

# Capacity Building Workshop on Low Carbon Development for Cambodia, Lao PDR, and Myanmar

## Synthesis Report

### -Key findings from the workshop-



29<sup>th</sup> September 2017  
Phnom Penh, Cambodia



## Preface

The earth continues to heat up, the severity of climate change impacts on global socioeconomic development and environmental sustainability continues to intensify and amplify. The global GHG emissions had doubled over the last two decades (from 29GtCO<sub>2</sub>eq./year in 1990 to 49GtCO<sub>2</sub>eq./year in 2010) and are projected to increase drastically if there is no appropriate measure to be taken. Countries in ASEANs, including Cambodia are facing adverse impacts of climate change, causing a number of human and animal mortalities, damaging physical infrastructures and natural resources and seriously affecting to social-economic development. Global climate policies reached a major turning point at COP21 in Paris, with the subsequent onus on each country to develop and implement policies based on the National Determined Contribution as the primary axis. Moreover, policies will now not only be formed and implemented at the national level, but also at regional and city levels. Therefore, it is a matter of an urgency to build capacity for low-carbon development via relationships between developed and developing countries; however, the extent to which developing countries need to go in this regard and the depth of their involvement in formulating evidence-based research communities are ill-defined areas.

With the financial support from the Ministry of Environment, Japan, the General Secretariat of the National Council for Sustainable Development in cooperation with the Institute for Global Environmental Strategies organized a **“Capacity Building Workshop on Low Carbon Development for Cambodia, Lao PDR and Myanmar”** on 29<sup>th</sup> September 2017 in Phnom Penh, Cambodia. The workshop is intended to provide the opportunity to discuss on how to strengthen research communities supported to decision making and implemented activities based on science in Cambodia, Lao PDR and Myanmar in the future.

This report captures some key findings, which covered the implementation of the low carbon development and climate change related policies and strategies at both national and local level among some Asian counties as well as illustrates the collaboration between decision makers and research communities on the low carbon development plan. The key messages in this report are aiming to inspire decision makers at both national and local level to support and integrate low carbon development approach into their respective development agendas.

We would like to take this opportunity to convey our sincere thanks to **H.E. Say Samal**, Minister of Environment and the Chair of the National Council for Sustainable Development (NCSD) for making the workshop available and for his long term vision to protect environment, conserve biodiversity, sustain natural resources consumption, and sustain livelihood for long-term benefits of all Cambodians. We would also like to express our gratitude to responsible senior managements and staffs of the Department of Science and Technology and the Department of Climate Change of the NCSD and staffs of the IGES for their considerable efforts, facilitation, and contributions in planning and preparing the workshop. We would also like to express our sincere appreciation to speakers and participants not only from Cambodia but also from our Asian countries for their contribution, active participation, and fruitful discussion.

**Tomoko Ishikawa**  
Secretary General, LCS-RNet Secretariat  
Institute for Global Environmental Strategies, Japan

**H.E. Tin Ponlok**  
Secretary General  
of the NCSD, Cambodia

## Synthesis of sessions

### OPENING SESSION:

Welcome Remarks: **Ms. Tomoko Ishikawa**, Secretary General LoCARNet/IGES

Opening Remarks: **H.E. Tin Ponlok, Secretary General**, the National Council for Sustainable Development (NCSD)

In welcome remarks, Ms. Tomoko Ishikawa expressed that global climate policies reached a major turning point at COP21 in Paris in 2015, with the subsequent onus on each country to develop and implement policies based on the National Determined Contributions (NDC) as the primary axis. Policies will now not only be formed and implemented at the national level, but also at regional and city levels. COP21 bookended an era of protracted climate negotiations and led to a new era for action and implementation towards realizing low-carbon societies where not only national governments but also non-state stakeholders such as cities, local governments, businesses, financial organizations, and civil societies will be focused on as actors of the transition. Actual actions on the ground at all levels will take a central stage. She stressed that Low Carbon Asia Research Network (LoCARNet) was established with the above in mind; i.e., with a firm conviction that the only way to accomplish development along a new pathway in a very short time is by fostering domestic and within-region research communities. The Network promotes evidence-based policymaking by bridging the gap between policymakers and research communities, and promotes region-wide knowledge-sharing via regional cooperation. We commit to deepening our exchange in this regard from this year on, which reinforces the aim of LoCARNet, as it gathers knowledge and wisdom from all over Asia. (See detail in Annex III).

H.E. Tin Polok, Secretary General of the NCSD indicated the global GHG emissions had doubled over the last two decades (from 29GtCO<sub>2</sub>eq./year in 1990 to 49GtCO<sub>2</sub>eq./year in 2010) and is projected to increase drastically if there is no appropriate measure to reduce GHG emissions. Countries in ASEANs, including Cambodia are facing adverse impacts of climate change, causing a number of human and animal mortalities, damaging physical infrastructures and natural resources and seriously affecting to social-economic development. Flood in 2013, Cambodia lost about 360 million (10% of total national budget) and is projected to increase to 3.5% of total GDP if there is no appropriate measure taken in 2050. Moreover, drought in 2016 damaged significant agricultural crops and peoples' animals which blew another pressure on the government. He highlighted that Low Carbon Development Policy is regarded as an appropriate approach, which provides multiple benefits including social, economic, and environmental benefits besides reducing GHG emissions. The adoption of low carbon development plan in mega cities will contribute considerably to reducing GHG emissions. He mentioned that total GHG emissions in Cambodia will increase to about 4 times and 25 times in 2030 and 2050, respectively, from 2010; however, the government can reduce GHG emissions significantly through adopting low carbon development plan, focusing mainly on forest plantation, sustainable forest management, energy efficiency technologies, energy saving, renewable energy, public transportation, and sustainable waste management, etc. He observed that over the last two decades, Phnom Penh city has experienced significant growths of population (double), vehicles (four times), waste disposal at landfill (3 times), rapid economic growth, construction and infrastructure development, and energy consumption, which are causing Phnom Penh city to face with traffic congestion, air pollution, and increase of GHG emissions, water pollution, welfare problems, and social security.

The development of low carbon development plan is seen as an important approach to solve these constraints. He expressed his enthusiasm that the workshop would respond to the specific needs through sharing knowledge, experience, and best practices about Low Carbon Development Plan and Policy as well as Climate Change Response Measures from several countries in Asia. The workshop would provide more opportunity to better understanding about the importance of low carbon development plan for cities in Asia, especially for Cambodia, Lao PDR, and Myanmar. He also pointed out the important role of Low-Carbon Research Network (LoCAR\_Net) for building human resources and strengthening research communities and capacity. (See detail in Annex IV).

