to the green growth strategic thrust in the 11th Malaysia Plan (2016-2020), Malaysia is shifting away from the 'grow first and clean up later' development model towards one that is resilient, low carbon, resource efficient, and socially inclusive. Fundamental changes are required in every major dimension. It includes the way policy is determined, regulation of institutions, sharing of responsibilities, and how people appreciate the environment.

Climate change mitigation and adaption movements at the local level of Malaysia can be seen in Iskandar Malaysia and Putrajaya. The climate change plans of Iskandar Malaysia and Putrajaya were crafted by multidisciplinary professionals, policymakers, enterprises, and local communities. The strong collaboration and synergy among the different parties ensures that the climate change plan be relevant to

local context and effective implementation. Malaysian cities are moving towards a new dimension of sustainable development.

Key Findings of the Session

- Cities are the key focus areas for the implementation of climate change mitigation and adaptation.
- A good city level climate change plan is characterised by its suitability and feasibility to its respective context and capacity.
- Climate change is the new dimension of sustainable urban development.

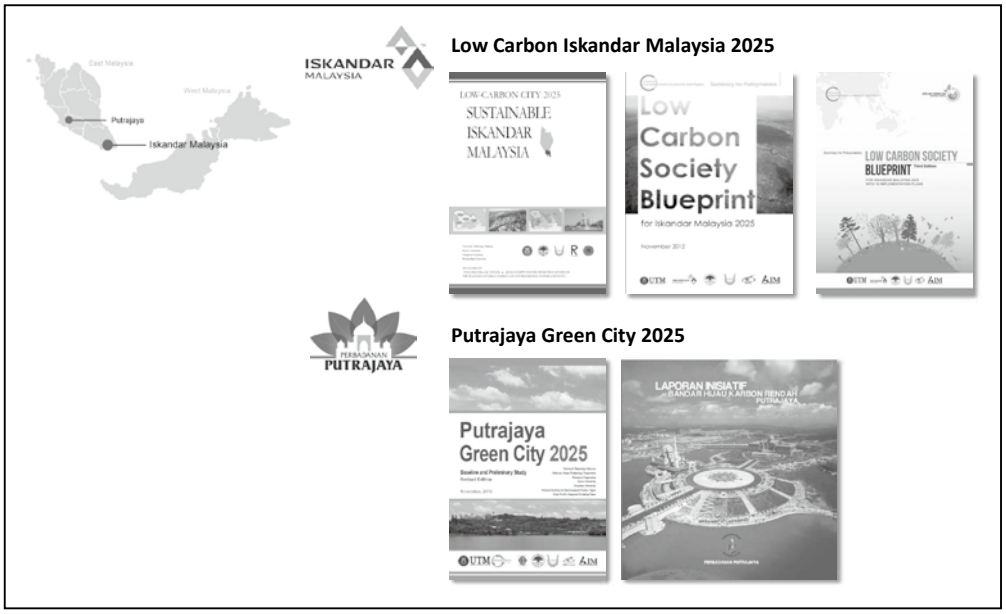
Concrete/Practical Steps for Low Carbon Transformation

(1) The development of a local level climate change plan can help cities reduce their carbon emissions and enhance their capacity on risk management.

(2) Consideration of the existing local policy direction, geographic setting, political-cultural, socio-economic, financial capacity, and human capital are essential for climate change plan crafting.

(3) Low carbon and resilient development initiatives can be strategically integrated with the existing development agenda to further promote urban sustainability.

Climate Change Plan of Malaysian Cities: Case of Iskandar Malaysia and Putrajaya



Source: Presentation by Ho Chin Siong, UTM, Malaysia

Climate Change: Key Findings of the IPCC Fifth Assessment Report

[Rapporteur]: Kristine Garcia-Gibe, TMP Systems, Philippines

[Speaker]:
Fredolin Tangang, Former IPCC WG1 Vice-Chair / Universiti Kebangsaan Malaysia (UKM), Malaysia

In 2013, the International Panel on Climate Change (IPCC) released its Fifth Assessment Report which has been a key source since then of succeeding climate change related publications. The IPCC has three working groups (WG): The Physical Science Basis (Working Group I), Climate Change Impacts, Adaptation and Vulnerability (Working Group II), and Mitigation of Climate Change (Working Group III).

Some of the major findings of WG 1 are as follows:

Warming of the climate system is unequivocal. Each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850. Over Southeast Asia, the increasing trend was found to be ~1.0^{o}C per century. For precipitation, the wet regions gets wetter and the dry regions get even drier since the second half of the 20th century. In addition, extreme weather and climate events became more frequent.

The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea levels have risen, and the concentrations of greenhouse gases have increased. The atmospheric concentrations of carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) have increased to levels unprecedented in at least the last 800,000 years. There was a 40% increase since the pre-industrial period. The oceans absorbed 30% of the emitted CO_2.

Human influence on the climate system is clear. Many disruptive economic human activities generate a large amount of emissions. Continued emissions of greenhouse gases will cause further warming and changes in all components of the climate system. The more disruptive the economic activities are, the more severe, pervasive, and irreversible impacts the society will have to face. This will lead to a more challenging transformation to a low carbon society.

Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions. With the increasing efforts and interests to mitigate climate change, society now has the means to limit it and build a more prosperous, sustainable future. This can be achieved through concerted efforts among various groups by promoting low carbon development and measures across all sectors.

The IPCC has been successful in understanding the global climate phenomenon, but there is still a lack of, or a gap in, understanding national and local situations. There is a need to address the critical lack of climate change studies in Southeast Asia.

Key Findings of the Session

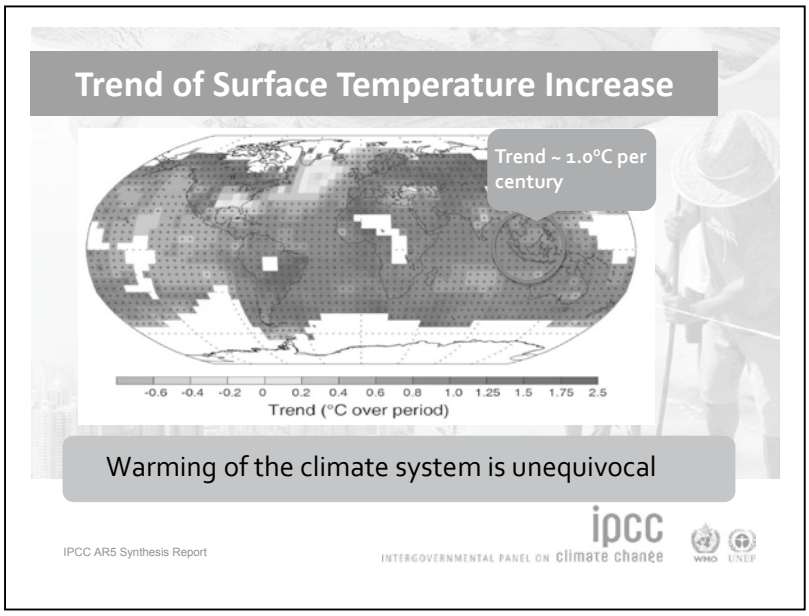
- Warming of the climate system is unequivocal. Southeast Asia, in particular, experienced an increasing trend of ~1.0^{o}C per century.
- Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions.
- Human influence on the climate system is clear. Continued emissions from human activities remains a challenge to the transformation to a low carbon society.
- There is a need to address the critical lack of climate change studies in Southeast Asia.

