

**Guest Article** // // // // //

# CORDEX

## AND ITS DEVELOPMENT IN THE ASIA-PACIFIC REGION

### Featured ARCP Projects

Building Asian Climate Change Scenario by  
Multi-Regional Climate Models Ensemble  
.....

Assessment of Climate Change Risks and  
Adaptation Options for Secondary Cities in  
South-western Bangladesh and Central Viet Nam  
.....

### Featured CAPaBLE Projects

Preparing for the World Ocean Assessment  
.....

Needs Assessment for Capacity Development for  
Integrated Marine Biogeochemistry and Ecosystem  
Research in the Asia-Pacific Region  
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# Message from the Director

Thank you for downloading this December issue of the APN Newsletter.

We are very pleased to announce that, after a rigorous screening process, 50 proponents have been invited to submit full proposals for Stage 2 review. Taking this opportunity, I sincerely thank our distinguished members of the Scientific Planning Group Sub-Committee (SPG-SC) and Capacity Development Committee (CDC) for their exemplary work and dedication. My deep appreciation also goes to all SPG members, invited experts and external reviewers, as we will count on your expertise and kind cooperation for a successful, transparent and efficient Stage 2 review.

It is also our pleasure to inform you that under the focused activity on Low Carbon Initiatives, we have invited shortlisted proponents to submit full proposals for further review. Also, as part of the main activities under the Low Carbon Initiatives programme, we are proud to have worked in collaboration with the Low Carbon Asia Research Network (LoCARNet) to successfully organize its first annual meeting in Bangkok, Thailand, on 16–17 October. The meeting addressed a variety of themes including integrated assessment models (IAMs), land use and forestry, greenhouse gas inventories, low carbon cities, local level initiatives, green growth and technology; and brought together scientists, policy makers and major stakehold-

ers to explore ways for enhanced interaction and synergy.

Climate adaptation has long been an important area of the APN work programme and this year, under the new Climate Adaptation Framework, we have started renewed efforts to address research, policy and capacity needs in the region, by expanding partnership opportunities to build on one another's knowledge and resource base, and working with key partners in the climate adaptation domain to provide a series of training courses and workshops for scientists and practitioners in Asian countries. At the time of writing this message, APN and the University Network for Climate and Ecosystem Change Adaptation Research (UN-CECAR), a joint initiative of over 20 leading universities across Asia, are co-organizing a training course on adaptation planning and implementation in Bangkok, Thailand, to raise the capacity of scientist and practitioners involved in policy-making process on adaptation.

We are pleased to welcome on board new national Focal Points from Lao PDR, Malaysia and Nepal, and the new SPG Member from Lao PDR. We sincerely appreciate your experience and expertise that are crucial to the APN, and we eagerly look forward to working closely with you and creating positive impacts in the science and policy community at national and international levels.

The subregional cooperation model that APN started back in 2007 has



*Akio Takemoto*

**Dr. Akio Takemoto**  
Director, APN Secretariat

proved to be highly successful for fostering collaboration among countries that face similar global change challenges. In this issue, you will find examples of how enhanced collaboration among Southeast Asian countries has led to a series of activities that contributed to generating new knowledge, improving science-policy interaction, and building scientific capacity, among others.

In pursuit of our strategic goal of maintaining and strengthening cooperation with other global change network and organizations at the international level, we are currently working in close cooperation with the ICSU Regional Office for Asia and the Pacific (ICSU-ROAP) towards contributing to the design and development of the global Future Earth initiative, which is a new 10-year international initiative on Earth system research for global sustainability.

Finally, on behalf of the APN, I thank all members, project leaders and collaborators as well as our key partners in the global change community for your continued support, inspiring work and strong interest in the APN. I invite you all to participate more actively in our future activities.

# The Coordinated Regional Climate Downscaling Experiment (CORDEX) and its Development in the Asia-Pacific Region

Michel Rixen, WCRP Joint Planning Staff, Geneva, Switzerland  
C. Jones (SMHI), R. Krishnan (IITM, India), C. Lennard (GSAG, South Africa),  
F. Giorgi (ICTP, Italy), M. Manton (MAIRS), H. Virji (START)

**T**he demand for science-based information about climate is increasing, especially as extreme weather, climate events and their adverse impacts on natural ecosystems and global economic development increase in frequency and severity. The complexity of such information, required by a diverse set of economic sectors and geographic regions around the world, is also increasing. A better understanding of the behaviour of Earth's climate system is critical to predicting its future evolution, reducing vulnerability to high impact weather and climate events, and sustaining life.

The provision of climate information for decision-making, especially at the regional and local levels, requires a better understanding of the response of regional and local climate systems to the global climate, and conversely their influence on the global system. Global observations are key to understanding this two-way feedback for the past and present climate conditions. Earth/climate system models are the primary tools used to project and predict future changes. Due to the

limitations of current climate models, advanced downscaling methods are required to translate coarse global-scale information into fine regional and local grids. This is necessary to obtain suitable information required for assessing impacts and vulnerability of natural and human systems to such changes, and to develop ultimately the science-based information required for climate adaptation, mitigation and risk management. The Asia-Pacific region in particular

**CORDEX presents an unprecedented opportunity to advance the knowledge of regional climate responses to global climate change, and for these insights to feed into ongoing climate adaptation and risk assessment research, policy planning and development at the regional level.**

has been increasingly threatened by climate change and extremes such as severe storms, flash floods, heat waves and droughts, whose effects

were amplified by the region's huge population density and development issues.

The World Climate Research Programme (WCRP) is leading a major worldwide effort, the Coordinated Regional Climate Downscaling Experiment (CORDEX), to address these issues in conjunction with the corresponding CMIP5 global scale effort aiming at supporting climate assessments, such as those conducted by the Intergovernmental Panel on Climate Change (IPCC). The CORDEX framework aims at facilitating the evaluation and, where possible, the improvement of Regional Climate Downscaling (RCD) techniques for use in regional climate projections in different regions worldwide, and the provision of inputs to work related to vulnerability, impact and adaptation (VIA).

The WCRP CORDEX, in partnership with START and other key partners, is developing regional research capacity for Asia and Africa. CORDEX presents an unprecedented opportunity to advance the knowledge of regional climate responses to global climate change, and for these insights to feed into ongoing climate adaptation and





*Participants, including APN's Dr. Stevenson, to the CORDEX South-Asia workshop, 17–20 October, Pune, India*

risk assessment research, policy planning and development at the regional level.

Many of the CORDEX regions are self-organizing already and are developing matrices of regional climate change projections. However, in certain regions of the world, access to reliable regional climate change information is extremely limited, such as in Africa, where CORDEX focused its initial effort. It is in those vulnerable regions that the collaborations developed through CORDEX are expected to bring the largest benefits. Such cooperation is already producing a significant matrix of climate change projections in Africa and elsewhere, both to support the 5th Assessment Report of the IPCC (IPCC AR5) and to provide useful climate information to decision makers involved in risk management and adaptation planning.

The successful implementation of the CORDEX strategy is now being replicated in the Asia-Pacific region, where worrying signs of climate change are showing their impact and where the need for climate information for decision-making cannot be overstated. A CORDEX South-Asia workshop, sponsored and supported by WCRP, START, ICSU, IITM (India), ICTP (Italy), CSAG (South Africa) and SMHI (Sweden) was held in Pune, 17–20 October, with over 80 participants from 11 Asia-Pacific countries and six other nations. The workshop included both scientific presentations by the community and dedicated training sessions on the analysis of CORDEX outputs and their subsequent VIA and policy-making exploitation. Further integration of CORDEX in the region is envisaged through three consecutive workshops over 2013–2015 in the Monsoon Asia region aiming at building synergies and sharing knowledge and capacities between CORDEX and other relevant regional climate initiatives such as the MAIRS-led RMIP effort in the Asia-Pacific region. Partnerships with organi-

zations such as APN and the Asian Development Bank will be critical to the successful implementation and long term sustainability of CORDEX efforts in the region. The International Conference on Regional Climate CORDEX 2013, 4–7 November 2013 in Brussels, Belgium, jointly organized by WCRP, the European Commission and IPCC, will also offer the opportunity for the Asia-Pacific CORDEX community to interact with the worldwide CORDEX community.

For more information, please visit <http://wcrp.ipsl.jussieu.fr/cordex/about.html>, <http://www.wcrp-climate.org>, and <http://ccr.tropmet.res.in/workshop/oct2012/>.