#### **SESSION 1: Relevant policies and measures to respond to climate change in Cambodia**

[Chair] Mr. Chea Chan Thou, Director of Department of Science and Technology,  
the National Council for Sustainable Development, Cambodia

##### ***Speakers:***

Mr. Sum Thy, Director of Department of Climate Change, the NCSD

Mr. Srey Vireak, the Ministry of Public Works and Transport (MoPWT)

Mr. Toch Sovanna, Director of Department, the Ministry of Mines and Energy (MME)

Mr. Lun Kimhy, Officer of Forest Administration of the Ministry of Agriculture Forestry  
and Fisheries (MAFF)

**This section explains about the national policies, strategies and actions from different government's institutions to address climate change and to promote low carbon development by taking some actions through climate change adaptations and GHG mitigation. The line ministries presented and shared the exiting climate change and low carbon development related policies and strategies.**

Having understood the adverse impacts of climate change, the Royal Government of Cambodia (RGC) has integrated climate change response measures into national and sub-national development policies and strategies. For instance, the RGC has taken actions through developing Cambodia Climate Change Strategic Plan (CCCSP) and Low Carbon Development Plans and Policies in order to adapt to climate change impacts and mitigate GHG emissions. Recently, relevant governmental institutions, NGOs, research institutes, academia, and sub-national authorities have actively participated in addressing climate change. The RGC has established the National Council for Sustainable Development (NCSD) in order to prepare, coordinate, and monitor the implementation of relevant policies, strategies, legal instruments, plans, and programmes, including CCCSP/CCAP. In addition, the Climate Change Technical Working Group (CCTWG) was established to provide technical assistance to the NCSD. The NCSD and the Ministry of Environment (MoE) are main institutions in leading and coordinating national strategies and policies to address adverse impacts of climate change. A number of capacity building programmes have been supported by the DCC/CCCA, including trainings on climate change to the all Provincial Department of Environments, Junior Staff of MoE, and University students.

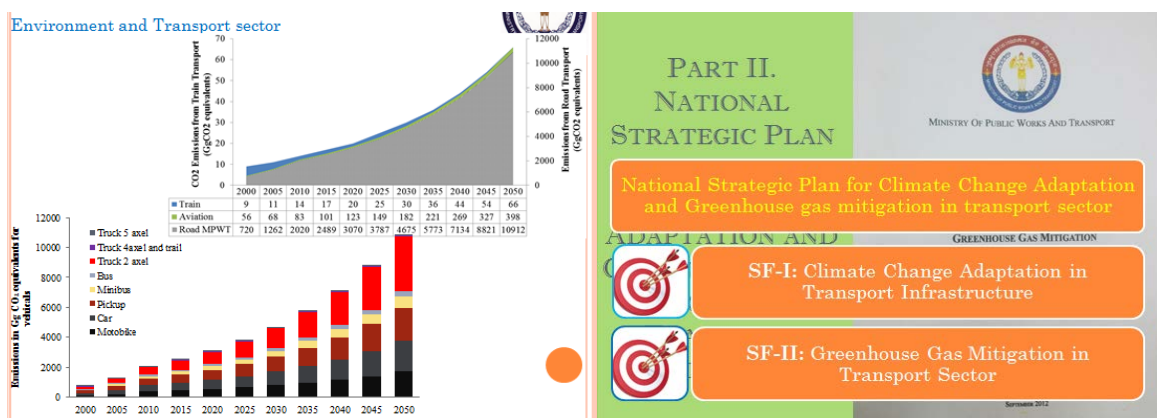
## Institutional Arrangement for Climate Change



Source: Presentation by Mr. Sum Thy, Director of the DCC, Cambodia

The Ministry of Public Works and Transport (MoPWT) is mandated to develop legal and regulatory frameworks and cooperated with ministries and agencies to enable transportation means for Cambodian people. However, the transportation sector in Cambodia shared GHG emissions of about 26% of total national GHG emissions; 90% of which contributed from road transportation. The MoPWT has prepared several climate change policies and strategies, including National Strategic Plan for Climate Change Adaptation and GHG Mitigation and Climate Change Action Plan for the Transportation Sector 2014-2018. Climate change policies and strategies in the transportation sector are intended to promote efficient, comfortable, and safety transportation system; to introduce modern public transportation system; to reduce traffic congestion; to enhance inspection and maintenance of vehicles; to enhance traffic management; and to enhance the quality of fuel. To achieve this goal ten strategies are proposed.

## Climate Change Strategic Plan for the Transportation Sector



Source: Mr. Srey Vireak, the MoPWT, Cambodia

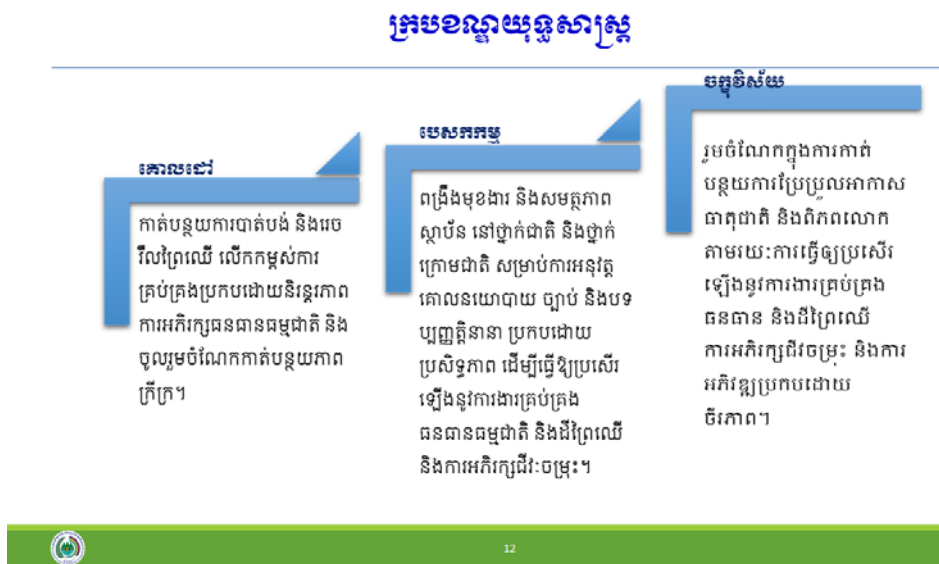
The Ministry of Mines and Energy (MME) indicated that the government has set a clear direction for energy development plan; for instance, all villages will be able to access to electricity of any



type by the year 2020 and at least 70% of all households will be able to access to quality electricity grid by the year 2030. To improve electricity accessibility by 100% of villages by 2020 and 70% of households by 2030 required huge investment, and needed participation from both Government and Private sector; simultaneously, capacity building and technology transfer is needed. Cambodia needs to develop her renewable energy and enhance energy efficiency regulation and activities to reduce energy intensity for long-term energy security. Recent years, power generation from solar energy significantly increased; the first solar farm with capacity of 10 MW in Bavet is connected to the national grid in September 2017, which is a good signal to scale up solar energy development in the other parts of the countries.

Forestry Administration (FA) presented about Strategy on REDD<sup>+</sup> and its implementation in Cambodia. He mentioned that Cambodia has supported REDD+ since COP13 in Bali, Indonesia. REDD+ strategy has a clear goal to reduce deforestation and forest degradation, to enhance livelihood, to sustain national resource management and to reduce poverty. Its vision is to reduce GHG emissions both national and global scale through improving resource management and forest land use, biodiversity conservation, and sustainable development. REDD+ strategies dominates three targets: 1) improve the efficiency of forest resource and forest land use management and monitoring; 2) strengthen the implementation of sustainable forest management action; and 3) mainstream the reduction of forest degradation, capacity building, and stakeholder participation.

