Our Common Future under Climate Change
7-10 July 2015, Paris

Parallel Session No. S3342:
Developing Capacity through Low Carbon Initiatives, Climate Adaptation and Increased Resilience to Climate Impacts in the Asia-Pacific Region

Dr. Linda Anne Stevenson of APN moderated the session and began with a short introduction of the presenters of the session. She welcomed Dr. Rodel D. Lasco from the Oscar M. Lopez Center in the Philippines, Dr. Saleemul Huq from the International Centre for Climate Change and Development (ICCCAD) in Bangladesh, Prof. Dr. Kanayathu K. Koshy from the Centre for Global Sustainability Studies in Malaysia, Dr. Shuzo Nishioka and Ms. Shom W.C. Teoh from the Institute for Global Environmental Studies (IGES) offices in Japan and Thailand, respectively, and Drs. Mukand S. Babel and Victor Shinde from the Asia Institute of Technology (AIT) in Thailand. Given the short amount of time for presentations, Dr. Stevenson also recommended the audience to save their questions for the end.

In the first presentation, Dr. Stevenson began by sharing information about APN, which is a network of 22 countries that was established in 1996. This year marked 20 years since the establishment of the organisation, which has expended around US$25 million and reached a milestone with 401 projects, each of which has engaged 5–10 researchers. In 2015, APN's Fourth Strategic Plan was approved for 2015–2020. She then provided details about the fourth strategic phase that has a research agenda which focuses on climate change and climate variability; biodiversity and ecosystems; changes in the atmospheric, terrestrial and marine domains; resources utilisation and pathways for sustainable development; and risk

reduction and resilience. She went on to note that her presentation would focus on capacity building activities undertaken by the APN.

Dr. Stevenson explained that APN has been supporting capacity development of early-career researchers, policy makers, community leaders and resource managers. Cooperating with other international capacity development programmes, APN has been pursuing existing or creating new opportunities for discussions and interactions, training workshops for scientists and encouraging stakeholder involvement in all phases of the projects, as well as regular synthesis and assessment activities of projects to identify important outcomes, research gaps and emerging issues. The CAPaBLE programme, specifically, has evaluated projects based on input, output and outcome. From 2010-2015, 60 projects were completed with 175 collaborators, 161 publications, workshops/conference proceedings, 44 peer reviewed papers, 4,117 people engaged and 83% of projects producing publications and 223 events conducted. Dr. Stevenson also highlighted a project on climate change and variability implications on biodiversity youth scenario simulations and adaptation in the Pacific. In the Philippines, APN influenced local level policy makers to integrate climate risk management and climate change adaptation plans. They effectively used traditional knowledge and have effectively engaged international and local level experts.

Scientists and participants emphasised the importance of having local champions in their policy sectors, the role of social media, science should be brought to local levels, partnerships need to be looked at with the aim of identifying what works and what doesn't, and expand partnerships to the private sector. In Bhutan in a science-policy dialogue, APN identified that researchers need to identify short-term and long-term actions for policy makers, reward incentives to motivate scientists, hold face-to-face discussions, work with intermediary agents and articulate the impact of scientific findings with human issues. Overall, in the Asia-Pacific region, APN provides opportunities for understanding diversity, educating individuals, creating opportunities, engaging all stakeholders and sharing and communicating results through face-to-face contact. She concluded her presentation and introduced the second speaker, Dr. Rodel D. Lasco.

Dr. Lasco began by describing how climate change will worsen impacts in Asia. He provided evidence from the IPCC that states that although there may be less number of cyclones, they will be more intense. He then demonstrated that **based from countries most affected by climate change, 4/10 top countries are from Southeast Asia (SEA). In the longer term, a lot of vulnerable countries are in SEA since the region is very sensitive and vulnerable to climate risk. With regards to the top annual loss in relation to social expenditure, Asian countries remain at the top.**

In the case of the Philippines, Dr. Lasco explained that flooding will increase, however this will also occur across SEA. The heaviest flooding in 50 years took place in 2011 in Thailand that cost US$45.7 billion. The perception in Manila is also to associate flooding with climate change and, in general, there is scientific evidence that climate change will have a detrimental effect on rice and food security. In 2011, heavy monsoon rainfall and multiple typhoons inundated large areas of productive rice lands in SEA. This has also led to high mortality – in 2011, SEA floods killed more than 2,000 people directly and many others died afterwards indirectly. He concluded his presentation by explaining how government agencies in SEA have dealt with climate change adaptation and disaster risk reduction separately.