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## Featured Organization:

# Asia-Pacific Adaptation Network (APAN)

Puja Sawhney, Coordinator, Regional Hub for APAN

Adaptation is a knowledge-intensive undertaking, and access to relevant and usable knowledge is an important prerequisite for successful adaptation efforts. The need for information and knowledge spans the interlinked stages of adaptation actions, from climate change impact assessment and vulnerability analysis, through policy-making and planning, to piloting, demonstrating, and full-scale implementation.

Huge knowledge gaps are observed in many critical areas for adaptation such as autonomous adaptation processes, management of critical ecosystems, migration, human health, water management and financing mechanisms for risk management. In particular, due to the fragmentation of knowledge under different disciplines, knowledge in a packaged and ready-to-use form, integrating the different stages of adaptation, is rarely available. In addition, knowledge about adapting to climate change lies at an international level and is failing to reach those in the developing world who need it the most.

The Subsidiary Body for Scientific and Technological Advice (SBSTA) of the United Nations Framework Convention on Climate Change (UNFCCC) recognized at its 28th session that “regional centres and networks undertaking work relevant to climate change play an important role in enhancing adaptation” and “agreed to promote existing networks for studying the impacts, vulnerability and adaptation and encourage the establishment of new networks”. The discussion of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA) at the 15th Conference of the Parties (COP) proposed regional centres and networks such as those for adaptation, technology and capacity.

Since 2008, United Nations Environment Programme (UNEP), in partnership with key UN agencies and international organizations, has been facilitating the development of a Global Adaptation Network (GAN). The Asia-Pacific Adaptation Network (APAN) is the first network under GAN and was launched in Bangkok in October 2009.

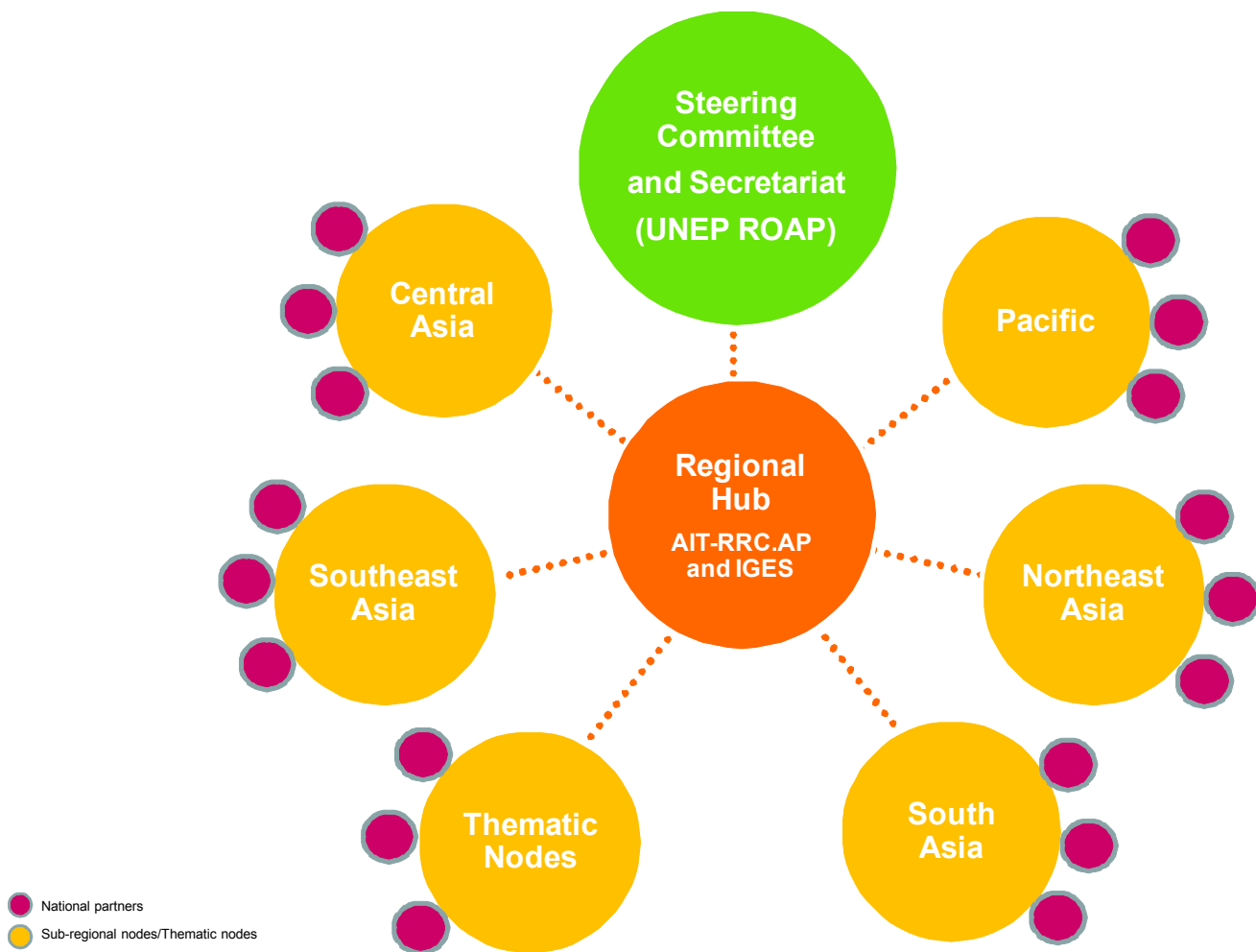
### Aims and objectives

The Network aims to help build climate resilience of vulnerable human systems, ecosystems and economies through mobilization of knowledge and technologies to support adaptation capacity building, policy-setting, planning and best practices.

Specific objectives of APAN include: (i) generation and sharing of knowledge and information on adaptation to enhance adaptation actions; (ii) facilitation application of appropriate knowledge to adaptation programmes/projects; (iii) facilitation access to adaptation finance mechanisms; and (iv) development of capacity of national and local planners, communities, development partners and the private sector in adaptation.

### Structure of APAN

To be able to effectively coordinate across such a large region, APAN works through a regional hub in collaboration with implementing sub-regional nodes (SRNs) and partner institutions in the Asia-Pacific region



building upon existing networks and initiatives. Subregional nodes designated under APAN coordinate activities with national partner institutes in each subregion. APAN has five Sub-regional Nodes covering five subregions in Asia-Pacific. SRNs are organizations whose key functions are to lead the implementation of the sub-regional activities of the Network in collaboration with the regional hub and national implementing partners. APAN also has three Thematic Nodes (TNs) on water, agriculture and mountains that reflect the current priorities of the region and are composed of organizations with specific expertise in respective thematic areas.

## Network Activities

APAN aims to fulfil its objectives through the mobilization and sharing of knowledge and technologies to support adaptation capacity building, policy-setting, planning and practices primarily to policy makers

and national institutions in order to contribute to climate policies at the national level.

The activities of APAN are organized around a framework of knowledge management, capacity development, and adaptation integration. Adaptation knowledge management fills gaps when adaptation domains need improved understanding, such as in identifying ways to better manage risk and uncertainty or build resilience, overcome limits etc., to adapt, or where there is a need for improved dissemination of existing knowledge. Capacity development recognizes the need for both strengthening the knowledge and skills of different actors at different levels to plan, design, implement, and evaluate appropriate adaptation measures, and to acquire financing and technologies for implementation as well as for integrating adaptation into development planning at different levels and in different adaptation domains. Adaptation integration

covers different adaptation domains or areas of particular concern such as agriculture and food security, water resources, health and sanitation, disaster management, coastal and islands, and mountains etc., and the need for integrating adaptation into policies, strategies, plans and actions.

APAN has established a database on good adaptation practices to climate change, which also includes practices on loss and damage. The database comprises of good practices from across the region outlining different approaches to climate adaptation and loss and damage to climate change. A total of 135 are currently included in the database. The purpose of the database is to enhance the exchange of good practices, help in possible replication of good practices and, ideally, be useful to policy makers.



## Featured Organization: **ICCCAD** International Centre for Climate Change and Development

Saleemul Huq, Director, ICCCAD

The aim of the International Centre for Climate Change and Development is to develop a world-class institution that is closely related to local experience, knowledge and research in Bangladesh, one of the countries that are most affected by climate change.

In its first year and a half, ICCCAD has trained more than 150 professionals from 40 countries. Going forward, the centre will scale up research, monitor and improve graduate programmes, develop a year-round curriculum and pilot 'commercial' short courses for business professionals.