### Strategic framework for REDD+ in Cambodia



Source: Mr. Lun Kimhy, Forestry Administration of the MAFF

## SESSION 2: Low carbon development and climate change responses from international perspectives

[Chair]: Dr. Junichi Fujino, Programme Director,  
City Taskforce, IGES/Senior Researcher, NIES

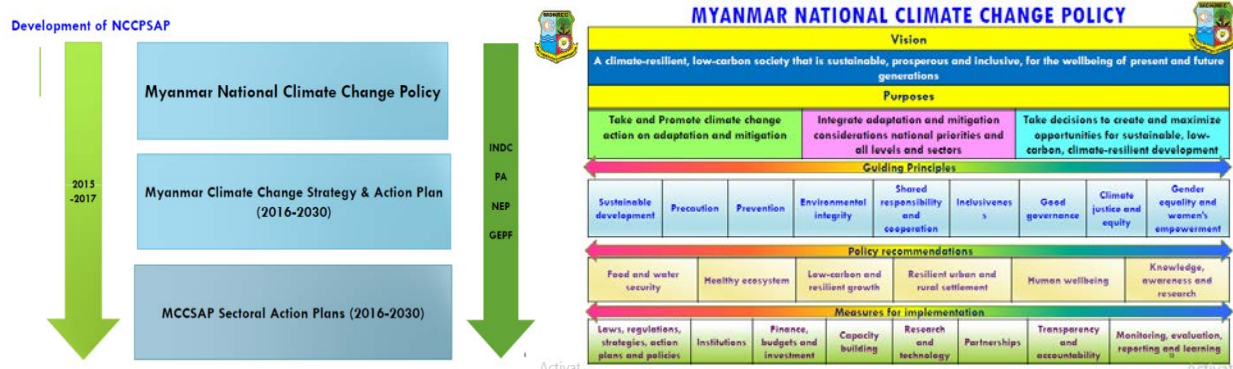
### Speakers:

Mr. Kyaw San Naing, Director, Environmental Conservation Department,  
the Ministry of Natural Resources and Environmental Conservation, Myanmar  
Mr. Boun Eua Khamphilavanh, Department of Climate Change of the MONRE, Lao PDR

**In this session, the main purpose is to share the best practices and experiences of Asian countries to respond to adverse impacts of climate change through the adoption of climate change policies and strategies as well as low carbon development plan**

Mr. Kyaw San Naing, Director of Environmental Conservation Department (ECD), the Ministry of Resources and Environmental Conservation, Myanmar indicated the country's effort to address adverse impacts of climate change through the adoption of National Climate Change Policy, National Climate Change Strategy and Action Plans (2016-2030), and NCCSAP sectoral plan (2016-2030), promotion of low carbon planning, and other related policy instruments. Myanmar has set a goal to achieve climate resilience and pursued a low carbon growth pathway to support inclusive and sustainable development by 2030. The objectives of the NCCSAP are to increase the adaptive capacity of vulnerable communities and sectors so that they are resilient to adverse impacts of climate change and to create and maximize opportunities for sectors to pursue a low-carbon growth pathway by ensuring development benefits to communities and all economic sectors.

### Myanmar National Climate Change Policy

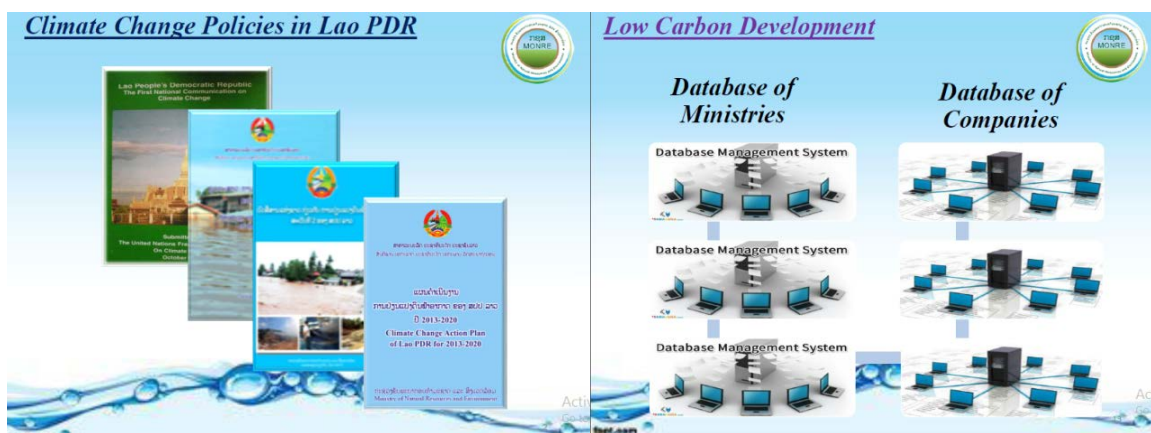


Source: Mr. Kyaw San Niang, Director, ECD, MONREC, Myanmar

Mr. Boun Eua Khamphilavanh, Department of Climate Change of MONRE, Lao PDR emphasized the importance of the low carbon development and climate change policies in Lao PDR which focused on green growth potential sectors, namely agriculture and fisheries, forestry and land use, tourism, urban development and transport, energy and mines, and education sectors. To achieve Green Growth Strategy Objective, the country developed National Resources and Environment Strategy (2016-2025) with a vision to make Lao PDR Green, Clean, and Beautiful based on Green Economic Growth; to ensure Sustainable Resilient Development and Climate Change; to support industrialization and modernization; to ensure preparedness; and to enable an effective response to

climate change and natural disasters towards 2030. He also highlighted the government's methodology to collect and control databases to develop low carbon emissions strategy and action plans.

### Low Carbon Development and Climate Change Policies in Lao PDR



Source: Mr. Boun Eua Khamphilavanh, Department of Climate Change of MONRE, Lao

### SESSION 3: Low Carbon Cities: Planning and Actions

[Chair] Dr. Hak Mao, Deputy Director of Department of Science and Technology/NCSD, Cambodia

#### Speakers:

Dr. Junichi Fujino, Programme Director, City Taskforce, IGES/Senior Researcher, NIES, Japan

Mr. Kazuya Fujiwara, Chief Consultant, MHIR, Japan

Prof. Ho Chin Siong, UTM, Malaysia

Mr. Keat Rangsey, Director of Environmental Department of Phnom Penh

**This session is mainly focused on low carbon cities planning and actions in Asian countries in order to ensure sustainable and low carbon development**

Dr. Junichi Fujino, Programme Director, City taskforce, NIES, Japan provided several case studies about low carbon development in Japanese cities. The world is required to maintain the global temperature to stay below 1.5/2°C. To achieve this target, the world has to ensure zero or minus emissions by 2100. He highlighted the requirement of every country to submit Climate Change Action Plans (CCAP) in every 5 years. He also indicated the important roles of business sectors and local governments to address climate change. He shared the studies of low carbon cities roadmap in several Asian cities, for instance, Tokyo Metropolitan Government (IMG) focusing on promoting energy efficiency of facilities through mandating facility owners to report energy use and plan for reduction; Kyoto city focusing on Kyoto low carbon society scenario 2005-2030 (GHG reduction of 25% by 2020 and 40% by 2030), and Shimokawa Town in Hokkaido (Forested FutureCity Shimokawa), etc. City and city cooperation has been made to support development of MRV system in ISKANDAR region based on Tokyo Carbon Reduction Reporting Programme. He emphasized that environmental educations are needed for young

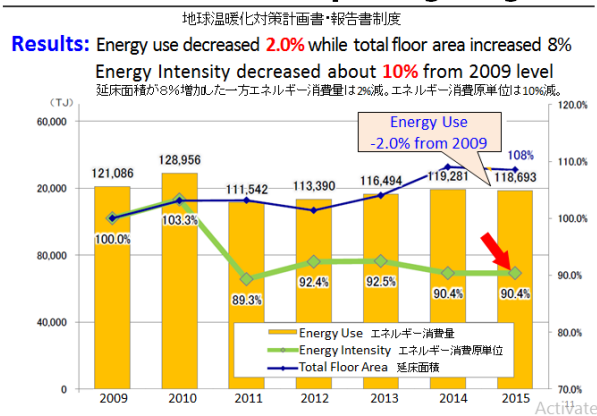


generations and general people, stakeholders, and relevant institutes to have more chance to get involved. Capacity building and community development for Low Carbon Society in Iskandar Malaysia is aiming to develop mechanisms and systems for sustainable and low-carbon society through the cooperation and partnerships between Kyoto and Iskandar Malaysia. It is intended to spread environmental activities in communities and households through steps (primary, secondary, and so on) of educational programmes for sustainable and low-carbon society.