In the third presentation of the session, Dr. Saleemul Huq introduced the Asia Pacific Forum on Loss and Damage that is an APN supported initiative. He explained that over the past year a number of events have been organised alongside several international conferences and for which an event will likely take place in Paris for COP21. He then gave a historical overview of the Warsaw International Mechanism on Loss and Damage (WIM) that was established in 2014 and for which a two-year work plan was agreed upon in Lima at COP20 and an executive committee was established during the 42nd Session of SBSTA in Bonn last month. As part of the work plan, Dr. Huq mentioned that the WIM will be evaluated in 2016.

He then clarified that **as there is no agreed-upon definition of loss and damage, many countries have converged on what is now common understanding. There is now a growing wave of individuals that are beginning to engage in the topic and now with the APN projects there are a number of different organisations that will be working on the issue.**

At ICCCAD, he included, the Resilience Academy was set up a few years ago and this year the topic will be on loss and damage. It is an opportunity for young researchers to merge ideas and create articles related to the issue. At the moment there is a fast growing interest on the topic and Japan has been ahead of the pack on research on this and now ICCCAD will be engaged in the WIM for which a member from Japan has been selected. Part of their task as a stakeholder is to ensure that committee members do not act as negotiators because the objective of the WIM is a coordinated effort for which they will need to work together. Having a social occasion to this is incredibly important and ICCCAD, in this regard, will help enable them to do their task and hopefully the research community will step up to do their job.

Dr. Stevenson then introduced Prof. Dr. Kanayathu C. Koshy to speak on disaster risk management for sustainable development. For the capacity based training, the focus is on risk reduction for disaster management and community-based approaches. It is important that disaster risk is considered part of hazard and vulnerability. As such, mitigation helps deal with the root cause and adaptation may be seen as reducing vulnerability. Dr. Koshy expanded by going into detail about the SEA training for Malaysia, Viet Nam, Cambodia and Lao PDR in-country training and the Climate and extreme events training institute among the Pacific Island countries. The trainings are 3-day workshops and the institutes were 2-week exercises that focus on resilience building and development. "**What we have been explaining in our training is that we need to build resilience through risk reduction so as to enhance capacity to cope with disasters later on,**" said Dr. Koshy. **It should be emphasised that it may not be possible to fully remove risks, but we could be better capacitated to deal with disasters through strategically planned responses.**

In Kedah, Malaysia, the project team made use of risk reduction and resilience training by first explaining the logic behind the theories and later on, when they felt comfortable, providing training on methodologies and tools that could be used for their specific situation using systems-thinking, mind mapping exercises, etc. They were then divided into groups that would eventually help them build resilience. During the training, they were introduced to activities that reduce risk. This included going into households to understand what risks were being faced. Trainees went to schools, housing areas and others so as to better understand what kind of risks they live in. They were given disaster risk management kits and boats to make use during flood disasters.

In the Pacific, a similar project was conducted to deal with disasters but one thing highlighted was the threat of not accomplishing the Sustainable Development Goals (SDGs). Sustainable development faces a number of challenges. For one, they tried to progressively build strength and, therefore, formulate a response. In the small island developing states (SIDS), they built on scenarios and potential risks and also looked at available data since they required different skills for risk assessment using computer-based models used during the training. The same project management approach was used. To understand how this was procedurally implemented, they looked at how communities are engaged (local practitioners, community leaders, community experts, etc.). Communities and project implementers worked together to build capacity and resilience.

A major outcome from the Pacific and SEA was that over 1,00 climate personnel had been trained and an equal number will be trained this year using APN support. They now know more theory and have more policy and project skills. More than building capacity, those who developed the training also learned from the participants – as a lesson learnt, we realised we need capacity building throughout the life of a project

(i.e. build 'capacity-building' exercises into projects). The two universities (Universiti Sains Malaysia and the University of the South Pacific) have established Masters and training courses to do this as well. All of this is happening not only because of APN but also because of institutional capacity and motivation to act. This is a great opportunity for researchers to link with organisations to share information that otherwise could not have been passed on.

For the fifth presentation, Dr. Stevenson introduced Dr. Shuzo Nishioka from LoCARNet, low carbon society network in Asia. He began his presentation by showing how emissions need to be halved by 2050 to reduce net global emissions. He explained that Asia is already more than 2 ton/capita. In Japan, he mentioned, they already have a "locked-in" society: for them, it is very difficult to go to a 2-ton world. He explained developed countries have an advantage, for this reason, to go directly to a 2-ton world. **He explained four operational policies of LoCARNet, and emphasized importance of fostering policy-oriented research community in each country so that they can formulate their development direction with their ownership, not by the foreign help who has less responsibility in long-term future of the country.** Using the example of Malaysia, Dr. Nishioka expanded that since they have already acquired enough knowledge of city planning in Asian way, they can help and lead other Asian countries as a member of alliance of Center of Excellence.