Based in Dhaka, Bangladesh, the centre uses its surroundings as a living laboratory on climate change and development.

The Centre is based at the Independent University, Bangladesh (IUB). Founded in 1993, IUB is one of the oldest private universities in Bangladesh and draws on the existing expertise of two other institutions of international repute—the International Institute for Environment and Development (IIED), and the Bangladesh Centre for Advanced Studies (BCAS), both of whom are its long term partners in its development.

The urgent, demand for knowledge is intense, and a web of centres for South-South learning is one of

the most promising strategies for building the world's capacity to take on climate change adequately addressed by ICCCAD, graduate fellows from around the world can also complete and publish studies here.

ICCCAD is intended to support the growing capacity of Bangladesh stakeholders, while enabling people and organizations from outside to benefit from training in Bangladesh, where they can be exposed to climate change adaptation and increasing knowledge from this emerging field in Bangladesh, one of the most vulnerable countries to climate change.



With focus on such work in Bangladesh, international participants will gain direct knowledge of the issues in a real-world context. Through the expertise of ICCCAD and its local partners, international organizations will be exposed to relevant and grounded knowledge that can be shared and transmitted around the world for the benefit of other LDCs, and their governments, donors and international NGOs.

ICCCAD runs regular short courses for NGOs, donors, the media, government staff, private sector, etc. In addition to initiating courses for local participants and Bangladeshi stake-

holders, it also provides tailor-made courses for organizations and departments that are seeking to enhance their capacity in regard to climate change. ICCCAD has held ten short courses (as of July 2012), since its start.

On field trips, students collect ideas from their Bangladeshi counterparts: government negotiators talk with other negotiators, NGO staff visit NGO projects, etc.



One of these courses took place in Kenya, the rest in Bangladesh. Two types of courses are held: the first are on topics considered to be urgent for adaptation (e.g. disaster risk reduction, urban adaptation, community-based adaptation). The second are run for particular organizations that require training for their staff, or for project activities.

ICCCAD will also be running a M.Sc. in Climate Change and Development in collaboration with IUB, and input from several other partner universities, such as Columbia University, United Nations University & Imperial College, London, to name a few.

ICCCAD is designed to enable researchers to come to Bangladesh and participate in cooperative work and other academic activities at ICCCAD or one of our research initiatives, e.g. ARCAB, with the purpose of building a knowledge-base around CBA action and knowledge transfer and the Loss and Damage initiative, which aims to understand the national context and the range of implementation options available for loss and damage.





Despite the increasing frequencies of environmental, health, and social disasters induced by climate change, the international climate regime has only begun to discuss how these vulnerabilities should be addressed. Many Asia-Pacific economies are among the most vulnerable to climate change-induced natural disasters and are also the same ones that lack the institutional, technical and financial capacity needed to realize a climate resilient future.

In response to addressing these critical challenges, Ibaraki University, Japan, established the Institute for Global Change Adaptation Science (ICAS) in 2006 to promote research,

education and networking in sustainability science, namely, climate adaptation in the context of economic and social development in the Asia-Pacific region.

Following the Great East Japan Earthquake and Tsunami of 11 March 2011, ICAS took the lead in investigating different aspects of the disaster including damage to infrastructure, evacuation efforts, recovery process, nuclear accidents, and impacts on cultural assets. These findings highlight the critical role of not only planning and technology but also social resilience in facing and recovering from both natural and climate-induced disasters.

#### FEATURED ORGANIZATION:

## Institute for Global Change Adaptation Science (ICAS)

Nobuo Mimura, Director, ICAS



### Research

ICAS focuses on facilitating and disseminating climate adaptation research in both domestic and international bases focusing in the Asia-Pacific region. Among the broad goals are forecasting the effects of climate change in order to improve decision-making capacity in policies and technological development, and building upon existing knowledge in disaster risk management (DRM) for adaptation.

The research topics include developing engineering methods for adaptation, climate change-adaptive agricultural technologies, livelihood plans and policies for adaptation, vulnerability assessment and plans for safe and secure societies in the future.

With urgency to promote science-based adaptation in the Asia-Pacific region, ICAS with support from the Ministry of Environment of Japan (S-8 project) and MEXT (Kaken-A) is undertaking studies with partners in Viet Nam to improve our understanding of vulnerability and adaptability among climate-sensitive sectors in the Red River and Mekong River Deltas.

### Education

Despite the fundamental importance of climate adaptation — especially in this region of the world — university research devoted to this issue is rare. A university-based facility focused on basic engineering, agricultural, and policy research is crucial, however, if climate resilient societies are to be realized.

An important role for ICAS is to support the research and training of emerging scholars, government, and non-governmental leaders in environment, adaptation and DRM, as well as to the university students.

Many talented students in Japan and from Asia wishing to work on environmental issues have little or no opportunity to learn in an integrated approach that spans across different disciplines. ICAS, in collaboration with the University's Graduate Programme on Sustainability Science and faculty across the Graduate Schools of Science and Engineering, Humanities, Education and Agriculture, is in a unique position to address global environmental challenges and opportunities through the training of students who can work across different stakeholder and other multiple levels, and through domestic and international fieldwork.

### Networking

As a stakeholder in the international community, the institute's mission is to enable the exchange of adaptation strategies and technologies in order to realize their full potential in contributing to DRM as well as to environmentally sustainable development in both industrialized and developing nations.

ICAS serves as a point of collaboration for a diverse group of international scholars and networks including APN and has hosted international symposia and workshops to promote greater synergies among various research communities in climate adaptation.

# 22nd APN Steering Committee Meeting Concluded in Kobe, Japan



**1 November 2012, Kobe, Japan** — Active input and constructive advice offered by APN Steering Committee members at its twenty-second meeting has provided a clear road map for APN's work towards and beyond the 18th IGM/SPG Meeting in 2013.

The meeting was attended by Mr. Sundara Sem, national Focal Point (nFP) of Cambodia and Steering Committee Chair; Mr. Basnayake Mudiyansele Uthpala Dayananda Basnayake, nFP for Sri Lanka; Dr. Madan Lall Shrestha, SPG Member for Nepal; Dr. Alexander Sterin, SPG Member for Russian Federation; the following invited experts— Mr. Louis Brown, Prof. Roland Fuchs, and Dr. Andrew Matthews; as well as donor representatives Mr. Hiroshi Tsujihara, nFP for Japan and Ms. Yuko Hoshino, Office for Global Environment Research, Ministry of the Environment, Japan.

Intense discussions took place at the two-day meeting, with active contribution by all participants, particularly on the following issues:

- Review of activities undertaken since the 17th IGM/SPG Meeting, including progress of the 2012 ARCP and CAPaBLE proposal processes;
- Review of the APN-START Science-Policy Dialogue and discussion on the way forward;

- Strategies for new focused activities, including those under the following frameworks:
  - » the Climate Adaptation Framework,
  - » the Low Carbon Initiatives programme, and
  - » the framework on Biodiversity and Ecosystem Services;
- Engagement in and collaboration with the Future Earth initiative;
- Review of subregional cooperation and strategies for further enhancing subregional communication;
- Status and strategies for allocating the APN Opportunity Fund (AOF);
- Report and discussions on budget and finances, communication and publications, membership development and amendments to the APN Framework Document; and
- Annual operating plan and timeframe for future strategic review and planning.

The Steering Committee, whose core members are elected by the APN Inter-Governmental Meeting (IGM), works closely with the Secretariat during the intersessional period between IGMs to promote and encourage effective implementation of IGM decisions.

# APN Southeast Asian Members Met in Cambodia for Closer Subregional Collaboration

**26 October 2012, Siem Reap, Cambodia** — APN Members from Cambodia, Indonesia, Lao PDR, Malaysia, Thailand and Viet Nam met for the fifth Southeast Asian Subregional Cooperation (SEA-SRC) Meeting to review the progress of subregional activities and discuss future actions to strengthen collaboration on research and capacity development in global change-related issues of common concern among Southeast Asian countries.

Hosted by the Ministry of Environment, Kingdom of Cambodia with support from the APN, the fifth SEA-SRC Meeting and back-to-back activities concluded successfully on 26 October 2012, bringing the Southeast Asia Member Countries one step closer in their joint effort to address global change challenges in the sub-region.

## Fifth Southeast Asia Subregional Cooperation Meeting

Before the official opening, all participants joined the organizer in observing a moment of silence for the very



recent demise of King Norodom Sihanouk.