Concrete/Practical Steps for Low Carbon Transformation

(1) Concerted efforts among various groups and sectors are needed to achieve a low carbon development. This can be done through implementing various adaptation and mitigation strategies, particularly in the energy and building sectors.

(2) Implement more capacity building activities for scientists in Asia, particularly in downscaling climate change models.

(3) Use available low carbon technology to minimise or reduce greenhouse gas emissions.



Source: Presentation by Fredolin Tangang, Former IPCC WG1 Vice-Chair / UKM, Malaysia

Climate Mitigation: From Global to Regional and Local Levels

[Rapporteur]: Fan Yee Van, UTM, Malaysia

[Speaker]:
Mohd Yusoff Sulaiman, Malaysian Industry-Government Group for High Technology (MIGHT), Malaysia

Climate mitigation requires the involvement from global to regional and local levels to be successful. It needs the participation of every person and the roles of the private sector cannot be neglected in order to achieve this common goal. In Malaysia, various national strategies and initiatives have been planned to confront climate change.

The 11th Malaysian Plan focused on four areas including: strengthening the enabling environment for green growth; adopting the sustainable consumption and production concept; conserving natural resources for the present and future generations; as well as, strengthening the resilience against climate change and natural disasters with the aim to balance the growth of the economy and the environment, as shown in the diagram below.

MIGHT is an organisation under the Prime Minister's Department, Malaysia with the core purpose to

address the country's needs in response to the effects of globalisation and trade liberalisation on future economic growth through the accelerated use of high technology. In an effort to slow down or prevent the acceleration of climate change, MIGHT came out with six programmes of action. They encourage the use of new technologies and renewable energies, exchange scientific knowledge, change consumer behaviours at all levels, and management practices to reach climate mitigation. By implementing the National Waste Grid Program, one of the six programmes of action, the national recycling rate will be increased to 22% and the metric tons of carbon dioxide equivalent will reduced by 31.91%. The other programmes are: the Green Chemicals Program, Smart Communities Program, Global Cleantech Innovation Program, Sustainable Development Solution Network Program and the Eco-Home Program.

In conclusion, the most vital action in fighting climate change is to implement. Besides, a new business model and a more collaborative model that works on a win-win approach are needed.

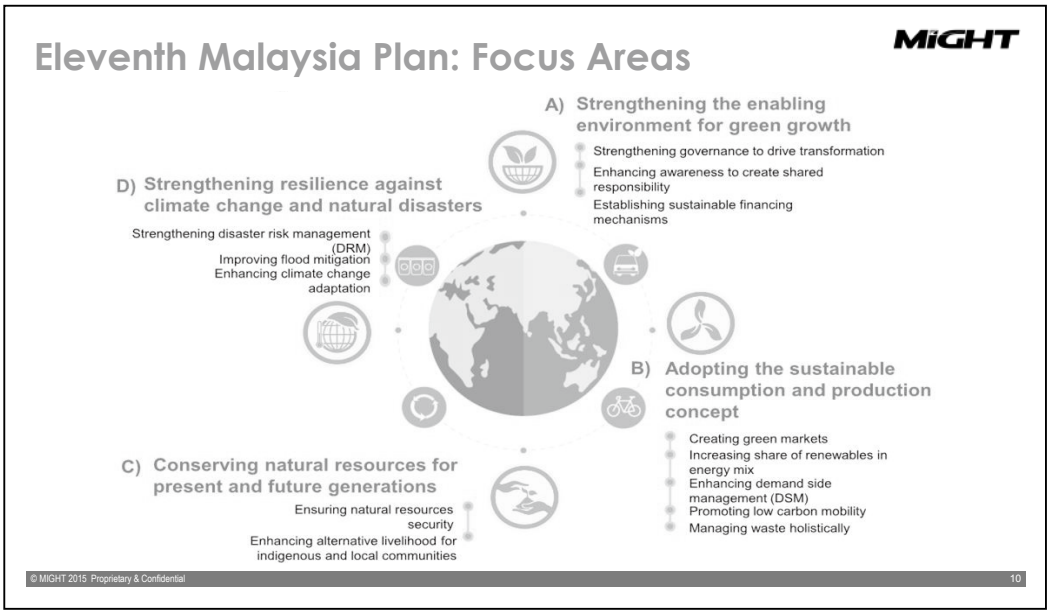
Key Findings of the Session

- The role of the private sector is significant. Close collaboration and engagement among the private sector with other stakeholders should be strengthened.
- Every action plan and policy must be implemented and enforced to be effectual.

Concrete/Practical Steps for Low Carbon Transformation

(1) By implementing the policies and action plan

(2) By introducing a win-win business model to attract the investors in green technologies



Source: Presentation by Yusoff Sulaiman, MIGHT, Malaysia

Finance and Resource Mobilisation for Low Carbon in Asia

[Rapporteur]: Linh Nguyen, GIZ

[Speaker]:
Bindu Lohani, Asian Institute of Technology (AIT) / IGES

Dr. Lohani started his speech by highlighting that one of the biggest challenges in the upcoming years is urbanisation and climate change. Cities have contributed as much as 80% of the global GDP, and thus the economic impact by climate change will take a heavy toll on these economic powerhouses. Half of these fast growing urban areas and the majority of climate-impacted cities are in Asia. Therefore, he stressed that the Asian cities will be the hot spot of these changes and particular attention should be paid to the second tier cities, or soon-to-be mega cities. These cities have significant potential to contribute to global carbon emission reduction goals. Further, he stated that the main challenges of today's cities include: how to make cities resilient and inclusive, such as the management of slums; how to make the investment committed to infrastructure development more climate sensitive; how to deal with limited available data and lack of understanding of investment needs on the ground. Another challenge he mentioned is that due to sectoral connectivity, one problem in one sector, for example flooding, can lead to an electricity shortage and/or gridlock of the transportation system. Thus, he underlined the biggest challenge for decision makers including policymakers, funders, and developers, is to learn to make sound decisions under certainty and in complex circumstances. Furthermore, there is a need to be more creative and innovative in using different financial instruments such as green bonds, carbon taxing, credit guarantees, a climate investment fund, etc. At global levels, the financial resources are available, however, more concrete efforts need to be made to tap into these sources.