Following this, Ms. Shom W.C. Teoh from IGES provided an update on their project to build the capacity of local governments in East Asia to become pioneers and policy leaders in low carbon city development, particularly in monitoring, reporting and verifying (MRV) greenhouse gases (GHG) and mitigation projects. She went into detail about the case of Phitsanulok Municipality, Thailand which has a predominantly service-led economy. The municipality has about 10 years of experience working with international organisations, but is a 'beginner' to GHG inventory and MRV. IGES used the ICLEI five-milestone framework to design capacity building activities. Collecting baseline data was the first step, so a working group comprising all the eight departments in the municipal organisation was established and trained through workshops. This was supplemented by individual consultations as necessary. **The municipality managed to create an in-house energy reporting system and draft municipal-level GHG inventory report for which they are currently in the process of translating into local language and using the New York inventory as comparison.**

Before the project was established, there was no list of the buildings owned by the municipality. Through this project, the municipality realised the value of tracking municipal expenses on energy (electricity and fuels). The ICLEI model was applied to assess whether the inaugural GHG inventory was relevant, complete, consistent, transparent and accurate. Overall, reasonably complete data could be collected for a municipal-level GHG inventory, while transport and building-related data were the problematic for city-level GHG data. **In terms of the challenges, Phitsanulok municipality realised that, while GHG inventory data is already available through pre-existing procedures, it is very scattered and thus, time-consuming to collect.** A particular problem in this process was that computer systems could not delineate data corresponding to the municipal and city's boundary.

From the policy perspective, there is no good reason for the local authorities to work on GHG and MRV in the absence of national laws. Hence, practical incentives and approaches are required to motivate such efforts, for example, peer-to-peer learning programmes and rewards/awards to recognise certain cities for being pioneers. There is actually a tremendous gap between the international development community's expectations versus the 'ground reality' on local government capacity to independently initiate and sustain GHG data inventory. **Capacity building needs to be more long-term and the training will not work well if it only targets local authorities. The electricity generation authority, national/provincial agencies and the private sector also need to be trained to cooperate in city-level data collection.**

In the final presentation, Dr. Babel from AIT presented the outputs of the Regional Forum on Climate Change (RFCC), held from 1st- 3rd July 2015. **The objective of the RFCC was to provide a platform to the vast array of stakeholders in the region, concerned with climate change, for discussions to ease the translation of science into practice and policy, and also help ASEAN negotiators build positions of increased ambition prior to the COP21.** The core content was related to scientific research papers, case studies, and policy initiatives with respect to mitigation and adaptation. Subsidiary content included side events, poster presentations, exhibitions, and media training. The event attracted over 400 participants from over 20 countries. In terms of hard science, the key take-home messages of the event were as follows. **First**, Asia needs a region-specific knowledge base to better address the challenges of climate change. **Second**, in terms of mitigation, the transition to a low carbon society is very much possible and there are good options to do so. **Third**, in terms of adaptation, the responses are a little more complicated and are sector specific. However, mitigation and adaptation cannot, and should not, be treated separately. Fourth, incremental changes such as end-of-pipe solutions are not sufficient, transformative change is needed. This may be capital intensive. Hence, win-win strategies utilizing co-benefits can provide early entry points. **Finally**, the need for citizen science in any response to climate change in becoming increasingly evident. The Forum pointed out that Asia is at the forefront in the battle against climate change, given that the center of gravity of the world economy is shifting eastwards. Hence, a mechanism to support technological, financing and capacity building needs must be put in place, coupled with a strong political will to increase our level of ambition to tackle climate change.

With time coming to a close, one question was afforded to Dr. Saleemul Huq on the types of projects and participants of the Resilience Academy. Dr. Huq clarified that the Academy includes scholars around the world with a common interest on loss and damage. Last year, the group came up with 11 working papers that have been published as ICCCAD, UNU-EHS, and Munich Re publications. The Academy itself is more about review papers and is not research oriented.

OFFICIAL STATEMENTS FROM THE CONFERENCE

Science Offers Robust Foundations for Ambitious Outcomes at COP21 and Beyond

The scientific conference "Our Common Future under Climate Change" (CFCC15) covers the full landscape of scientific knowledge on climate change. The largest international science conference before the Paris COP21, with close to 2,000 participants from almost 100 countries, CFCC15 explores current understanding of all dimensions of the climate change challenge plus the full range of mitigation and adaptation options that can lead to sustainable, equitable solutions across all nations and regions.*

The main objective of COP21 in December 2015 is to produce a cooperation framework among governments for a steady increase of individual and collective ambitions for addressing the challenge of climate change. The new climate governance regime is intended to strengthen confidence, support implementation, maximize benefits of international cooperation, and cement awareness that a new development model (low to zero carbon, resilient) is emerging. For science, the opportunity is progressively broadening from assessing risks and options to also understanding and helping enable transition pathways to sustainable, resilient economies and societies.

This statement distils the scientific foundation for action, building on current understanding of the solution space and the problem space.