H.E. Dr. Vann Momyneath, Deputy Secretary General of the National Committee of Coastal Management and Development, Deputy Director General cum Cambodia-ASOEN Chairman, General Department of Technical Affairs, Ministry of Environment, Kingdom of Cambodia provided opening remarks, noting the increasing need for scientific capability in Cambodia and the sub-region to address climate change adaptation at all levels.

Mr. Sundara Sem, Head of Department of International Cooperation, Ministry of Environment, Cambodia, APN national Focal Point (nFP) for

Cambodia and Chair of the APN Steering Committee, welcomed all participants to Cambodia. He provided a brief review of past SEA-SRC Meetings and the main objectives of the present one, noting that regular subregional meetings over the years had enhanced the

contact among Member Countries and led to a number of fruitful outcomes that benefited the science and policy communities within the subregion.

The meeting was jointly chaired by Mr. Sem and Dr. Subramaniam Moten, SPG Member for Malaysia. Dr. Linda Anne Stevenson, Executive Science Officer of APN Secretariat, provided a brief background of APN subregional cooperation and introduced the objectives of the meeting.

This was followed by a comprehensive review of the fourth SEA-SRC Meeting and back-to-back events held in Hanoi, Viet Nam in 2011, by Dr. Kim Chi Ngo, SPG Member for Viet Nam. She noted with appreciation that discussions at the meeting had led to a successful Science-Policy Dialogue for Southeast Asia, and steady progress had been made towards designing and developing a summer school programme on urban adaptation to climate change.

Dr. Erna Sri Adiningsih, SPG Member for Indonesia, reported on the status of the proposed summer school project. She started with how the idea was formulated and later developed with the support from SEA members. She highlighted the





proposed objectives, curriculum and topics of the summer school programme and informed that a scoping workshop will be held to identify the real problems and gaps, in order to develop a solid proposal for IGM consideration.

Dr. Jariya Boonjawat, SPG Member for Thailand, provided a full review of the Southeast Asia Science-Policy Dialogue. She presented a summary report and a number of other important outputs. Discussions focused on how to develop information products that would meet the needs of the science and policy communities, lessons learned that could shed light on improving future dialogues, and the possible way forward to enhance interaction between scientists and policy makers in the region.

Mr. Xiaojun Deng, Programme Officer, APN Secretariat, provided updates on communications and institutional matters, especially regarding progress in engaging Myanmar as a member of the APN. The SEA-SRCom members acknowledged the strategic importance and opportune timing to involve Myanmar as an official APN Member Country, as it will chair ASEAN in 2014 and is also a very active member in the Mekong subcommittee. It was recommended that, before officially becoming a member of APN, Myanmar be granted "Approved Country" status so that organizations and individuals from Myanmar are eligible to receive funds from APN.

A brainstorming session focused on ways to enhance the flow of information and mechanisms for enhanced communication channels that will lead to better interaction between scientists and policy makers in Southeast Asia, as well as future plans for the SEA-SRCom. Dr. Ngo introduced a proposed activity on urban solid waste management with links to climate change mitigation. Members expressed interest in this activity and agreed to facilitate its further design and development to ensure it



provides tangible benefits to Southeast Asian nations.

## Climate Adaptation Seminar

The SRC Meeting was followed by a half-day Climate Adaptation Seminar, where country representatives and experts from the subregion shared knowledge and experience related to climate adaptation in their countries.

Dr. Stevenson made a keynote presentation on APN and its recent work in the area of climate adaptation. She introduced APN research and capacity development activities concerning climate vulnerability, impacts and adaptation. She highlighted recent publications, including *Climate in Asia and the Pacific*, which synthesizes APN climate-related research and capacity development over ten years and provides recommendations for decision makers, and a policy brief on partnerships to address climate adaptation challenges. She also introduced APN's new multi-year focused activity on climate adaptation, which will cover regional-scale research, downscaled modelling, information and knowledge sharing, disaster risk management, systematic training and capacity building for scientists and practitioners, and science-policy dialogues.

Dr. Preap Visarto, General Directorate of Agriculture, Ministry of Agri-



culture Forestry and Fisheries (MAFF), Cambodia, and former APN project leader, presented on climate adaptation efforts in Southeast Asia through a general overview of the natural and socioeconomic environment of the subregion, natural and anthropogenic climate stressors, as well as best practice examples of climate adaptation activities in Cambodia and across the subregion.

This was followed by country-specific presentations with focus on major adaptation concerns; current institutional arrangements; policies, strategies and actions to address climate adaptation; as well as the general landscape of climate adaptation research and the gaps and needs therein.

## Proposal Development Training Workshop

Back-to-back with the seminar was a Proposal Development Training



Workshop (PDTW). APN members and project leaders shared their experience and provided hands-on training to some 15 young scientists from Southeast Asia Member Countries.

APN's PDTWs aim to raise awareness among young and early career scientists about APN and its activities and to increase their capacity in developing competitive proposals for the APN. In addition, PDTWs aim to provide a platform for trainees to establish and maintain effective professional relationships with mentors and peers, and for new nFPs and SPG members to better understand the APN proposals process.

The workshop started with an oral presentation session that addressed basic information about the APN; background and objectives of the PDTW; the APN proposals process; and guidelines and advice on writing competitive proposals for the APN.

Trainees then gathered in their pre-assigned groups to review and revise summary proposals they had been working on prior to the workshop, based on advice from mentors and the criteria provided by the APN. Each group designated one member to deliver an oral presentation based on their proposed activity, and in the ensuing

discussion session, they exchanged views on proposal improvement.

Each group was allowed time to revise their proposals before being reviewed by their peers employing APN criteria. All groups presented their findings, indicating strengths, weaknesses and suggestions for improvement.

"The guidance provided to us by our mentors really helped us to develop a competitive proposal," said Mariche Basañez Bandibas, workshop trainee and Science Research Assistant at the Ecosystems Research and Development Bureau (ERDB), the Philippines, "There are biases as to whether we are too young in our research fields; the networking opportunity here helped to build strong partnerships, friendships, and many others."

All presentations from the Climate Adaptation Seminar and the PDTW are available for download on the APN Website.

For details about APN subregional cooperation and Proposal Development Training Workshops, please contact Dr. Linda Anne Stevenson, Executive Science Officer, APN Secretariat at [l Stevenson@apn-gcr.org](mailto:l Stevenson@apn-gcr.org).



## APN Representative Shares Research Networking Experience at ACP FORENET Workshop

**12 November 2012, Bogor, Indonesia**—At a regional workshop organized by ACP FORENET (African-Caribbean-Pacific Forest Research Network), APN representative Dr. Erna Sri Adiningsih, Scientific Planning Group (SPG) member for Indonesia, shared with participants the recent activities of APN and how it facilitates regional collaboration in global change research.

The workshop was held at the headquarters of CIFOR (Center for International Forestry Research) at Bogor, Indonesia from 12–14 November 2012. Dr. Adiningsih introduced the overall framework and programmes of the APN and, through best practice examples, explained how the enabling mechanisms of the APN work to strengthen and foster research collaboration as well as capacity building in the Asia-Pacific region. The workshop was attended by national focal points of ACP FORENET and representatives of universities of the African-Caribbean-Pacific region.

“The APN subregional cooperation model is a successful tool for enhanced collaboration among countries that face similar global change challenges,” said Dr. Adiningsih, “It provides a platform for regular exchange of knowledge and views by members across countries that have comparable geographical and socio-economic environment.” She emphasized the importance of science-policy linkages in addressing global change issues and one of APN’s goals is to strengthen science and policy interactions. She further pointed out that, as a result of increased communication through the subregional mechanism, fruitful collaboration involving scientists and policy makers have been realized.

One example was the recent Southeast Asia Science-Policy Dialogue on Challenges of Global Environmental Change in Southeast Asia, which

took place in Bangkok, Thailand from 19–21 July 2012, drawing together over 90 participants from the science and policy-making communities to exchange views and knowledge that would contribute to improving the science-policy interface.

Another example of successful capacity building in climate adaptation for practitioners in Indonesia was the APN CAPaBLE project led by Dr. Rizaldi Boer of Bogor Agricultural University. The project involved decision makers of the Ministry of Agriculture and local farmers in northern West Java. The project successfully achieved the outcomes to raise awareness of policy makers as well as local farmers in implementing climate adaptation actions in the field.