Key Findings of the Session

- Governments of developing countries have learnt to rely on the domestic sources as the ODA has become scarcer. However, the fact that the national economic efficiency and effectiveness has not been ranked, and thus government bonds are not ready to be exchanged in the international financial market, is still prevalent.
- Undue attention has been paid towards improving the credit worthiness.
- The subsidies policy towards supporting renewable energy and the poor is still limited.

Concrete/Practical Steps for Low Carbon Transformation

(1) Recognise the importance of low carbon as a strategic development and a priority in the national agenda.

(2) Mainstream climate change in the development agenda in all relevant sectors.

(3) Policy development for urban areas should orient towards green, smart, and inclusiveness.

(4) Energy governance needs to move towards reducing fossil fuel and increasing energy efficiency.

(5) Promoting a strong knowledge-based economy in Asia should be the focus. This implies improving the education systems and more effective investment in research and development (R&D). Specifically, the Asian countries other than Japan, Korea, Singapore, need to strive to achieve the breakthroughs in solar energy, carbon capture, and electric and hybrid vehicles. It is suggested that Asia countries build a centre of excellence that brings together Asian wisdom and unique competitiveness.

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Japan's INDC and International Cooperation for Low Carbon Society through SATREPS

[Rapporteurs]: Liu Wen Hui, UTM, Malaysia
Wong Wai Yoke, UTM, Malaysia

[Speaker]:
Kenji Yamaji, RITE, Japan

The Japanese INDCs are committed to reducing emission levels by 26% in 2030 compared to 2013 levels (which corresponds to 25.4% compared to 2005 levels). This includes the national emissions reduction and absorption. GHG emissions in 2030 would be about 1,042 million tCO_2 in total. According to Prof. Yamaji, based on year 2013, Japan is more ambitious than the US and EU in targeting the emissions reduction rate, GHG intensity, and marginal abatement cost.

The Japanese government's proposition for the energy mix is generally assessed as appropriate. However, a GDP growth of 1.7% per year is anticipated, and simultaneously, a growth of electricity demand of only 0.1% (the GDP elasticity: 0.05).

In its INDC, Japan will actively contribute internationally towards human resource development and the promotion of development and diffusion of technologies related to emission reductions in developing countries. In accordance to this, Science and Technology Research Partnership for Sustainable Development (SATREPS) was introduced to strengthen science and technology cooperation between researchers in Japan and developing countries for resolving the global issues. The implementation of research outcomes is particularly emphasised. Since 2008, 54 SATREPS projects have been conducted in 15 countries in Asia. One of the recent projects was the "Development of Low Carbon Society Scenarios for Asian Regions" in Iskandar Malaysia (IM).

With the collaboration between Japanese-Malaysian higher educational institutes and local authorities, the following outputs will be achieved:

1. Methodology is developed to create LCS scenarios that are appropriate for Malaysia.
2. LCS scenarios are created and utilised for policy development in IM.
3. Co-benefits of LCS policies on air pollution and on recycling-based society are quantified in IM.
4. Organisational arrangement of UTM to conduct training on LCS scenarios for Malaysia and Asian countries is consolidated, and a network for LCS in Asia is established.

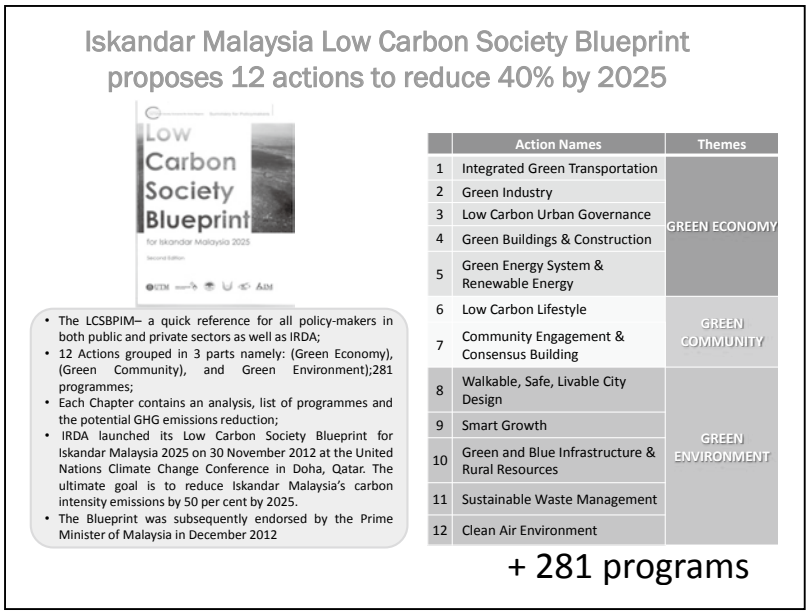
To reduce 40% GHG emission in IM from BaU by 2025 (2005 baseline), an LCS blueprint was launched at COP 18 Doha, 2012, consisting of three themes: green economy, green community, and green environment. Ten priority programmes were selected to form the implementation plan "Actions for Low Carbon Future" by policymakers. Programmes implemented included: a field visit to Japan to see educational activities related to LCS; The "Iskandar Malaysia Eco-Life Challenge" in all IM primary schools (226 schools); The Iskandar Malaysia Sustainable and Low Carbon School Exhibition; formation of RCE Iskandar; and, the International Symposium on the "Future City" Initiative.

Key Findings of the Session

- The Japanese INDCs commit to reduce carbon emission levels by 26% in 2030.
- In its INDC, Japan will actively contribute internationally towards human resource development and the promotion of development and diffusion of technologies related to emission reductions in developing countries.

Concrete/Practical Steps for Low Carbon Transformation

(1) As one of the SATREPS projects with Iskandar Malaysia, an LCS blueprint was launched at COP 18 Doha, 2012, consisting of 12 actions and 281 programmes.



Source: Presentation by Kenji Yamaji, RITE, Japan

Aligning Long-Term Climate Stabilisation Target with Near-Term Actions

[Rapporteurs]: Liu Wen Hui, UTM, Malaysia
Wong Wai Yoke, UTM, Malaysia

[Speaker]:
Priyadarshi R. Shukla, IIMA, India

Representative Concentration Pathways (RCPs) adopted by the IPCC fifth Assessment Report (AR5) has described possible climate futures, which depend on GHG emission in the coming years. The target of limiting the global temperature rise to 2°C is necessary to be achieved. Researches have been shifting to address the question of "how do we achieve the target (2°C temperature rise limit)?"

The new IPCC report is currently on-going and expected to be ready by year 2020 or 2021, to inform policymakers whether we are on the right path beyond the year 2030 to achieve the targets set. On the other hand, there are 17 sustainable development goals outlined by the UN.

The importance and urgency of achieving the goals set forth with concrete actions are emphasised. As there will be only one outcome in reality, actions are needed before the projected increase of global temperature (BaU) is realised.

Two different development perspectives were compared: the Conventional Climate Centric Paradigm and the Sustainable Development and Climate Paradigm. The conventional model looks only at the economic side of the climate forecasting environment/ climate issues in terms of carbon price to achieve the targets set to stabilise the climate at a minimal GDP loss. However, the effect of the carbon price on the behaviour in the short term is not strong. Alternatively, the sustainable development model uses a back-casting

method where the global climate targets and national socio-economic targets are addressed hand-in-hand.