Climate change is a defining challenge of the 21st century. Its causes are deeply embedded in the ways we produce and use energy, grow food, manage landscapes and consume more than we need. Its effects have the potential to impact every region of the Earth, every ecosystem, and many aspects of the human endeavour. Its solutions require a bold commitment to our common future.

Because warming from carbon dioxide persists for many centuries, any upper limit on warming requires carbon dioxide emissions to fall eventually to zero. A two in three probability of holding warming to 2°C or less will require a budget that limits future carbon dioxide emissions to about 900 billion tons, roughly 20 times annual emissions in 2014. To limit warming to 2°C, emissions must be zero or even negative by the end of the 21st century.

Smart policies to manage and reduce the risks of climate change must be fair, embracing the importance of history, capabilities, equitable financing, and the richness of human experience. 2015 is a critical year for progress. The window for economically feasible solutions with a reasonable prospect of holding warming to 2°C or less is rapidly closing.

Every nation has a role. Bold action in 2015 can be decisive in assuring a common future of sustainable, robust economies, equitable societies, and vibrant communities.

Science is a foundation for smart decisions at COP21 and beyond. Solving the challenge of climate change requires ambition, dedication, and leadership from governments, the private sector, and civil society, in addition to the scientific community.

We in the scientific community are thoroughly committed to understanding all dimensions of the challenge, aligning the research agenda with options for solutions, informing the public, and supporting the policy process.

THE SOLUTION SPACE

1. Ambitious mitigation to limit warming to less than 2°C above preindustrial levels is economically feasible. Delaying deep emissions cuts, waiting on the sidelines by some countries, or excluding particular clean-energy technologies all increase costs and complexity. Cost-effective mitigation pathways to limit warming to 2°C require reducing emissions of greenhouse gases by 40–70% below current levels by 2050.

2. Mitigation over the next few decades will be pivotal in determining the amount of long-term warming and associated risks. But even with ambitious mitigation, much of the climate change over the next few decades is unavoidable as a

result of both climate processes and the natural lifecycle of existing technology and infrastructure. Adaptation in the near term and long term can help address risks of impacts that cannot be avoided, but there are limits to adaptation.

3. Investments in climate-change adaptation and mitigation can provide a wide range of co-benefits that enhance protection from current climate variability, decrease damages from air and water pollution, and advance sustainable development. Smart responses to climate change, designed to maximize co-benefits and minimize adverse side-effects, can be part of an integrated strategy of inclusive and sustainable development.

4. Ambitious mitigation will require a range of actions, including investing in research, development, and technology transfer; phasing out subsidies on fossil energy; and pricing carbon. Pricing carbon helps level the playing field among energy technologies by charging for the damage caused by climate change and rewarding other benefits of mitigation activities.

5. Over the rest of the century, global investments in energy and energy infrastructure will total many trillions of dollars. The additional investment required to transition to clean energy can be a small fraction of this amount. With effective implementation, this additional cost can be an important contributor to inclusive and sustainable economic growth.

6. Emissions of heat-trapping gases are simpler to reduce in some sectors than in others. Decreased deforestation, energy efficiency, electricity generation, buildings, and cars are at the simpler end of the spectrum. Aviation, heavy trucks, ocean ships, and agriculture are more complicated. Technologies with huge potential include demand management, energy efficiency, solar, wind, bioenergy, and nuclear, with the possibility of breakthroughs. Improved stewardship of the Earth presents large opportunities not only for climate but also for biodiversity and ecosystem services.

THE PROBLEM SPACE

1. Warming of the climate system is unequivocal. Human activities are to blame for much of the warming to date.

2. Impacts of climate changes that have already occurred are widespread and consequential. Impacts have affected every continent, from the equator to the poles and the mountains to the coasts. Climate changes have contributed to many kinds of extremes, including heat waves, heavy rain, wildfires, droughts, and decreased snow and ice. They have made it more difficult to increase crop yields and have shifted the locations and activities of plants and animals on the land, in lakes and rivers, and in the oceans.

3. People and places around the world are vulnerable and exposed to climate change, with different risks in different places. Vulnerability is especially daunting where poverty, inequalities, lack of infrastructure, and ineffective governance combine to constrain options.

4. Continued high emissions of heat-trapping gases increase the risk of impacts that are severe, pervasive, and irreversible. Risks for people, economies, and ecosystems are all much greater in a world of continued high emissions, with warming by the end of the century potentially reaching 4°C or more above preindustrial levels, than in a world of ambitious mitigation. Risks of greatest concern include impacts on food and water security, human health and well-being, biodiversity and ecosystem services, inequalities and poverty, unique cultures, economic activities and infrastructure, and crossing of large-scale thresholds for sea level, biodiversity, and climate feedbacks.