At the end of her presentation, Dr. Adiningsih pointed out some key success factors in managing an international research networking organisation based on APN’s experiences—among these include a focus on core activities; effective organs; robust mechanisms and procedures; a pro-

fessional secretariat team; and the active involvement of Member Countries.

Dr. Adiningsih’s presentation at the workshop also helped raise the awareness about APN, while opening up potential partnership opportunities with participating international organizations working in the domain of global change research.

The ACP Forestry Research Network (FORENET) was established in 2007 and is coordinated by CIFOR. It facilitates links between forest research organizations of selected African-Caribbean-Pacific (ACP) countries by supporting selected local research organizations and enabling them to collaborate effectively on common forest research domains and programmes. More information: [http://www.cifor.org/forenet/\\_ref/home/index.htm](http://www.cifor.org/forenet/_ref/home/index.htm).



*Dr. Erna Sri Adiningsih, APN SPG Member for Indonesia, participated in the ACP FORENET Workshop, 12–14 November 2012, at CIFOR Headquarters in Bogor, Indonesia. She presented an overview of APN and lessons learned on international research networking.*

## Message from the New APN National Focal Point for Lao PDR

It gives me great pleasure to join the APN as the national Focal Point (nFP) for Lao PDR. When I look at the role of an nFP, I understand the challenges that face me and for me to do the best for the Member Countries in the Asia-Pacific region, especially for Lao PDR. I believe the performance and activities of the APN is continually growing, along with the development of the Inter-Governmental Meeting and Scientific Planning Group.

Currently I work as Deputy Director General for Natural Resources and Environment Institute, which was established in May 2012 as a department under the Ministry of Natural Resources and Environment (MONRE). Previously, I worked in the geography sector and was responsible for spatial data and mapping from 1986 to 2005. Since 2005, I have taken various other roles: from 2005 to 2008 I was a National IKMP (Information and Knowledge Management Programme/Mekong River Commission) coordinator, through which I gathered experiences in regional collaboration. In 2009 I was a project

director of the elaboration in the field Socioeconomic Atlas of Lao PDR.

I believe that the goals of the APN are very significant for sustainable development in Lao PDR. Hence, the outreaching approach of the APN for sustainable development is crucial for Laos.



It was only in 2011 that the new MONRE was established to manage the natural resources in my country. I believe that this offers a unique opportunity to align the goals of APN and MONRE, and enter into a strengthened collaboration.

In today's age, natural resources are vital. It is pivotal that national strategies and realities are aligned with global agendas. In this regards, the scientific themes of APN offer great potential for collaboration, with respect to the national strategies of the Government of Laos.

## Message from SPG Member for Lao PDR



It is my honour and pleasure to be a part the APN as a new Scientific Planning Group member for Lao PDR. On behalf of the global change science community in my country and speaking for myself, I would greatly appreciate your kind collaboration with us and I am looking forward to this close collaboration in the area of global change research.

Over the past few decades, similar to neighbouring countries, Laos has been increasing vulnerable to

extreme climate events, like floods and droughts, due to the change of land use policy as well as the intensification of global warming. Therefore, the government of Laos pays high attention to climate change, its impacts and focuses research in this area.

Agriculture is an important sector in Lao PDR, and rural communities rely heavily on weather conditions, especially in the rainy season, to grow their crops. But more frequently they are experiencing the late arrival of rain, prolonged dry periods, sudden heavy rainfall and floods, all which have major impacts on their crops, particularly rice, the most common crop grown by local farmers. Experts believe the rainy season may continue to be less stable in the future as a result of climate change. Rising temperatures are changing the weather systems that affect Lao PDR, which could mean that rain will continue to fall at different times of the year

causing heavy storms and more flooding.

I now serve as Acting Chief of Environment Research Center, Natural Resources and Environment Institute under the Ministry of Natural Resources and Environment of Lao PDR. According to its mandate, my division is assigned to research the environment and technology, in order to support policy makers and to address climate change issues and its connection with natural resources.

It is a new and exciting responsibility for me to be part of the APN. The APN allows me to be engaged in an effort to build capacity and advance my knowledge of global change science in the Asia-Pacific region. Once again, I am pleased to be working with the APN Secretariat and my colleagues from the other Member Counties.



# Suggestions for a Future APN Strategic Programme to Enhance Climate Adaptation in the Asia-Pacific Region

1. As a result of the discussions at the APN-ICAS Scoping Workshop to Enhance the Climate Adaptation Actions of APN Developing Countries, it is suggested that the APN establishes a multi-year strategic programme focusing on climate adaptation from FY2013 (April 2013), pending resource availability.
2. The new programme aims to enhance science-based adaptation activities of APN developing countries and comprises the following components:
  - i. Regional research programme that has a capacity building element;
  - ii. Capacity building programme, including projects at national and sub-national scales; and
  - iii. Activities jointly conducted with other organizations and networks.
3. Based on the needs, gaps and lessons learned regarding climate adaptation in the Asia-Pacific region (see box on facing page), regional research and capacity building projects should contribute to improving applicability by users, focusing on the following themes:
  - i. Development of high-resolution observational, model and downscaled data sets that can contribute to filling data gaps;
  - ii. Sharing of needs-oriented data;
  - iii. Calibration and validation of regional climate models; and analysis of projections and assessment of uncertainties;
  - iv. Development and utilization of impact, vulnerability, risk and economic assessments;
  - v. Improvement of communication skills of scientists and practitioners with stakeholders, including local government, community, private sector and civil society, for encouraging policy makers to formulate and implement adaptation plans based on the latest scientific knowledge;
  - vi. Utilization of available information including climate data in applications for adaptation;
4. It is recommended that the APN enhance its partnerships with local, national, regional and international organizations and networks under the new programme. Potential partners include, but are not limited to, the following<sup>1</sup>:
  - i. Asian Development Bank (ADB)**
    - a. Collaboration on a regional climate scenarios consortium and library in the areas of coordination of data collection, rescue, mining and calibration;
    - b. Collaboration on needs assessment of users at national and local levels;
  - ii. Asia Pacific Adaptation Network (APAN)**
    - a. Multi-year collaboration on capacity development for scientists and practitioners on climate adaptation including themes on adaptation plans and “training the trainers” activities;
    - b. Organization of a follow-up meeting for recommendations to strengthen partnerships at Asia Pacific Adaptation Forum 2013;
  - iii. Institute for Global Change Adaptation Science (ICAS)**
    - a. Involvement of Japanese scientists for adaptation activities implemented by APN and its partners;
    - b. Organization of follow-up events with APN;
  - iv. Ministry of Interior, Thailand**
    - a. Cooperation with the APN national Focal Point for Thailand on the development of community-based adaptation activities that involves local governments and communities in Thailand;

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<sup>1</sup> The institutions and organizations listed expressed interest in partnering with the APN and attended the scoping workshop.



- v. **University Network for Climate and Ecosystems Change Adaptation Research (UN-CECAR)**
    - a. Training activities for scientists and practitioners on climate adaptation including modelling, downscaling, resilience, etc.;
  - vi. **World Climate Research Programme (WCRP)**
    - a. Collaboration with CORDEX-Asia on capacity development in climate downscaling;
5. It is recommended that APN further develops its climate adaptation programme and expand its partnerships with organizations and networks through relevant platforms. This should be considered in accordance with the APN work programme and budget, and the APN Strategic Plan and Framework Document.