Drawing upon India's experience of "Aligning Climate and Development Actions: Deep Decarbonisation Pathways for India," the Soft-Linked Integrated Model System (SLIM)" was introduced not only setting the pathway at the national level, but also at specific ministerial levels (e.g. transport ministry), providing the flexibility of narrowing down to address specific targets.

In the case of India, being a large importer of fossil fuel (oil and gas), the sustainable scenario offers a better strategy to the policymakers in terms of lowering the costs of imported fuel. The industry sector is also seeking new technology to reduce energy consumption (research) to increase their competitiveness in the global market. Air pollution (PM2.5 emission) and energy security (non-dependent on imported coal) serve as the co-benefits from the sustainable scenario.

However, the actions that are being taken are still falling short to achieve the 2°C target and the gap needs to be closed.

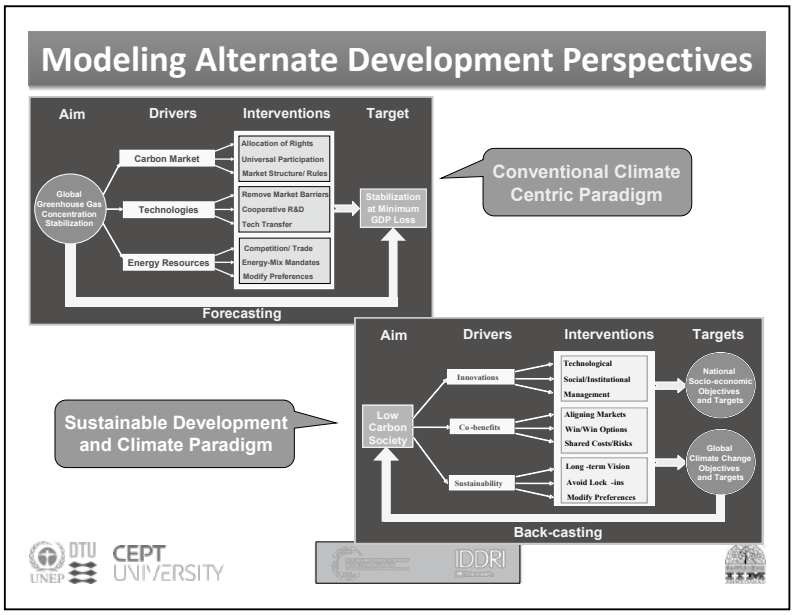
Key Findings of the Session

- Climate (environmental) target could be achieved hand-in-hand with national social and economic targets with a shift of paradigm using the Sustainable Development and Climate Paradigm model.
- Pathways to decarbonisation should include not only plans at the national level, but concrete actions at the ministerial and public (citizen) levels as well.

Concrete/Practical Steps for Low Carbon Transformation

(1) Actions planned need to be aligned with the 2°C target.

(2) Technology and knowledge exchange between countries with high and low carbon prices would be beneficial for narrowing the gap of the carbon price.



Source: Presentation by Priyadarshi R. Shukla, IIMA, India

Session Reports

Breakout Session 1: Business, Finance and Industry

[Chair]: Bindu Lohani, AIT/IGES
[Rapporteur]: Kristine Garcia-Gibe, TMP Systems, Philippines

[Speakers]:
Tomonori Sudo, Ritsumeikan Asia Pacific University, Japan
Nobohiro Kino, Ministry of the Environment, Japan
Boyd Dionyrisius Joeman, Iskandar Regional Development Authority, Malaysia

Adequate and sustainable financing is necessary in achieving a low carbon development. The immense financial gap for Asian infrastructure development in the next decades is estimated to be about USD 8 trillion by the Asian Development Bank (ADB). On the other hand, the World Economic Forum (WEF) estimated that the incremental investments needed to accommodate climate change are about USD 0.7 trillion/year. Domestic sources have been playing a significant role in bridging this financial gap and providing funds for sustainable development in the last ten years. There is an urgent need to harness this resource by addressing the political and economic challenges such as weak governance, tax reforms, the government's credit worthiness, and political commitment.

Integrated and inclusive development is vital in realising a low carbon society at scale. Including regional and borders in economic development can generate multiple benefits for all institutions involved. An example of such a development is Iskandar Malaysia that envisions a strong and sustainable metropolis of international standing by having an integrated green transportation, green and blue infrastructures, and renewable energy systems among others. There should also be uniform and harmonious environmental standards among different cities included in regional development. Lastly, involving research and academic institutions is beneficial in developing low carbon technology projects as research gaps do exist. There is an increasing trend of green investors but knowledge is lacking in terms of technology, information, and feasibility studies. The partnership of Universiti Teknologi Malaysia and Iskandar Malaysia is an example of such a mechanism.

Stimulate investments that contribute to realising a low carbon society. The government should provide an attractive investment environment for private investors that can generate additional funds for the identified infrastructure gaps. Offering incentives and feed-in tariffs are some examples for this. The rising interest in the green, sustainable, and impact investment among key institutional investors and companies should be seen as an opportunity for the local government to design and develop profitable and low carbon project opportunities for them. This can be done, for example, by providing evidence that renewable energy projects and green building systems meet such interest.

Critical changes to economic policies and society could help in achieving low carbon development. Long and short-term adjustments, both economically and socially, are needed to transform the development to low carbon. Realigning subsidies in fossil fuel can potentially offer a pathway for the transformation. Subsidies should be offered in low carbon development projects instead. Subsidies for fossil fuel projects should be targeted only at projects that can demonstrate maximised economic benefits when fossil fuels are used instead of a renewable energy source. Refocusing the ideas of the general society, including the business sectors, can also contribute in low carbon development.

There are economic mechanisms that exist that promote low carbon development. International financial cooperation plays a significant role in enhancing technology transfer and deployment of good practices towards low carbon development in this

region. An example is the Joint Crediting Mechanism (JCM) of Japan that facilitates the diffusion of leading low carbon technologies, products, systems, services, and infrastructure, as well as the implementation of mitigation actions, and contributes to the sustainable development of developing countries.