## Low carbon society scenario in Japanese cities

## Eco life Challenge in Kyoto

### Carbon Reduction Reporting Program



### Eco Life Challenge in Kyoto



## Low carbon city plan at Shimokawa Town in Hokkaido



Source: Dr. Junichi Fujino, Programme Director, City Taskforce, IGES/Senior Researcher, NIES, Japan

Mr. Kazuya Fujiwara, Chief Consultant, MHIR, Japan has introduced Asia-Pacific Integrated Model (AIM), which is a family of analytical models developed by research institutes in Japan. AIM can be regarded as “researcher’s network” as it is developed and applied through collaboration with researchers in various countries. AIM has contributed to IPCC reports in the area of climate change mitigation actions in Japan and Asian countries (e.g. Thailand, Vietnam, Malaysia, Indonesia and Cambodia). Moreover, he shared the application of AIM at the city level in Vietnam (e.g. Ho Chi Minh, Da Nang and Hai Phong) and Malaysia (e.g. Putrajaya and Iskandar city). While in Cambodia, AIM team is ready to start developing a climate change action plan in Phnom Penh Capital City by using a quantitative analysis with integrated modeling approach.

## AIM application and its implementation procedure



Sources: Mr. Kazuya Fujiwara, Chief Consultant, MHIR, Japan

Prof. Ho Chin Siong, UTM, Malaysia observed the issues and challenges for mega cities including: rapid urbanization and industrialization, relatively high carbon intensity dependence on fossil fuel (fuel subsidy), high private car ownership, low density development and urban sprawl, and low efficiency appliances, and low usage of renewable energy. Malaysia's 2020 vision is a fully developed nation along all dimensions—economically, politically, socially, psychologically, and culturally. Main themes for low carbon development in Malaysia includes digital nation, green growth cities, competitive cities, promote biodiversity, environmental awareness, enable energy plan, inclusiveness, and enable energy plan. The country is committing to ensuring 45% reduction in GHG emission intensity by 2030 relative to the emissions intensity of GDP in 2005. Several case studies and researches were introduced to address climate change, focusing mainly on urbanization and industrialization problems and socio-economic planning. **“Science to Action”** is the way towards creating low carbon futures, i.e. ensuring good, scientifically grounded and community-rooted LCS policies are materially acted upon, yielding real cuts in GHG emissions with simultaneous socioeconomic co-benefits for the people by considering on existing policy direction; geographical setting; political cultural; socio-economic; financial capacity; and human capital.

### Best practices for low carbon development actions at local level in Malaysia

#### IMLCS ACTIONS: Potential CO<sub>2</sub> Reduction

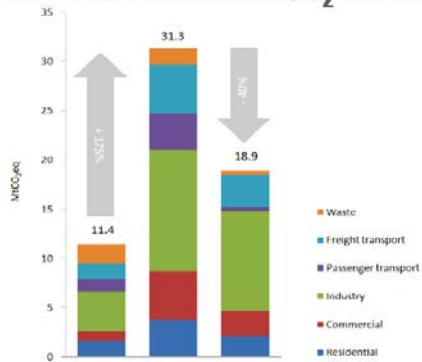


Figure 1: GHG emissions by sectors

Source: Low Carbon Society Blueprint for Iskandar Malaysia 2025 – Summary for Policymakers (2nd Ed.), 2018, p.1

#### Kuala Lumpur Low Carbon Society Blueprint 2030 EMISSION REDUCTION CONTRIBUTION BY ACTION

Thrusts	Actions	Reduction (ktCO <sub>2</sub> -eq)	Share (%)*
Economy (59%)	Action 1 Green Growth (GG)	2,502	5.2
	Action 2 Energy Efficient Spatial Structure	2,872	6.0
	Action 3 Green Mobility (GM)	6,868	14.2
	Action 4 Sustainable Energy System (SE)	16,327	33.9
Social (19%)	Action 5 Community Engagement and	9,015	18.7
Environment (22%)	Action 6 Low Carbon Green Building (GB)	9,673	20.1
	Action 7 Blue and Green Network (BG)	316	0.7
	Action 8 Sustainable Waste Management	527	1.1
	Action 9 Sustainable Water and (WW)	105	0.2
Enabler	Action 10 Green Urban Governance (UG)	0	-
<b>Total</b>		<b>48,206</b>	<b>100</b>

Source: Prof. Ho Chin Siong, UTM, Malaysia

Mr. Keat Rangsey, Director of Environmental Department of Phnom Penh, Cambodia highlighted three (3) main themes for city development and environmental management, covering issues and constraints, development and sustainable environment, and development achievements. Environmental issues and challenges are air pollution (e.g. transportation, waste burning, dust, ect.), water pollution (e.g. waster water discharge without proper treatment, solid waste dumped into water bodies, etc.), and land pollution (e.g. improper waste management). However, measures are taken to ensure air quality management, sustainable and clean water, and sustainable land management and use (development and sustainable environment). Phnom Penh has been awarded for her effort to develop and promote low carbon and sustainable city including: Award Winner of Sustainable Water Supply from the Development Bank in Manila, the Philippines in 2004; Leadership Award in London, United Kingdom in 2005; Asia-Pacific Clean City Award in Melbourne, Australia in 2006; Environmental Improvement Mechanism Award in London, United Kingdom, 2007, and Clean Industrialized Water Award in Stockholm, Sweden, etc.

### Clean Air Promotion and Management



### City Development Achievements



Source: Mr. Mr. Keat Rangsey, Director of Environmental Department of Phnom Penh

## SESSION 4: Enhancing actions to respond to climate change from low carbon society research network (LoCAR-Net) perspectives

[Chair] Dr.Shuzo Nishioko, Counselor, IGES

### Speakers:

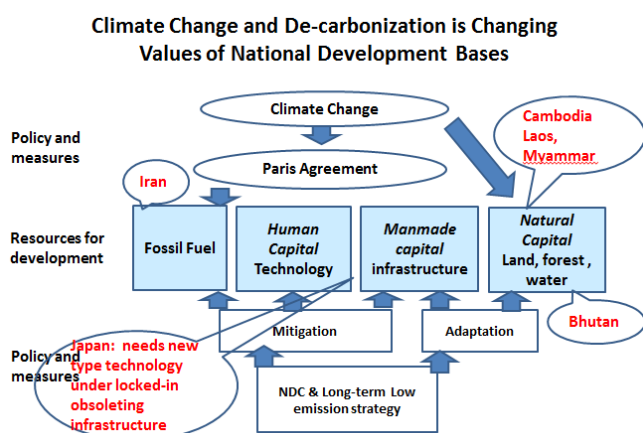
- Dr. Shuzo Nishioka, Counselor, IGES, Japan
- Dr. Jakkanit Kananurak, Director, Capacity Development Team, TGO, Thailand
- Ms. Oulavanh Sinsamphanh, Head of Climate Change Unit, Department of Environmental Technology, Faculty of Environmental Science, National University of Laos
- Dr. San Win, Environmental Conservation Department (ECD), Ministry of Natural Resources and Environmental Conservation (MONREC), Myanmar
- Dr. Hak Mao, Deputy Director of Department, Department of Science and Technology, Ministry of Environment, Cambodia