## Needs, gaps and lessons learned regarding climate adaptation in the Asia-Pacific region

### • Data, Modelling, Downscaling

- » **Objectives of downscaling**
  - Huge spectrum, variety of purposes
  - Dynamic or statistical downscaling can be selected depending on the purposes
- » **Data observation, collection and mining**
  - In particular, the lack of capacity to collect and mine data
  - Development of common data formats
- » **Calibration of RCMs**
  - How to combine downscaled data with local data
- » **Development of high resolution downscaling that is suitable to users' needs (sector-specific)**
- » **Time scale**
  - Ranging from seasonal to decadal predictions, medium term (about 5 years) to long-term predictions; and long-term climate projections
- » **Data distribution/interface with users**
  - Capacity development to be a good user (individual and institution)

### • Impact and vulnerability assessment

- » **Development of assessment models**
  - Different types of assessment models (impact assessment, risk assessment, and vulnerability assessment)
  - Cost analysis
  - Current/ future impacts

- » **Compound impacts (integrated assessment of climate and non-climate impacts)**
- » **Capacity building for both modellers and users**

### • Adaptation planning and implementation

- » **Scientific capacity of practitioners/decision makers to formulate national adaptation plans**
- » **Development of a screening tool on climate risk assessment for infrastructure**
- » **Development of approach to encourage policy makers to adopt scientific knowledge**
  - Present response which is favoured by practitioners
  - Consideration of policy priorities other than climate policies such as development policy
  - Consideration of economic aspects
- » **Role of public and private sector**
- » **Range of capacity building**
  - Individual, institution, governance
- » **Consideration of uncertainty**
- » **Consideration of politics, governance, and culture**
- » **Enhancement of communication skills for both scientists and policy makers**
  - Scientists' capacity to communicate with society (i.e., mass-media)
  - Risk perception
  - People's acceptance

# LoCARNet Convenes First Annual Meeting in Bangkok

Akio Takemoto, APN Secretariat

The first meeting of Low Carbon Asia Research Network (LoCARNet) was held in Bangkok, Thailand, on 16–17 October 2012, co-organized by the IGES (LoCARNet Secretariat), Asian Development Bank (ADB), APN, Joint Graduate School of Energy and Environment (JGSEE), Ministry of the Environment of Japan (MOEJ) and Thai Greenhouse Gas Management Organization (TGO). More than 100 officials and experts from governments, research communities, international and regional organizations, and other stakeholders in and out of Asia participated in the meeting to exchange their knowledge related to a low carbon society.

LoCARNet is a network of research institutions and stakeholders aiming to facilitate, formulate and implement science-based policies for low carbon in the Asian region. After a proposal by Japan to establish an Asian research network on low carbon research at the ASEAN+3 Environmental Minister's Meeting in April 2011, Phnum Penh, Cambodia, the LoCARNet was launched in April 2012 at the "East Asia Low Carbon Growth Partnership Dialogue" as a part of "East Asia Knowledge Platform for Low Carbon Growth".

At the opening session, Mr. Spachai Watanangura, Board of Directors of TGO and Mr. Soichiro Seki, Director General of Global Environment Bureau of MOEJ made statements that included acknowledgement to the APN for its financial support to the LoCARNet. Dr. Shuzo Nishioka, Secretary General of LoCARNet introduced the background, possible activities and his ideas on the way forward.



After the opening of Day 1, there were a series of breakout sessions on a variety of themes, including integrated assessment models (IAMs), land use and forestry, greenhouse gas inventory, low carbon city, local level initiatives, as well as green growth and technology.

On Day 2, a dialogue between researchers and policy makers was held to discuss science-policy interaction, followed by another dialogue with stakeholders for discussing how LoCARNet will network with relevant organizations and what LoCARNet will do in the future. Dr. Akio Takemoto, Director of the APN Secretariat, who participated in the panel discussion of this dialogue, introduced the APN framework and the Low Carbon Initiative, a new APN programme to support regional research and capacity building activities in Member Countries. Drawing from experience learned during the 16-year history of APN, he suggested LoCARNet should develop a strategic plan which includes a common vision, missions and action plans in order to promote LoCARNet sustainably. He also suggested LoCARNet should develop partnerships with other organizations and networks under the LoCARNet so that they could gain mutual benefits through these partnerships.

At the wrap-up session, the Secretariat summarized key findings, and concluded they will be interpreted into (reflected on) action plans of the LoCARNet.



# The 9th AWCI International Coordination Group (ICG) Meeting and the Workshop on Climate Change Adaptation

Linda Stevenson and Taniya Koswatta, APN Secretariat

The 9th AWCI international coordination group (ICG) meeting was held on 29-30 September 2012 at Hongo campus, University of Tokyo, Japan. The meeting focused on sharing the outcomes of present and past AWCI research and discussed future activities, which can be implemented through collaboration between Member Countries. Prof. T. Koike, APN project leader and main organizer of the meeting, acknowledged APN for its strong financial support towards the AWCI project and activities.

The APN was invited to give a welcome speech and a presentation on its recently developed draft climate change adaptation framework. Dr. Linda Stevenson warmly welcomed all participants and invited them to visit the APN booth, which was situated outside of the meeting room and displayed APN publications. During her presentation on the APN climate adaptation framework, she briefly introduced APN activities and acknowledged donor countries. Secondly, she mentioned that during the upcoming 5th Southeast Asia and 4th South Asia Subregional cooperation meetings, APN will attempt to engage both Myanmar and Maldives, respectively, as a step towards potential membership or approved country status. In addition, she highlighted APN's climate adaptation activities and shared the outcomes of a recent workshop, "APN-ICAS Scoping Workshop to enhance the Climate Adaptation Actions of APN Developing Countries". She then briefly introduced the APN's climate synthesis report and adaptation policy brief and finally, she introduced APN's metadata portal database (APN's E-Lib) to the audience, which stores project reports and ongoing project information.



The first day of the meeting focused on two main objectives. One was to discuss and present AWCI current and past project reports. During this session, six APN funded AWCI projects were presented with their research findings and current activities by Prof. T. Koike (ARCP2011-02CMY-Koike), Dr. I. Kaihotsu (CBA2011-02CMY-Kaihotsu), Prof. D. Bae (ARCP2011-05CMY-Bae), Dr. K. Fukami (ARCP2009-01CMY-Fukami), Dr. G. Rasul (CBA2012-03NMY-Rasul) and Dr. O. Ochiai (ARCP2012-16NMY-Ochiai). The second objective was to present ongoing activities of climate change adaptation and water Nexus in each country. During the country report session, Pakistan mentioned an APN funded project which is undergoing research activities on climate adaptation.

On the second day, the meeting was divided into three sections: A) Inputs from international cooperation activities B) Breakout discussion for implementation planning and C) Research updates. During session one, SAFE, NARBO/JWA, JICA, ADB, ICHARM, and UN-CECAR presented their ongoing activities. In the UN-CECAR presentation, APN was

highlighted as a partner in the post-graduate course on Climate Change Downscaling Approaches and Applications (CCDAA), to be held from 9–20 November 2012, in Bangkok, Thailand.

In the discussion session, participants were separated into two groups. The first group focused on identifying the research needs in survey and prototyping, and the second group focused on identifying research needs in prototyping and operational research in water related issues. APN took part as an observer. Both groups presented their outcomes and they identified research themes based on climate issues prominent in each country. Furthermore, in the country base proposed research activities, most countries identified APN as a potential funding source. APN project leaders Prof. Bae and Dr. Rasul actively participated in country discussion sessions and presented group presentations.

The workshop on "Meta-Guidelines for Water and Climate Change Adaptation" was held on 1-2 October 2012 back to back with the 9th AWCI international coordination group





(ICG) meeting. The APN participated in the first day of the workshop and displayed its publications during the whole workshop. Prof. Toshio Koike gave opening remarks and acknowledged APN for its strong support, not only in AWCI activities, but for the present workshop as well.

The objective of the workshop on “Meta-Guidelines for Water and Climate Change Adaptation” was to advise and support leaders and policy makers in the Asia-Pacific region on policies and good practices for mitigation and adaptation of the impacts of climate change on water resources management and water services. The Asia-Pacific Water Forum’s (APWF) Steering Group on Water and Climate Change has produced a Framework Document on Water and Climate Adaptation.

As a follow-up action, the Steering Group of APWF (whose secretariat is based in Tokyo, Japan) launched discussions on guidelines for practitioners in using climate change projection methodologies, tools for vulnerability and impact assessments and project screening; and for adaptation strategies and activities.

The document (Asia-Pacific Water Forum, 2012) “Framework Document on Water and Climate Adaptation” for leaders and policy makers in the Asia-Pacific region considers 5 main principles:

- **Principle 1: Useable knowledge**
  - » We must support scientists and practitioners to work together and develop knowledge that leads to effective actions and an increased awareness of knowledge.
- **Principle 2: No Regret Investments**
  - » We must identify and implement approaches that improve water security over a wide range of potential conditions, including current climate variability.
- **Principle 3: Resilience**

- » We must build societies’ capacity to develop communities’ resilience in the face of a changing climate.

- **Principle 4: Mitigation and Adaptation**

- » We must adopt optimal combinations of measures.

- **Principle 5: Financing**

- » We must increase dedicated financing substantially.

Based on preliminary reviews, the synthesis workshop aimed to prepare “meta-guidelines” based on the following key questions:

- How to bridge the gap of useable knowledge?
- How to synergize adaptation of IWRM?
- How to develop capacity and resilience?
- How to plan and decide on investments?
- How to make best use of climate finance?