Key Findings of the Session

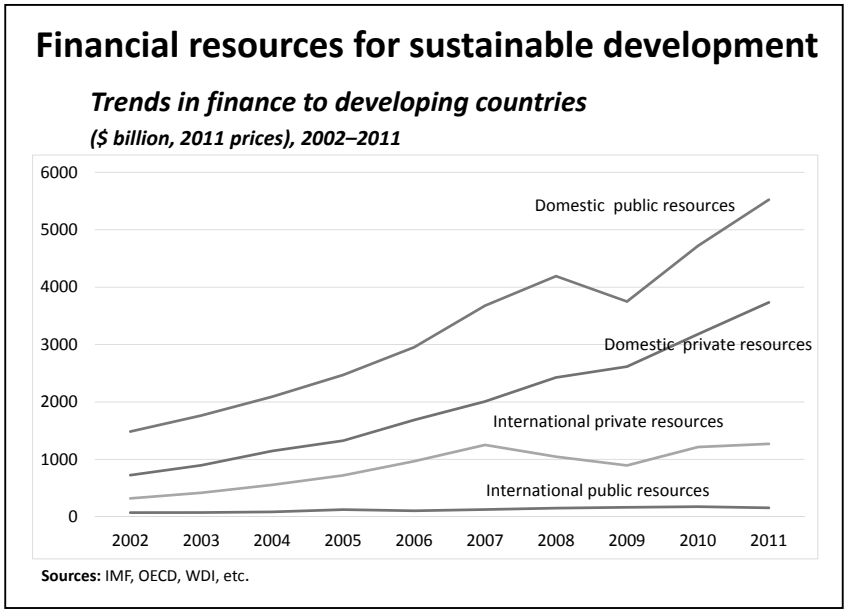
- Adequate and sustainable financing is necessary to bridge the immense financial infrastructure gap to achieve low carbon development in Asia. A domestic fund has been an important source of this funding.
- Integrated and inclusive development is vital in realising a low carbon society at scale. Meeting the interests of investors in green investment can be incorporated in such development.
- Designing a political and economic environment that stimulates investments can contribute to the realisation of a low carbon society. Critical changes to governance, economic policies, and society could help in achieving low carbon development.

Concrete/Practical Steps for Low Carbon Transformation

(1) Offering incentives and feed-in tariffs for green projects such as renewable energy systems

(2) Reforming taxation is needed in many government institutions to maximise domestic and public sources of funds for low carbon development projects

(3) Improving the credit worthiness of the local and regional government for green and sustainable investment



Source: Presentation by Tomonori Sudo, Ritsumeikan Asia Pacific University, Japan

Breakout Session 2: Low Carbon Society, Sustainable Consumption and Production, and Local Actions

[Chair]: Yasuhiko Hotta, IGES, Japan
[Rapporteurs]: Oulavanh Sinsamphanh, National University of Laos, Lao PDR
Cassendra Bong Phun Chien UTM, Malaysia

[Speakers]:
Yasuhiko Hotta, IGES, Japan
Pongsun Bunditsakulchai, Chularlongkorn University, Thailand,
Shazwin Taib, UTM, Malaysia
Misato Nojima and Maya Kudo, Sapporo City, Japan

The under practicing of sustainable consumption and production (SCP) from household usage is a significant contributor of green house gas (GHG) emissions when compared to the commonly acknowledged sectors such as industrial and transportation. Recently, rapid urbanisation and growing GDP in Asia and the Pacific, where high GHG emissions and energy-consuming electrical appliances are becoming more accessible, brought along a higher demand of power supply and thus intensifies the consumption of electricity and energy from the household sector. The key drivers towards SCP are through education, economic incentives, and strong policy actions that can be supported by a change of attitude, facilitating economic incentives, and providing the right infrastructure.

A case study by Lao PDR showed the increasing electricity consumption from the household sector in a rapidly urbanising Asia, specifically on the increasing electricity demand in the capital city as reflected by detailed surveys and modelling analysis with a projection of future energy demand and consumption. This can be countered by introducing energy smart products such as energy-efficient air-conditioners and lighting equipment, an energy efficient grading system, and smart energy usage as compared to the BaU scenario. However, the accuracy of the model is limited due to the complexity in obtaining more information on the electricity usage pattern from rural areas.

Although energy-efficient products are to be introduced, it is not the end of the story. There are issues related to waste from replaced products. Conventionally, linkages of climate issues and waste issues are about organic waste management and material recycling. In addition to energy consumption, households can generate unexpected waste, such as CFCs, HCFCs, HFCs from air conditioners and refrigerators that have high ozone depletion potential (ODP) and global warming potential (GWP) which urges for better management in the case of Malaysia.

As the case of Sapporo city, it demonstrated the backstory on its transformation into a smart city which features a 'smart life' through 'conserving energy smartly, enjoyably, and without waste.' The representatives shared the successful factors of a strong implementation from the local government, economic benefits from energy saving, active public engagement, and an interactive online platform between the public and experts in energy conservation, such as the Uchi-eco Shindan[1] programme.

[1] To introduce quantitative measurement to household and individual levels to recognise their own responsibility, e.g. authorised experts on energy saving in the household visit each residence (household), rank consumption, and advise on concrete actions.

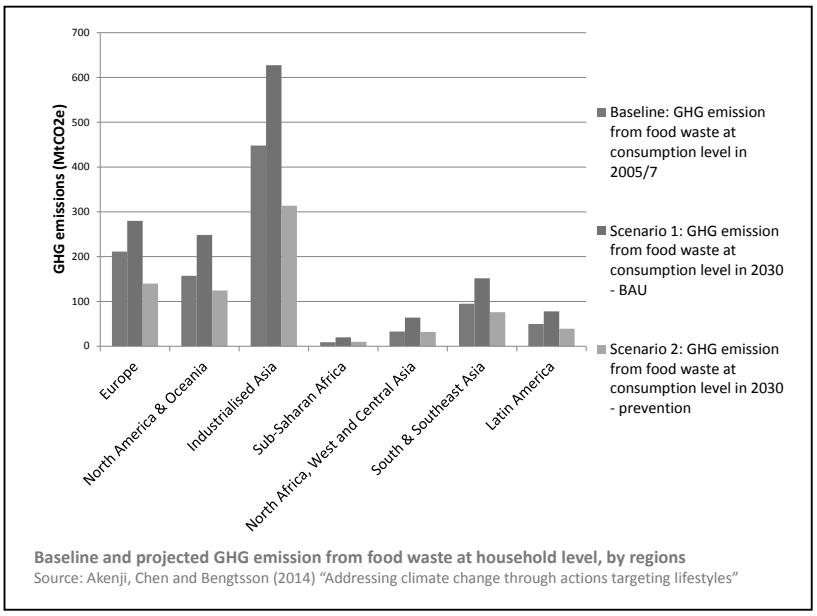
Key Findings of the Session

- Households can contribute significantly to GHG emissions and energy consumption.
- Education, policy, and economic initiatives involving all parties are important from science to action in order to achieve smart energy and better management of household waste.

Concrete/Practical Steps for Low Carbon Transformation

(1) The use of online electronic platforms and energy efficient grading systems can be used for evaluating SCP performance and sustainability indicators.

(2) Surveys and a modelling system for the projection of energy demand showed powerful significance. Future study includes the incorporation of decarbonising efforts and electricity usage in rural areas for a better projection on the demand and GHG emissions from households.