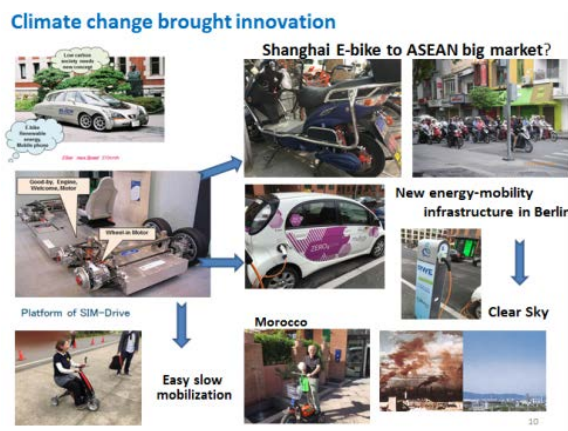
**This session is mainly focused on low carbon development researches in Japan and Asian countries to enhance actions to respond to climate change from low carbon society research network perspectives and to enhance further studies at all level.**

Dr. Shuzo Nishioka, Counselor, IGES, Japan explained about role of research community for carbon neutral development - case of natural resources depending countries. He highlighted mainly on how we can stop climate change, what impacts the carbon neutral issue gives to base countries' development, role of scientists in carbon neutral development, and role of government. He hinted that if we wish to stable climate at some temperature level, we have to stop emissions at that point, because any additional emission remains will add some part of its remains and enhance temperature rise. He noted that climate change and de-carbonization is changing values of national development bases. Japan, for example, is facing hi-energy lock-in and age society, which, in turn, the government is realizing the restoration and promotion of compact city plan. In the meantime, he observed that climate change lead innovations in some cities; for instance, the introduction of railway, E-bike, and new energy-mobility infrastructure, etc. He also investigated effects of carbon neutral path and energy access in Buthan, originating from change of precipitation and hydrology which impacts on capacity and stability of hydropower, disaster including land slide, soil erosion, burst of Glacier Lake, degradation of forest/soil/agricultural land leading to reduction of carbon sequestration and biomass capacity, and development path under democratization and globalization.

## Climate change and national development



## Innovations to address climate changes

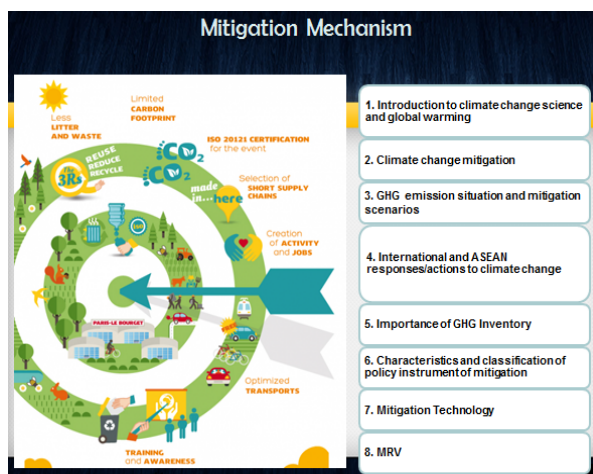


Source: Dr. Shuzo Nishioka, Counselor, IGES, Japan

Dr. Jakkanit Kananurak, Director, Capacity Development Team, TGO, Thailand introduced capacity building for low carbon development and climate change responses. He defined that Climate Change International Technical and Training Center (CITC) is a one-stop technical and training center and networking platform on mitigation and adaptation for the Southeast Asia Countries. Many activities have been implemented such as training and e-learning courses which respond to GHGs inventory management. He highlighted that Climate Change Management and Sustainable Development Concept covers: climate change management and sustainable development, climate change from international and regional perspective, and climate change national policy, importance of GHG inventory, importance of mitigation and climate change adaptation, characteristics and classification of policy instrument of mitigation and adaptation, integration of mitigation and adaptation planning

and implementation, mitigation/adaptation actions plan, policy integration monitoring, good governance and low carbon city development, strategies on capacity building, GHG emissions reduction networks. His center organized capacity development programme almost every year.

### CITC action for GHG mitigation



### Training programme of CITC

Upcoming Activities to support AMS			
Trainings/ Workshops	Training Overview	Targets	Date
1. Regional Training on Greenhouse Gas Mitigation	I. Climate Change and importance of mitigation mechanism II. International and ASEAN GHG emission situation and outlook III. Characteristics and classification of policy instrument of mitigation IV. Mitigation technology V. Best practices and case studies on mitigating GHG emission from relevant sectors	• Government officials, and authorities who involve in the planning, management and implementation of GHG mitigation	2018-2020
2. Regional Training on MRV of GHG Mitigation	I. GHG Mitigation Tracking Guideline II. Methodologies Development III. Structure of MRV IV. Cases study/Best practices on MRV of GHG Mitigation V. Structure of Reporting		
3. Regional Training on Climate Finance	I. Climate Change Science and Policies II. Climate Finance – Policies and Mechanisms III. Case Studies of Climate Finance Projects IV. Accessing Climate Financing and Managing Projects V. Developing Supportive Infrastructures for Climate Finance	1) National government officers who activities, finance planning, and infrastructure development/investment. 2) Financial and investment related institutions	

Source: Dr. Jakkanit Kananurak, Director, Capacity Development Team, TGO, Thailand

Ms. Oulavanh Sinsamphanh, Head of Climate Change Unit, National University of Laos, shared about Climate Change and Low Carbon Development Research in Lao PDR, focusing on education system at National University of Laos, ongoing projects, national and international cooperation, and possible project and collaboration. Climate change and low carbon development related projects were introduced including: cook stove promotion project “Harnessing Climate Change Mitigation Initiatives to Benefit Women” and domestic research on “assessment of the contribution of Improve Cooking Stove (ICS) on reduction of the firewood consumption and CO<sub>2</sub> emission”. She also illustrated potential areas of cooperation such as low carbon, green energy and environmental sustainability, climate change impact assessment (resilience, adaptation, and mitigation), climate modeling, course curriculum development, climate change and sustainable development (Mitigation & Adaptation), disaster preparedness, and Risk reduction management, etc.

### Low Carbon Research Projects

**Examples:**  
**Low carbon research**

According to Lao PDR's NDC: MOMRE, DDMCC and NUoL and with GIR Greenhouse gases Inventory Research Center, Korea

- collaborate on small project on **Cooperative Capacity-Building for Nationally Determined Contribution CCB1**
  - To compile GHG inventory and conduct mitigation potential analysis
  - To exchange of NDC implementation experiences on a regular basis
  - To support establishment of an integrated GHG database and MRV system in participating countries
- conduct a Cook stove promotion project “**Harnessing Climate Change Mitigation Initiatives to Benefit Women**”
- and domestic research on “**assessed the contribution of Improve Cooking Stove (ICS) on reduction the firewood consumption and CO<sub>2</sub> emission**”

the cooks had different ways of lighting the ACE. The cooks constantly overloaded the ACE causing some smoke during the cooking process, adding fuel too frequently and did not turn up the fan regulator to its full capacity citing that the faster the fan spins the quicker the fuel runs out.