Dr. Rasul, Chief Meteorologist from the Pakistan Meteorological Department and APN Project leader, posed a couple of questions that would be discussed later during the discussion session. He asked, “What is useable knowledge and for whom?” He stressed that for researchers and experts, knowledge is to know the nature of the problem, ground realities and capacity of local communities. For decision makers, knowledge is the results of research that is applicable practically; and knowledge for the public and private sectors includes infrastructure for climate resilience. For planners and designers he noted that science based future vision of climate change and variability is needed.

All very much food for thought and the APN looks forward to disseminating the outputs of this important workshop as they become available.



*The APN  
wishes you  
a joyous holiday season  
and  
a rewarding new year!*



## New Publications

**ARCP2011-03CMY-Asanuma: Intercomparison of Landsurface Process Modeling at Asian Drylands**

<http://www.apn-gcr.org/resources/items/show/1584>

**ARCP2011-01CMY-Wang: Building Asian Climate Change Scenarios by Multi-Regional Climate Models Ensemble**

<http://www.apn-gcr.org/resources/items/show/1567>

**ARCP2011-20NSY-McEvoy: Assessment of Climate Change Risks and Adaptation Options for Secondary Cities in South-western Bangladesh and Central Viet Nam**

<http://www.apn-gcr.org/resources/items/show/1601>

**CBA2011-18NSY-Peñalba: Awareness Raising and Capacity Building on Alternative Water Management for Communal Irrigator's Association in the Philippines**

<http://www.apn-gcr.org/resources/items/show/1696>

**ARCP2008-01CMY-Ziegler: Sediment Dynamics and Down-stream Linkages in Tropical Streams as Affected by Projected Land-Cover/Land-Use and Climatic Change**

<http://www.apn-gcr.org/resources/items/show/1541>

# Building Asian Climate Change Scenario by Multi-Regional Climate Models Ensemble

Reference No.: ARCP2011-01CMY-Wang

Project Leader: Dr. Shuyu Wang

Metadata: <http://www.apn-gcr.org/resources/items/show/1567>

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Global change has become a major concern for the general public. However, the changes are not expected to be uniform across the Earth. For example, the northern high latitudes are already experiencing stronger warming than the tropics. The regional effect of global change thus varies from place to place and may not necessarily follow the broad global trend. As a result, the process of devising adaptation and mitigation strategies to reduce the risks induced by climate change is a regional issue.

Asian climate is characterized by monsoon variability on multiple time scales. Efforts have been made by the science community to investigate the responses of the monsoon system to global climate change in regional climate projections for Asia. The APN project "Building Asian Climate Change Scenario by Multi-Regional Climate Models Ensemble" is one such effort to provide detailed information on the change and variability of the future monsoon climate, as well as to examine the sources and range of uncertainty in climate change projections. The project is the result of long-term collaboration across the Asia-Pacific region to promote the study of Asian climate (Figure 1).

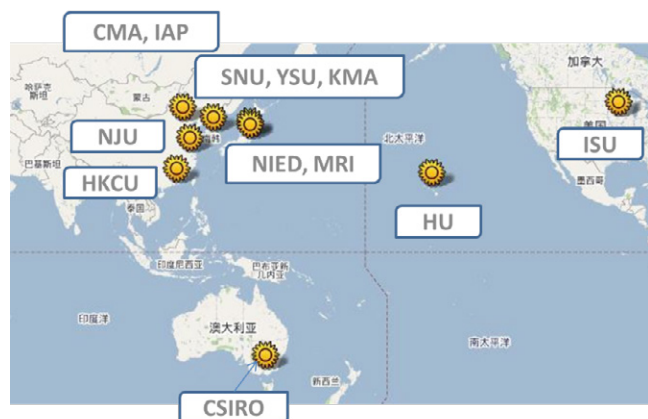


Figure 1. Project teams across the Asia-Pacific Region

This three-year project was approved by the APN in 2009. It aims to develop a future climate scenario for monsoon



Asia with regard to studying the uncertainty and the statistical significance of using an ensemble of RCMs. Its main scientific objectives are:

1. To provide high-confidence scenarios of regional climate change in Asia based on an ensemble of results from nine RCMs.
2. To provide a scientific basis for the impact and assessment communities and for policy makers, so that better understanding of monsoon Asia climate change will be achieved, by adequately detecting and assessing the sources and magnitudes of uncertainty in Asian climate change projections.
3. To set up a regional climate modelling network and establish connections with other regional climate research networks around the world, based on the sharing of data and techniques.

During 2009–2012, 11 regional climate models and one stretched-grid global model have been configured to project high-resolution regional climate change by down-scaling ECHAM5 outputs for 2040–2070. During the project, 11 model simulations have been produced for both the control climate (1980–2000) and future climate (2040–2070). Based on these model results, an Asian regional climate projection has been constructed, with the sources and magnitude of uncertainties detected and carefully assessed. The project calculates the future change and variance of the Asian monsoon system, and the expected impacts on Asian climate.

The preliminary analyses show that compared to the present-day climate (1980–2000), a remarkable warming

is produced for the future climate in all four seasons. Over land, the temperatures are expected to increase by 2.5°C annually, with less warming over the ocean, and with smaller seasonal variations. During 2040–2070, the warming trend is likely to continue, and the high-latitude subregions such as arid/semi-arid East Asia, as well as north and central China will experience stronger warming than other regions. The precipitation is expected to increase over most of the East Asia region during 2040–2070, with a domain-averaged increase of 2.5% (0.13 mm/day) annually. The most significant increases occur over regions equatorward of 20°N such as the Philippine Sea,

Indian Ocean, Indonesia and Malaysia, with increases of up to 3 mm/day.

Since its launch in 2009, three scientific workshops have been held to present progress of the project, and to exchange latest research highlights on Asian regional climate studies. With the support of APN project funding, a project data server has been set up and a project website is under construction. All participating members have agreed on a data policy that the project results will be available to scientific communities as well as to vulnerability and impact study groups.

## Assessment of Climate Change Risks and Adaptation Options for Secondary Cities in South-western Bangladesh and Central Viet Nam

Reference No.: ARCP2011-20NSY-McEvoy

Project Leader: Dr. Darryn McEvoy

Metadata: <http://www.apn-gcr.org/resources/items/show/1601>

Darryn McEvoy, Alexei Trundle and Iftekhar Ahmed  
RMIT University, Melbourne, Australia

### Background

In a recent assessment of vulnerability to climate change, Southern and Southeast Asia were identified as two of the most exposed regions globally, with the countries of Bangladesh and Viet Nam ranked by risk analysts as the 1st and 13th most climate-vulnerable nations respectively (Maplecroft, 2011). While both regions are experiencing extensive and rapid urbanization, the existing body of research analysing climate impacts at a subnational scale has largely focused on rural settings, with those assessments within the urban environment being applied almost exclusively to the regions' sprawling mega-cities. In contrast, the potential impacts of climate change on 'secondary' cities (cities with fewer than 1 million inhabitants)—which account for over 60% of the world's urban population (UN DESA, 2012) and face a distinctive set of adaptive pressures due to lessened economic, political, and institutional capacity—have largely eluded rigorous academic research to date (IHC, 2011).



*Urban and peri-urban landscapes in Huế (left) and Satkhira (right)*



## The Project

This project sought to go some way towards rectifying this knowledge gap through the development, testing and refinement of a community-based climate risk assessment toolkit, specifically tailored to application in developing secondary cities, and applied predominantly by local research teams. The piloting of this toolkit in the cities of Satkhira (south-western Bangladesh) and Hué (central Viet Nam), coupled with the hosting of joint reflective workshops in each city, provided a comparative basis for assessment activity across the Asia-Pacific; while also promoting south-south learning, exchange and linkages between in-country research teams, policy makers, community groups and other key stakeholders.