Baseline and projected GHG emission from food waste at household level, by regions
Source: Akenji, Chen and Bengtsson (2014) "Addressing climate change through actions targeting lifestyles"

Source: Presentation by Yasuhiko Hotta, IGES, Japan

Breakout Session 3: Resilient Cities

[Chair]: Toshizo Maeda, IGES, Thailand
[Rapporteurs]: Liu Wen Hui, UTM, Malaysia
Vu Duc Canh, University of Tokyo, Japan

[Speakers]:
Kwang Sik Kim, UTM, Malaysia
Damasa B. Magscale-Macandog, University of the Philippines Los Banos (UPLB), Philippines
Ky Quang Vinh, CCCO of Can Tho City, Viet Nam
Peter N. King, USAID Adapt Asia-Pacific

The 1st presentation focussed on a study about evacuation routes in transportation networks in case of natural disasters at Haeundae beach in Busan, Korea. The application of a MATSim model identified that the management of access routes to the main corridor line is a key point in reducing evacuation time and risks to the community.

The 2nd presentation introduced the topic evaluation of the resiliency of the Silang-Santa Rosa subwatershed Laguna in the Philippines. The subwatershed is experiencing rapid land conversion due to an increasing population and land use change. Based on flood and land use change modelling, the potential flood-prone areas were predicted, the development plans for the Santa Rosa were identified to mitigate and adapt the impacts of flooding in the context of climate change. The possible measures mainly consist of improving land use, flood-tolerant and environmentally-conscious building, integrated watershed management, capacity building, and public awareness.

The 3rd presentation discussed the climate change resilience action plan year 2010-2015 in Can Tho City—the lowest land area of the Mekong Delta. Construction works and non-construction activities required the Climate Change Coordination Office (CCCO) for baseline data collection, drainage system reinforcement, awareness-raising of citizens, designing of work plans, and project proposals to secure funds, etc. Skilled labour in the CCCO based in Can Tho city is insufficient (only four staff members) to deal with the mounting challenges.

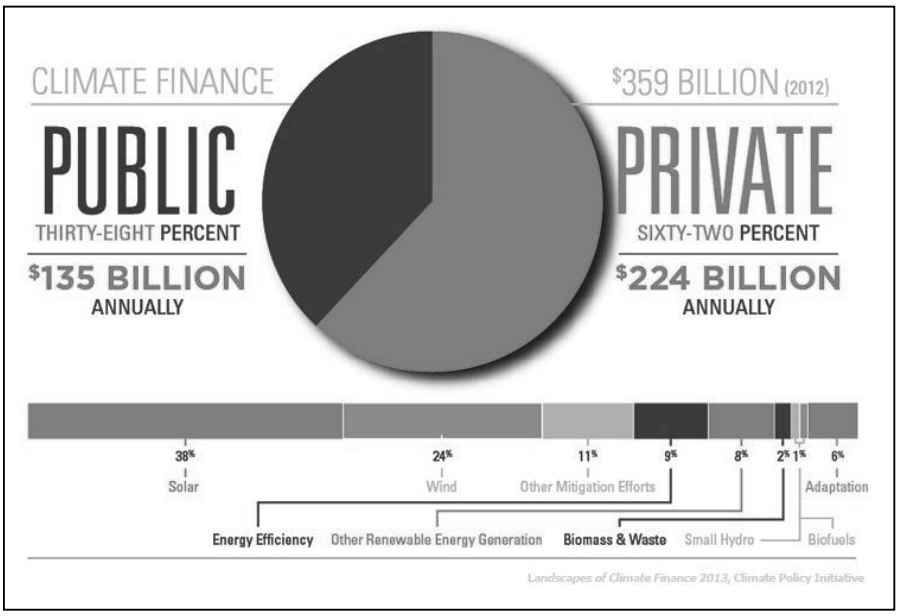
The 4th presentation debated the adaptation financing. In fact, there are enough financial sources for climate change but not much for adaptation. The problem is a lack of capacity, capability, and creativity of fund applicants and local authorities to design and implement projects efficiently and effectively. Still, many adaptation projects have yet convinced funders of their ability to be self-sustainable by creating new revenue streams and giving bankable outputs against future risks.

Key Findings of the Session

- Climate change case studies from Silang-Santa Rosa subwatershed Laguna and Can Tho City could be role models for other cities in designing adaptation action plans and implementing projects based on scientific research findings.
- Funds are available for climate change adaptation projects but they have not yet been adequately disbursed.
- Local authorities tend to lack baseline data and capacities to design ‘bankable’ adaptation projects to secure funds.

Concrete/Practical Steps for Low Carbon Transformation

(1) There is a gap between the quality of adaptation project proposals expected by funding agencies and the capacities of local officials in delivering them, wherein experts including researchers, scientists, economists, and engineers have a role to play.



Source: Presentation by Peter N. King, USAID Adapt Asia-Pacific

Breakout Session 4: Intended Nationally Determined Contribution (INDC)

[Chair]: Toshihiko Masui, NIES, Japan
[Rapporteurs]:Teh Bor Tsong, UTM, Malaysia
Wong Wai Yoke, UTM, Malaysia

[Speakers]:
Uy Kamal, NCSD, Cambodia
Bundit Limmeechokchai, SIIT, Thailand
Priyadarshi R. Shukla, IIMA, India
Hancheng Dai, NIES, Japan

INDCs proposed targets are necessary to achieve the 2°C target (global mean temperature increase to be below 2°C). In this session, four countries outlined their respective targets, INDC preparation process, problems and challenges faced, as well as messages to policymakers and other stakeholders.

INDCs are prepared in line with existing government policies, plans, and strategies, as well as support at parliament-level approval (Thailand) and ministerial level (India). Key activities include both adaptation and mitigation. Two main mitigation activities are: (1) energy consumption—energy sector shifting from fossil-based fuel to non-fossil fuel (renewable energy source); GHG emission reduction from manufacturing/ industry, transportation; and (2) increasing carbon sinks through forest conservation and expansion.

Several challenges are raised by respective countries while preparing INDCs including: clean energy

security; adaptation issues, such as climate resilient infrastructure to accommodate social development and economy growth (rapid urbanisation in the case of China); capacity building among government agencies which are strongly needed; and technology/knowledge transfer.

Action plans are important at the government level. In addition, educating the public (and other sectors as well) on how to reduce energy consumption is important as practical steps to achieve the target.