**Tao Dam**

**WS2**

**ACE African Clean Energy Fan driven TLUD gasifier**

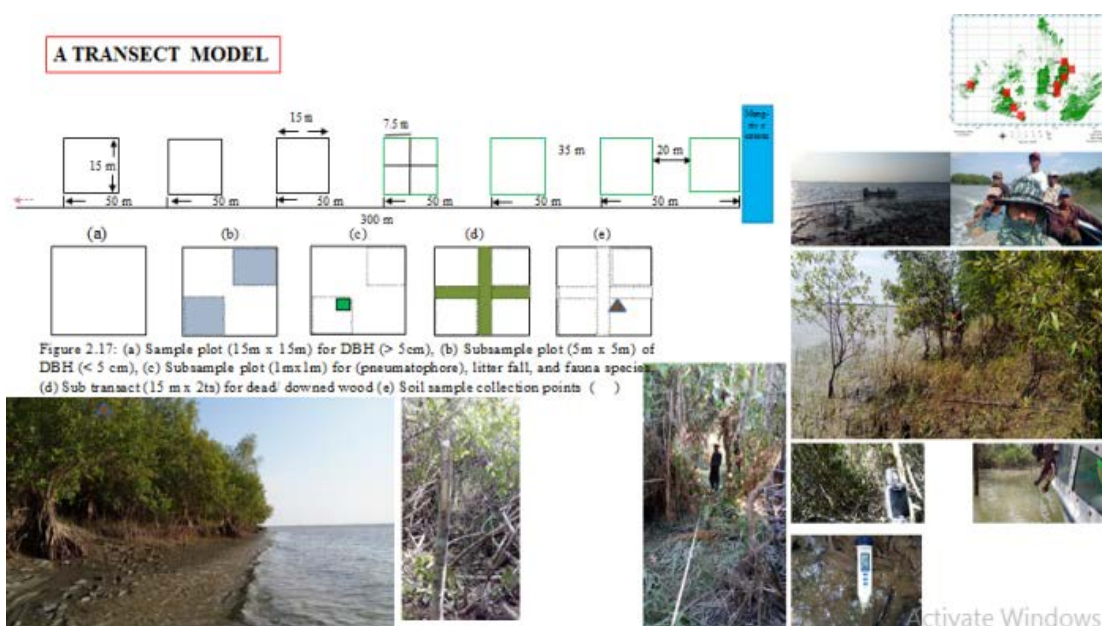
Source: Ms. Oulavanh Sinsamphanh, Head of Climate Change Unit, National University of Laos

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Mr. San Win, Ph.D. Candidate, Environmental Conservation Department (ECD), Myanmar shared his research progress on Mangrove/a carbon sink status in Ayeyarwaddy, Myanmar. Main objectives of research are to investigate the impacts of Cyclone Nargis on mangroves and their recoveries in Ayeyarwaddy, to understand mangrove species composition status, and to understand mangrove ecosystem service to low carbon development measures. The results of his study showed that 26 mangrove tree species of 1825 trees belonging to 11 plant families; tree density:  $262.88 \text{ trees ha}^{-1} \pm 619.90$ ; SSA2 demonstrated highest tree density of  $2056.05 \text{ trees ha}^{-1}$ ; least tree density at SSB5 with  $262.88 \text{ trees ha}^{-1}$  located in Mainmahla Island RF and wildlife sanctuary; and shrub and palm species are taking place in degraded mangroves in the study area. Mangroves and their ecosystem conservation are crucial to enhance low carbon development measure. He also concluded that mangrove RFs should be demarcated clearly to prevent encroachment by local communities and to encourage natural recovery; coastal ecosystem conservation measures should be encouraged through policy engagement to enhance low carbon development.

### Mangroves/ a carbon sink status in Ayeyarwaddy

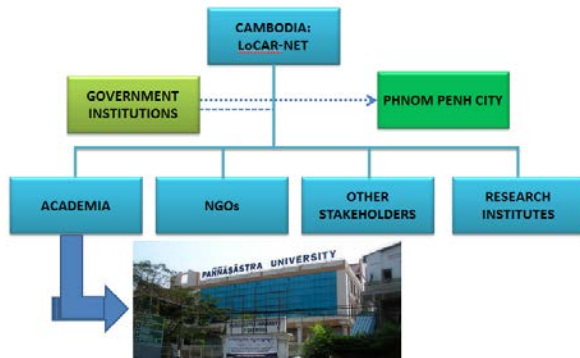


Source: Dr. San Win, Environmental Conservation Department (ECD), Myanmar

Dr. Hak Mao, Deputy Director, Department of Science and Technology, the NCSD, Cambodia briefed background of low carbon research cooperation between Cambodia and Japan since 2011. He expressed his aspiration to propose low carbon research network participated by governmental institutions, NGOs, academia, research institutions, and other stakeholders. Substantial progresses have been made for low carbon research cooperation, especially with private university (e.g. Pannasastra University). He also shared his research on low carbon development plan in Cambodia towards 2050, covering four policies and twelve strategies. The introduction of low carbon technologies have been surveyed and researched in several provinces and is expected to extend to other provinces in Cambodia; however, financial support is needed to achieve research targets. Additionally, enhancing cooperation and collaboration for low carbon development research in Cambodia must be made and is expected to engage with local authorities (Phnom Penh City).

## Low carbon development research in Cambodia

### PROPOSED LOW CARBON RESEARCH NETWORK



### RESEARCH OUTCOMES



Source: Dr. Hak Mao, Deputy Director of DST/NCSD, Cambodia

Additionally, Dr. Hak Mao presented Cambodia's Environmental Outlook: Status, Challenges, and Opportunities on behalf of H.E. Ken Serey Ratha, Deputy Secretary General of the NCSD. This presentation indicated the current country status of political stability, multiparty liberal democracy under constitutional monarchy, bilateral and donors partnership and assistance, poverty alleviation drive in positive progress, free market economy, world trade organization, Law on investment, anti-corruption Law, and financial and government reform in progress. The presentation also highlighted some challenges faced including: climate change, degradation of ecosystems services, human resource development, coordination, legal reform (e.g. environmental code, draft NESAP), and institutional reform (e.g. conservation and productions). The country also envisioned the scene for economic development with a long vision towards 2030 and beyond as well as to consider insights for knowledge, policy, and governance towards sustainability.

## Cambodia's Environmental Outlook: Status, Challenges, and Opportunities



Source: H.E. Ken Serey Ratha, Deputy Secretary General of the NCSD, Cambodia

## **Wrap-up and closing session**

The workshop participated by 119 participants who are representatives of the government institutions, research institutes, academia, and NGOs of Cambodia, Lao PDR, Myanmar and other Asian countries. The respective speakers have shared and updated climate change and low carbon development related policies, strategies, and actions as well as identified the future direction to address adverse impacts of climate change and to promote greener and cleaner economic development and to promote low carbon society in the near future. Representatives from each country raised their own perspectives and future strategic plans to ensure low carbon development in different possible ways. This workshop is considered as another driving vehicle to encourage the decision-makers to take low carbon development plan into account for the economic development. Further effort is in place to integrate low carbon development study into city level, especially Phnom Penh City. Integration of low carbon development into academia must be extended widely in order to build human resources and capacity. In sum, we have to mobilize financial support from different development partners and donor nations to promote low carbon development research and translate into concrete actions.