Key Findings of the Session

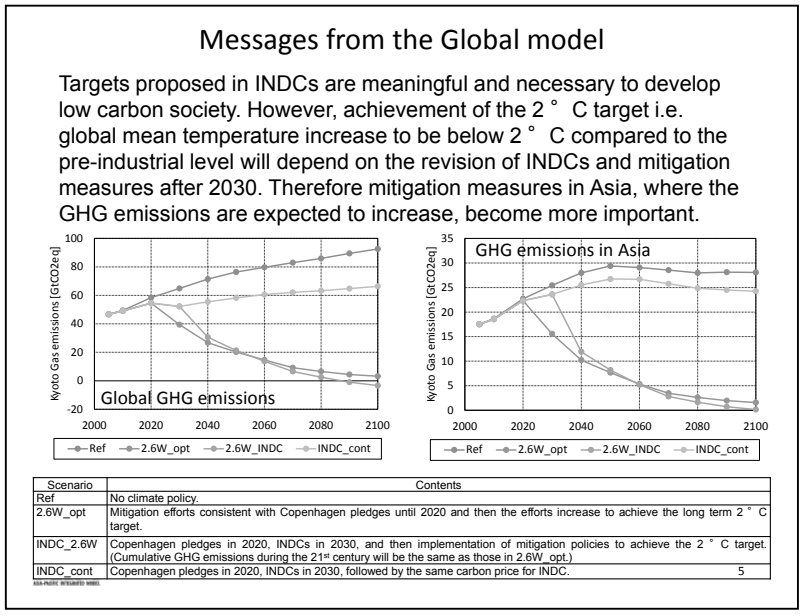
- The gap between INDC and the 2°C target is recognised (INDC is not sufficient to achieve the 2°C target). There is a need to address the gap by introducing firmer countermeasures after 2030.
- Action plans are in place to achieve the targets practically.
- Additional finances/investments are needed to scale up adaptation and mitigation activities to achieve targets set forth.
- An MRV (measurement, reporting and verification) system is important to be in place to assist countermeasures, as monitoring is needed to track if targets are achieved.
- As uncertainties exist, a continuous revision of INDC (every five or ten years) is necessary.

Concrete/Practical Steps for Low Carbon Transformation

(1) INDC serves as an opportunity for countries to align GHG emission targets with their governmental policies and strategies

(2) Capacity building for government offices

(3) Technology and knowledge transfer for renewable energy development and low carbon technology



Source: Presentation by Toshihiko Masui, NIES, Japan

Breakout Session 5: GHG Reduction Planning and Concrete Actions

[Chair]: Junichi Fujino, NIES, Japan
[Rapporteurs]: Minal Pathak, CEPT University, India
Fan Yee Van, UTM, Malaysia

[Speakers]:
Ucok Siagian, ITB, Indonesia
Nguyen Tung Lam, ISPONRE, Viet Nam
Chanyaphak Wathanachinda, Capacity Building and Outreach Office, TGO, Thailand
and Satoshi Iemoto, JICA
Shunsuke Shimbori, Kyoto Environmental Activities Association, Japan

Over 120 Intended Nationally Determined Contributions (INDCs) have been submitted by countries indicating their respective national ambitions and strategies to address climate change post-2020. There exists a significant diversity of approaches of different countries towards mitigation goals and plans depending on national circumstances. Realisation of GHG reduction will be facilitated by targeted efforts across sectors and governance levels. There is, however, a need for establishing robust Monitoring, Reporting and Verification (MRV) guidelines.

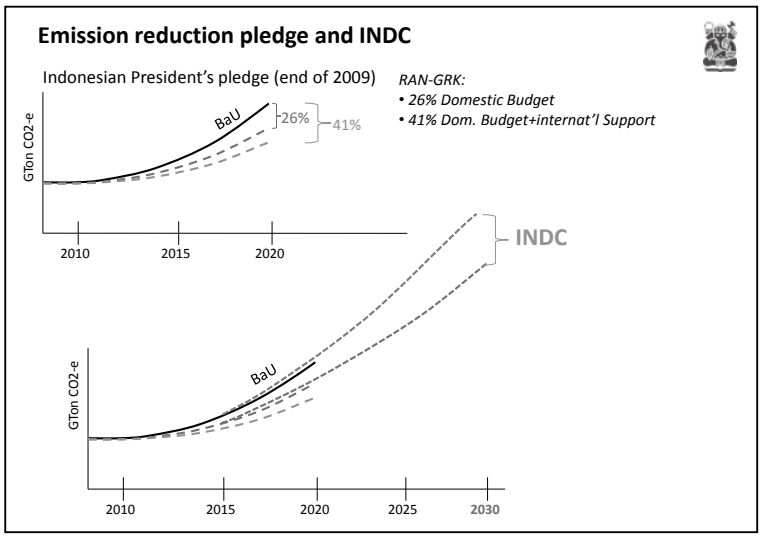
International cooperation can significantly enhance mitigation potential. For instance, Viet Nam and Thailand can raise the level of contributions beyond the unconditional pledges if international support is received through bilateral and multilateral cooperation, and through the implementation of new mechanisms under the Global Climate Agreement by 2030.

Translating INDCs into actions will require a clear, implementable roadmap. Essential elements of this architecture include a sound legal framework, science-based policy making process, awareness, capacity building and information sharing.

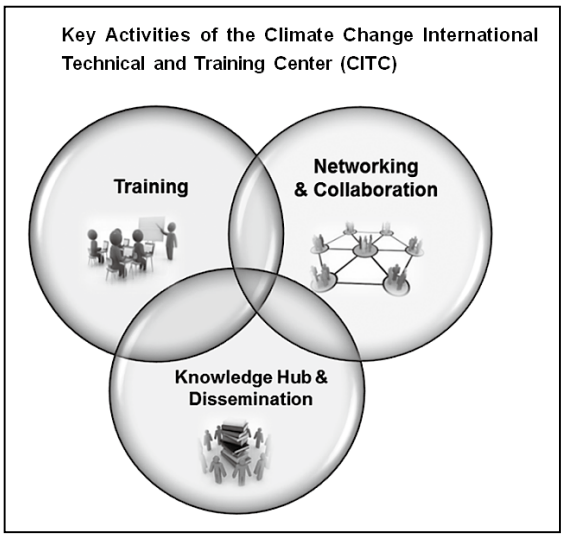
Capacity building and awareness for diverse stakeholders–businesses, policymakers starting from national ministries to local policymakers and communities is essential towards a realisation of mitigation targets. Emerging good practices including the Climate Change International Technical and Training Center (CITC), supported by JICA, and the Kyoto Environmental Activities Association, highlight successful collaborative efforts for building capacity on climate change mitigation and adaptation, networking, and knowledge dissemination on climate change mitigation and adaptation.

Key Findings of the Session

- INDC targets need to be translated into specific mitigation plans and implementable projects. This will require science-based policy/planning inputs.
- Robust MRV systems to verify reduction claims need to be established.
- GHG reduction will require targeted efforts across sectors and governance levels.
- Importance of engaging a diverse range of stakeholders–businesses, policymakers, including national ministries, local policymakers, and communities.