**Annex I: Agenda**  
**Capacity Building Workshop on Low Carbon Development**  
**for Cambodia, Lao PDR and Myanmar**  
 29 September 2017, Sunway Hotel, Phnom Penh, Cambodia

**7:30-8:30 REGISTRATION**

**8:30-9:00 OPENING SESSION**

- National Anthem: **Ms. Heang Phallin**, Technical Officer
- Welcome Remarks: **Ms. Tomoko Ishikawa**, Secretary-General, Low Carbon Asia Research Network (LoCARNet) / Institute for Global Environmental Strategies (IGES)
- Opening Remarks: **H.E. Dr. Tin Ponlok**, Secretary General
- Group Photo: All participants

**9:00-9:20 COFFEE BREAK**

**SESSION 1: Relevant policies and measures to respond to climate change in Cambodia (Chair: Mr. Chea Chanthou, Director of Dept. of Technology and Science, DST)**

9:20-9:40 (20 mins.)

- Progress of national actions to address climate change (Q&A)
  - **Mr. Sum Thy**, Director of Climate Change Department

9:40-10:00 (20 mins.)

- Transport development policy and climate change responses (Q&A)
  - **Mr. Srey Vireak**, the Ministry of Public Works and Transport

10:00-10:20 (20 mins.)

- Energy development policy and climate change responses (Q&A)
  - **Mr. Toch Sovanna**, Director of Department, the Ministry of Mines and Energy

10:20-10:40 (20 mins.)

- Strategy on REDD+ and its implementation in Cambodia (Q&A)
  - **Mr. Lun Kimhy**, Officer of Forest Administration of the Ministry of Agriculture Forestry and Fisheries (*GHG mitigation from AFOLU sector*)

**SESSION 2: Low carbon development and climate change responses from international perspectives (Chair: Dr. Junichi Fujino, Programme Director, City Taskforce, IGES/Senior Researcher, NIES)**

10:40-11:00 (20 mins.)

- Low carbon development and climate change policies in Myanmar (Q&A)
  - **Mr. Kyaw San Naing**, Director, Environmental Conservation Department, the Ministry of Natural Resources and Environmental Conservation

11:00-11:20 (20 mins.)

- Low carbon development and climate change policies in Lao PDR (Q&A)
  - **Mr. Boun Eua Khamphilavanh**, Department of Climate Change of MONRE

**SESSION 3: Low Carbon Cities: Planning and Actions (Chair: Dr. Hak Mao, Deputy Director of Department)**

11:20-12:00 (40 mins.)

- Opening remarks and brief introduction of AIM-JCM project (Q&A)
  - **Dr. Junichi Fujino**, Programme Director, City Taskforce, IGES/Senior Researcher, NIES
  - **Mr. Kazuya Fujiwara**, Chief Consultant, MHIR

## **12:00-13:00 Lunch Break**

13:00-13:20 (20 mins.)

- Best practices for low carbon development actions at local level in Malaysia (Q&A)

- **Prof. Ho Chin Siong**, UTM, Malaysia

13:20-13:40 (20 mins.)

- Brief introduction of PP's Master Plan (Q&A)

- **Mr. Keat Rangsey**, Director of Environmental Department of Phnom Penh

13:40-14:20 (40 mins.)

- Cambodia's environmental outlook and its long-term vision (Q&A)

- **Dr. Hak Mao**, Deputy Director of DST, the NCSD

14:20-15:00 (40 mins.)

- Panel Discussion

## **15:00-15:20 COFFEE BREAK**

**SESSION 4: Enhancing actions to respond to climate change from low carbon society research network (LoCAR-Net) perspectives (Chair: Dr. Shuzo Nishioka, Counsellor, IGES)**

15:20-15:45 (25 mins.)

- Roles of research communities for low carbon development and climate change responses (Q&A)

- **Dr. Shuzo Nishioka**, Counsellor, IGES

15:45-16:05 (20 mins.)

- Capacity development for low carbon development and climate change responses (Q&A)

- **Dr. Jakkanit Kananurak**, Director, Capacity Development Team, TGO, Thailand

16:05-16:25 (20 mins.)

- Climate change and low carbon development research in Lao PDR (Q&A)

- **Ms. Oulavanh Sinsamphanh**, Head of Climate Change Unit, Department of Environmental Technology, Faculty of Environmental Science, National University of Laos

16:25-16:45 (20 mins.)

- Climate change and low carbon development research in Myanmar (Q&A)

- **Dr. San Win**, Environmental Conservation Department (ECD), Ministry of Natural Resources and Environmental Conservation (MONREC)

16:45-17:00 (15 mins.)

- *Progress of low carbon development research in Cambodia*

- **Dr. Hak Mao**, Deputy Director of Department

## **17:00 WRAP-UP AND CLOSING SESSION**

- **H.E. Dr. Tin Ponlok**, Secretary General



### **Annex III: Welcome Remarks**

#### **Ms. Tomoko Ishikawa, Secretary General, LoCARNet during Capacity Building Workshop on Low Carbon Development for Cambodia, Lao PDR and Myanmar**

29 September 2017, (Sunway Hotel), Phnom Penh, Cambodia

[呼びかけ]:

Distinguished participants, Ladies and Gentlemen,

My name is Tomoko Ishikawa, Secretary-General of Low Carbon Asia Research Network, LoCARNet for short.

On behalf of the organisers, first of all, I would like to express my sincere gratitude to staff members of the Ministry of Environment, Cambodia, for the excellent preparation of the workshop, and all of you for your participation in this workshop. Especially, special thanks go to researchers and policymakers from Cambodia, Lao PDR and Myanmar, as well as Prof. Ho of UTM, Malaysia and Dr. Jakkani of TGO, Thailand, who will make presentations in the workshop later on.

I am very happy to hold the 5th tripartite workshop here in Cambodia, and honored to give a few words as a representative of the network.

[活動紹介]

The Low Carbon Asia Research Network, so called LoCARNet, started from 2011 by Japanese proposal to ASEAN plus three Environment Ministers' Meeting held at Siem-Reap, is a network of researchers who make profound contributions to national climate policies. The basic concept of the network is that, in order to reduce GHG emissions required for climate stabilisation, it is quite necessary for us to conduct across-the-board transition in our social system as a whole.

In line with the concept, we have conducted knowledge-sharing on policies and mechanisms at both central and local levels; for example, ensuring that social hubs, such as energy technology systems, industries, urban infrastructures, social systems, financial functions and individuals all aim for effective GHG reductions.

The results of our discussions were developed in academic journals and books, reported at various meetings of UNFCCC, as well as being reflected into policies in each country through participants.

[今回のWSテーマ]

Global climate policies reached a major turning point at COP21 in Paris in 2015, with the subsequent onus on each country to develop and implement policies based on the NDC (National Determined Contributions) as the primary axis. Moreover, policies will now not only be formed and implemented at the national level, but also at regional and city levels.

COP21 bookended an era of protracted climate negotiations and led to a new era for action and implementation towards realising low-carbon societies, where not only national governments but

also non-state stakeholders such as cities, local governments, businesses, financial organisations and civil society will be focused on as actors of the transition. In other words, actual actions on the ground at all levels will take centre stage.

To carry out the above we will need to create science-based expert communities in each country and develop systems to keep the stakeholders concerned updated with all available and pertinent knowledge. As referred to in the Paris Agreement, it is a matter of some urgency to build capacity for low-carbon development via relationships between developed and developing countries; however, the extent to which developing countries need to go in this regard as well as the depth of their involvement in formulating evidence-based research communities are ill-defined areas.

Low Carbon Asia Research Network (LoCARNet) was established with the above in mind, i.e., with a firm conviction that the only way to accomplish development along a new pathway in a very short time is by fostering domestic and within-region research communities. The Network promotes evidence-based policymaking by bridging the gap between policymakers and research communities, and promotes region-wide knowledge-sharing via regional cooperation.

This workshop aims to provide an opportunity to discuss how to further fortify the research communities that will support science-based policymaking and actions in the three countries, Cambodia, Lao PDR and Myanmar, in the future.

[まとめ]

With that, I would thus like to convey my vote of confidence in the workshop, its speakers and resource persons, and to all of the distinguished participants. May today be very fruitful and successful!

Thank you very much for your attention!

#### **Annex IV: Opening Remarks**

**H.E. Tin Ponlok, Secretary General of the General Secretariat of  
the National Council for Sustainable Development during  
Capacity Building Workshop on Low Carbon Development for  
Cambodia, Lao PDR and Myanmar**

29<sup>th</sup> September 2017, Sunway Hotel, Phnom Penh

- **Dr. Shuzo Nishioka**, Counselor, Institute for Global Environmental Strategies (IGES)!
- **Ms. Tomoko Ishikawa**, Secretary General, Low-Carbon Asia Research Network (LoCARNet)/ IGES!
- **Dr. Junichi Fujino**, Programme Director, City Taskforce, IGES/NIES!
- Excellencies, Professors, Ladies and Gentlemen, National and International Distinguish Guests!

Today, I have a great pleasure and honor to preside over a “**Capacity Building Workshop on Low Carbon Development for Cambodia, Lao PDR and Myanmar**”. On behalf of H.E Say Samal, Minister of the Ministry of Environment and Chair of the National Council for Sustainable Development, I would like to express my warm welcome to Venerable Monks, Excellencies, Ladies and Gentlemen, representatives from Union of Youth Federations of Cambodia (UYFC), representatives from the Association of Pagodas Children, Intelligentsia and Students , and National and International Distinguish Guests who are participating in the very important Capacity Building Workshop. I would like to pay my special thanks to the Ministry of Environment of Japan for providing financial support through the IGES who has subsequently been supported and smoothly cooperated for organizing workshops in Cambodia. I do hope that such a cooperation will be sustained in order to achieve human capacity building target in the area of low carbon development in Cambodia. In the meantime, I would like to request the IGES to keep supporting and providing opportunities to relevant officers and students from Cambodia’s institutions and universities to participate in trainings, workshops and exchange programs in the field of Climate Change Mitigation (low carbon development) and Adaptation in Japan. The aim of today’s workshop is to provide an opportunity to discuss how to further fortify the research communities that will support science-based policymaking and actions in the three countries, Cambodia, Lao PDR and Myanmar, in the future.

#### **Excellencies, Ladies and Gentlemen!**

Climate change has become one of the greatest risks facing humanity and a high priority of global concern in the 21<sup>st</sup> century. According to 5<sup>th</sup> Assessment Report of the Inter-governmental Panel on Climate Change (5<sup>th</sup> IPPCC) indicated that the earth continues to heat up, the severity of climate change impacts on global socioeconomic development and environmental sustainability continue to intensify and amplify. The global GHG emissions had doubled over the last two decades (from 29GtCO<sub>2</sub>eq./year in 1990 to 49GtCO<sub>2</sub>eq./year in 2010) and it is projected to increase drastically if there is no appropriate measure to reduce GHG emissions. Countries in ASEANs, including Cambodia are facing adverse impacts of climate change causing a number of human and animal mortalities, damaging physical infrastructures and natural resources and seriously affecting to social-economic development. For instance, flood in 2013 Cambodia lost about 360 million (10% of total national budget) and it is projected to increase to 3.5% of total

GDP if there is no appropriate measure taken in 2050. Moreover, drought in 2016 damaged significant agricultural crops and peoples' animals which blew another pressure on the government. The adoption of Climate Agreement (Paris Agreement) in late 2015 has played an important role in mitigating GHG emission to a maximum level and providing opportunities to build climate resilience so as to ensure sustainable development. Low Carbon Development Policy is regarded as an appropriate approach, which provides multiple benefits including social, economic, and environmental benefits besides reducing GHG emissions. I would affirm that the adoption of low carbon development plan in mega cities will contribute considerably to reducing GHG emissions.

**Excellencies, Ladies and Gentlemen Professors, National and International Distinguish Guests!**

Under the leadership of Cambodia Government national economic growth has increased remarkably over the last decade and the Government has set an economic development target to reach the status of an upper-middle income country by 2030 and a high-income level by 2050 in 5<sup>th</sup> mandate; and in order to achieve this target, energy demand is expected to increase dramatically. A study estimated that total GHG emissions in Cambodia will increase to about 4 times and 25 times in 2030 and 2050, respectively, from 2010 (Mao et al, 2016). The same study suggested that the government can reduce GHG emissions significantly through adopting low carbon development plan focusing mainly on forest plantation, sustainable forest management, energy efficiency technologies, energy saving, renewable energy, public transport, and sustainable waste management, etc. The Royal Government of Cambodia has prioritized environmental sector through assigning the Ministry of Environment to lead and manage environmental protection, biodiversity conservations, sustainable natural resources consumption, and sustainable livelihood for long-term benefits of all Cambodian people.

**Excellencies, Ladies and Gentlemen!**

Phnom Penh Capital is named as administrative, economic and cultural city of the Kingdom of Cambodia. Over the last two decades, population has grown double (almost 1 million people in 1998 to 2 million people in 2016); numbers of vehicles has increased four times (about 300, 000 in 2002 to 1 million vehicles in 2016); the amount of waste disposal at landfill has increased almost 3 times (105 million tons in 2003 to 386 million tons in 2010), etc. Simultaneously, economic growth, construction and infrastructure development, and energy consumption have increased rapidly. These factors are causing Phnom Penh city to face with traffic congestion, air pollution, and increase of GHG emission, water pollution, welfare problems and social security. Therefore, the development of low carbon development plan is seen as an important approach to solve these constraints. Dr. Junichi Fujino, Programme Director, City Taskforce, IGES/Senior Researcher/NIES will present about initial study for low carbon development in Phnom Penh City in the following session.

I am confident that that today's workshop will respond to the our specific needs through sharing knowledge, experience, and best practices about Low Carbon Development Plan and Policy as well as Climate Change Response Measures from several countries in Asia.. The workshop also provides more opportunity to better understanding about the importance of low carbon development plan for cities in Asia, especially for Cambodia, Lao PDR and Myanmar. In addition, the workshop will point out the important role of Low-Carbon Research Network

(LoCAR\_Net) for building human resources and strengthening research communities and capacity. The workshop will become a critical message for decision makers to mainstream low carbon development plan into national development policies and plans of the Royal Government of Cambodia. I would like to take this opportunity to call for all relevant stakeholders, especially to Phnom Penh Authorities and lines-departments to cooperate and participate with both national and international experts for data collection and analysis.

I would like, once again, to express my heartfelt thanks to the Ministry of Environment of Japan for providing financial support and the IGES of Japan for initiating and cooperating to hold this workshop. I also thank staffs of the IGES (especially to **Ms. Michiko Inoue**), officers of the Department of Science and Technology, and the Department of Climate Change, for their committed efforts to prepare this workshop. I would also thank both national and international speakers for spending their auspicious times and energy to prepare and present during the workshop.

Last but not least, I would like to wish Venerable Monks, Excellencies, Ladies and Gentlemen, representatives from Union of Youth Federations of Cambodia (UYFC) and the Association of Pagodas Children, Intelligentsia and Students, and National and International Distinguish Guests the four gems of Buddhist wishes: **Longevity, Nobility, Health, and Strength** and I wish the workshop to have an active and productive discussion. I would like to declare the workshop opened from now.