Source: Presentation by Ucok Siagian, ITB, Indonesia



Source: Presentation by Chanyaphak Wathanachinda, TGO, Thailand and Satoshi Iemoto, JICA

Breakout Session 6: Policies and Strategies on LULUCF towards Low Carbon Societies and Challenges in Their Implementation

[Chair]: Rizaldi Boer, Bogor Agricultural University, Indonesia
[Rapporteurs]: Linh Nguyen, GIZ
Cassendra Bong Phun Chien, UTM, Malaysia

[Speakers]:
Tsuyoshi Fujita, NIES, Japan
Nobuko Saigusa, NIES, Japan
Damasa B. Magcale-Macandog, UPLB, Philippines
Bernadinus Steni, Earth Innovation Institute (INOBU), Indonesia
Mohd Azuwan Bin Abdullah, MONRE, Malaysia

Specific examples from the countries in the region on LULUCF toward low carbon were presented. In Japan, an innovative modelling and monitoring research project showcased the significant importance of powerful and accurate visualisation and mapping tool in monitoring and forecasting GHG emission of different sectors that can help. This has potential application in other Asian cities to facilitate better land use planning and policy. This integrated observation, modelling and analysis system combines both a top down approach, such as via satellite, and a bottom up approach, such as Fluxnet sites for monitoring and detection of the carbon cycle change.

The case of low carbon and climate resilient watershed management in the Philippines emphasised the importance of sciences and availability of tools in assisting local governments and stakeholders to better understand the potential threat of climate change and stimulating discussion and collaboration across sectors and governments in evaluating their development plans and design scenarios for the future development towards a low carbon and climate resilient system.

The case of Indonesia and Malaysia underlined the significance of involvement and commitment of sub-national governments in the implementation of REDD+. The key strategies to achieve emission reduction commitments through REDD in Indonesia are strengthening the forest management unit, controlling the spatial planning and licenses; building alliances with the private sectors to ensure the sustainable

supply change of commodities; and ensuring a low carbon emission development that is inclusive for the participation of indigenous peoples and local communities.

In Malaysia, encouraging progress has also been made in the preparation of an institutional system and infrastructure for supporting the implementation of REDD+.

Challenges remain including data intensive modelling tools and require accessing free global data with higher accuracy to reduce cost; negotiation and achieving agreement across sub-national governments in defining reference emission levels (integration with the national reference emission levels) and emission reduction targets; specific mechanism for benefit sharing from REDD+.

Key Findings of the Session: Concrete Windows of Opportunities

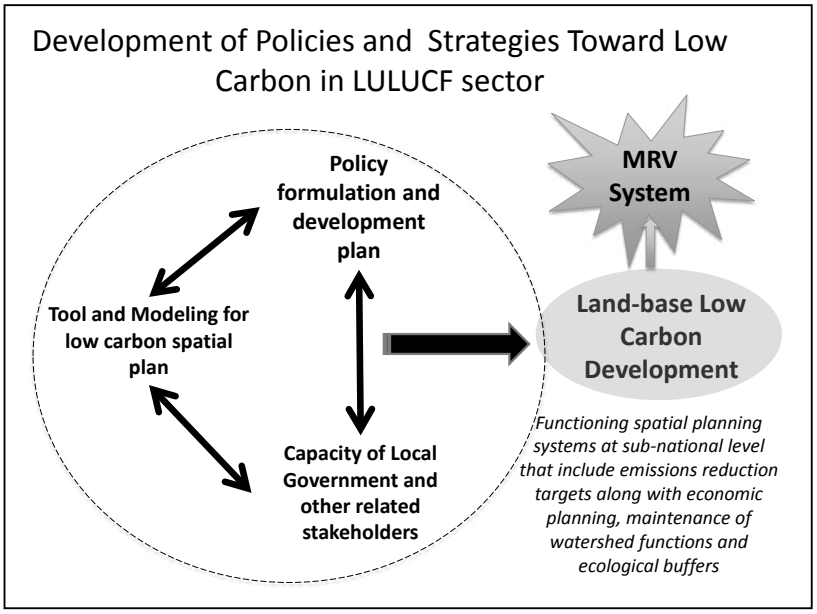
- Innovative modelling and a monitoring system for land use scenarios of eco-cities that combine macro and spatial scope and project a low carbon future are to be developed.
- Integrated observation, modelling and analysis system from both top down (CO_2 concentration) and bottom up approach (carbon flux net measurement). This will bring significant progress, not only in obtaining more accurate estimates of carbon source/sink to evaluate mitigation and adaptation policies, but also in the detection of near real time changes in the carbon cycle in the Asia-Pacific and globally.

Concrete/Practical Steps for Low Carbon Transformation

(1) Mobilisation of more financial and human resources

(2) Commencement of a feasibility phase and pilot implementation of the innovative spatial simulation and analysis that was already applied in Japan in suitable Asian cities

(3) Further development of concrete activities on the ground and follow up steps



Source: Presentation by Rizaldi Boer, IPB, Indonesia

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Acknowledgements

This synthesis report was developed with the aim of highlighting cross-cutting conclusions emerging through the discussions held during the Fourth Annual Meeting of LoCARNet in Johor Bahru, Malaysia, from 11-13 October 2015.

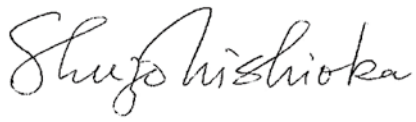
One of the major challenges in the upcoming Paris meeting is North-South cooperation. Asia, in particular, is one of the giants of climate policy, and will become the focus of worldwide attention on how it endeavours to tackle climate stabilisation. In this regard, it declared the "Johor Bahru Declaration" to make an appeal to the world that Asia is promoting climate stabilisation in a serious manner, and that it proposes to develop a worldwide cooperation scheme.

Looking back over three days of discussions, we think our annual meeting was heading in the right direction towards further evolution, so that participants could get far-reaching knowledge on climate policies in Asia and discover the necessary emerging research. In addition, our annual meeting could provide opportunities to accumulate knowledge in Asia, to discuss what the next challenges should be for future research, and how we can best address these challenges, such as financing technology transfer and sustainable consumption and production (SCP). Therefore, we do hope that, based on discussions, researchers in Asia could define a direction for climate policy research, and we will create a virtuous cycle so that policymakers can support research for science-based policymaking.

I would like to express my special appreciation to UTM and IRDA for their generous support for the LoCARNet Fourth Annual Meeting. I would also like to express my appreciation to YAB, Dato Mohammed Khaled Bin Nordin, Menteri Besar Johor for the hospitality we received in Johor Bahru. In addition, I would like to express our appreciation to the focal points of LoCARNet, who took part in the meeting: Prof. Rizaldi Boer (Indonesia), Dr. Bundit Limmeechokchai (Thailand), Dr. Toshihiko Masui (Japan), Dr. Nguyen Tung Lam (Viet Nam), Dr. Ucok Siagian (Indonesia), Prof. Priyadarshi R. Shukla (India), and Dr. Sirintornthep Towprayoon (Thailand), for their strong support before, during, and after the meeting.

And, last but not least, I am thankful to the Japanese Ministry of the Environment for their continuous support of this network.

Shuzo Nishioka



Secretary General, Low Carbon Asia Research Network (LoCARNet)

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

Referencing this report:

Stabilizing Climate through Low Carbon Actions in Asia: Road to COP21 and Beyond
Synthesis Report of the LoCARNet Forth Annual Meeting 2015

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

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Printed in Japan