## Approach and Activities

As shown in the local assessment framework below, a participatory,

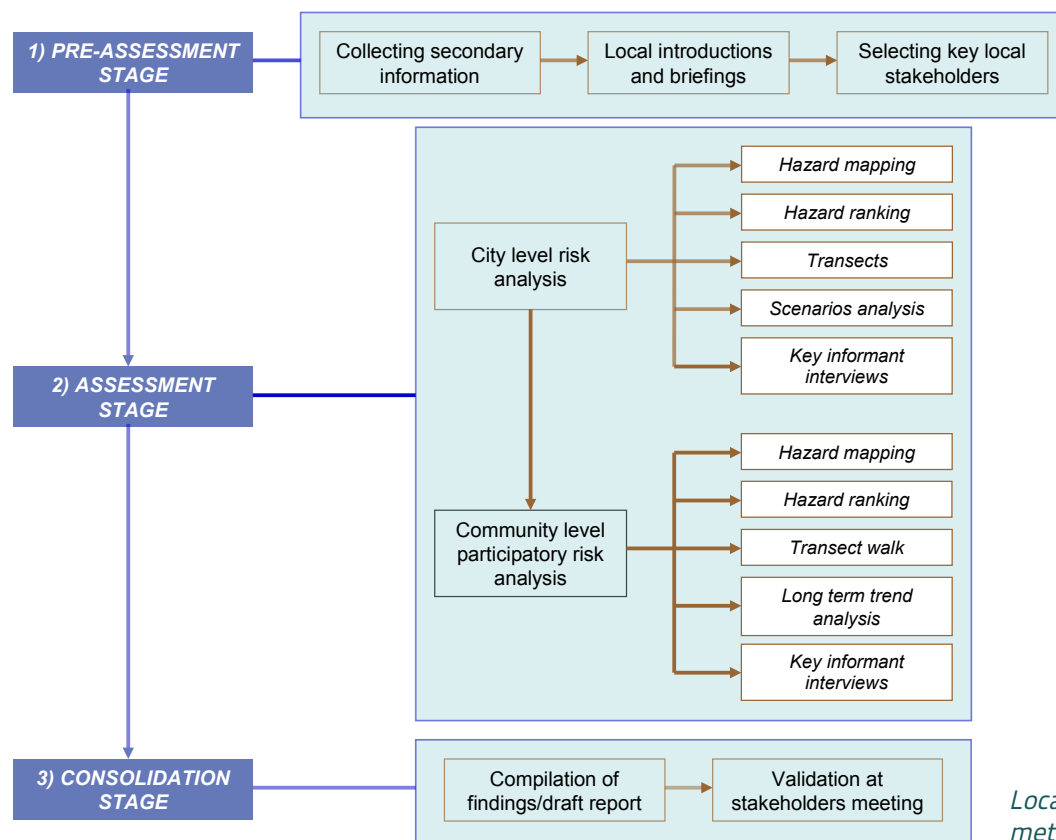
three-phase approach was developed for the in-country research teams. The toolkit – including the below methodology – built upon existing organizational and agency-developed risk and vulnerability assessment approaches, which were identified through an extensive literature review (see for example: ICLEI Oceania, 2008; UNDP, 2010). The toolkit included 17 tools, integrating and refining these contemporary approaches for application in the context of secondary cities. Particular emphasis was placed on the principles of participatory, community-based development, which have largely been excluded from previous applications of risk/vulnerability frameworks (a notable exception is the vulnerability and adaptation assessment carried out for Sorgoson City, Philippines, see UN-Habitat, 2008; 2011).

In addition to the application outlined in the toolkit, two supplementary project workshops were held to facilitate south-south learning objectives

and enhance the iterative piloting of the methodology. These workshops included field visits to those vulnerable communities identified through the toolkit's application; facilitating broader reflective discussions regarding: components of the methodology; variations in application between the two in-country research teams; and epistemic considerations in the emergent field of climate-adaptive development.

## Findings, Outcomes and Lessons

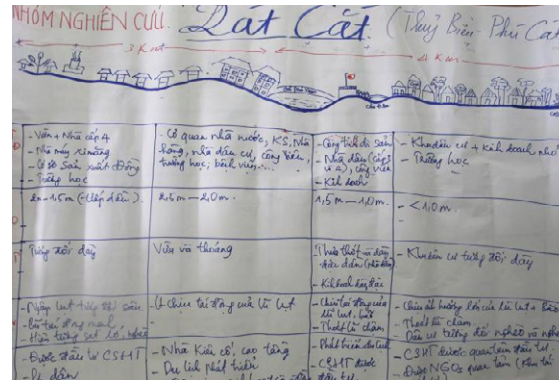
Toolkit implementation in both cities successfully identified and analysed vulnerable locations at whole-of-city and sub-urban scales, with the two in-country research teams providing positive feedback on the toolkit's structure, components and guidance framework. Participating stakeholders were similarly receptive, with the opportunity to input local knowledge into the research process strongly welcomed by participants. The cross-



*Local assessment methodological framework*



City-level hazard map and transect diagram for Huế



sector engagement approach was also observed to promote robust workshop discussion between previously disengaged community sectors and members.

Identified areas of vulnerability correlated strongly with existing socio-economic disadvantage, paralleling international observations evident in global vulnerability assessments (Füssel & Klien 2006). This promoted wider discussion around the applicability of future climate scenarios within these national and localized contexts, and planning for longer term climate change, given the more immediate challenges represented by a combination of poverty, rapid urban growth, and exposure

to current day climate variability; as well as the impact of weather-related extreme events on the coping capacity of communities and individuals.

De-coupling climate change impacts from the consequences of anthropogenic modifications of the immediate environmental system was found to be a core issue for both case cities. Indeed, local community-members were observed to over-attribute urban climate impacts (such as localized flooding) to global climate change, rather than local human interventions (such as drainage system blockages for shrimp farming). This will become increasingly challenging as changing socio-ecological 'relationships' act to either enhance, mitigate, and/or adapt local contexts to the impacts of climate change.

## Acknowledgements

This project was a truly collaborative exercise and the contributions, expertise and enthusiasm of all participants is gratefully acknowledged. In particular, the authors wish to acknowledge contributions of the members of the research team:

Le Thanh Sang, Nguyen Ngoc Diem, Lam Thi Thu Suu & Tran Ba Quoc (Huế case study)

Fuad Mallick, Rezaur Rahman, Aminur Rahman & Nandan Mukherjee (Satkhira case study)

## References

Füssel, H.-M., & Klein, R. J. T. (2006). Climate Change Vulnerability Assessments: An Evolution of Conceptual Thinking. *Climatic Change*, 75(3), 301–329.

ICLEI (2008) Local Government Climate Change Adaptation toolkit.

International Housing Coalition (IHC) (2011), *Adapting to Climate Change: Cities and the Urban Poor*, Available Online: <http://intlhc.org/wp-content/uploads/2011/09/Climate-Change-and-the-Urban-Poor.pdf>

Maplecroft (2011), *Climate Change Vulnerability Map 2011 – Summary Report*.

United Nations Department of Economic and Social Affairs (UN DESA) (2011). *World Urbanization Prospects: The 2011 Revision New York*. Available Online: [http://esa.un.org/unup/pdf/FINAL-FINAL\\_REPORT%20WUP2011\\_Annexables\\_01Aug2012\\_Final.pdf](http://esa.un.org/unup/pdf/FINAL-FINAL_REPORT%20WUP2011_Annexables_01Aug2012_Final.pdf)

UNDP (2010) *Designing climate change adaptation initiatives: a UNDP toolkit for practitioners*.

UN-Habitat (2008) *Sorsogon City climate change vulnerability and adaptation assessment* UN-Habitat, Fukuoka (Japan).

UN-Habitat (2011) *Planning for Climate Change: A Strategic Value-Based Approach for Urban Planners* UN-Habitat, Nairobi (Kenya).

Professor Darryn McEvoy is Leader of the Climate Change Adaptation Program at RMIT University, Melbourne, Australia; and also acts as Deputy Director of the Victorian Centre for Climate Change Adaptation Research. He is a member of the Scientific Steering Committee for the IHDP initiative 'Urbanization and Global Environmental Change'.



Stakeholder interviews and transect-mapping participants, Satkhira



## Preparing for the World Ocean Assessment

Reference No.: CBA2011-08NSY-Baker

Project Leader: Dr. Elaine Baker

Metadata: <http://www.apn-gcr.org/resources/items/show/1686>

Elaine Baker, UNEP/GRID Arendal, University of Sydney

The APN recently supported a workshop in Bangkok (17–19 September) that aimed to build capacity related to producing an integrated marine assessment, with a focus on requirements for assessments to support the new United Nations World Ocean Assessment (previously called the A Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-economic Aspects, see [http://www.un.org/Depts/los/global\\_reporting/global\\_reporting.htm](http://www.un.org/Depts/los/global_reporting/global_reporting.htm)).

The workshop was organized by UNEP/GRID-Arendal, the UNEP Regional Seas (COBSEA and NOWPAP) and the IOC/UNESCO (WESTPAC) with moderation provided by Dr. Trevor Ward. The participants were marine scientific experts from Cambodia, China, Indonesia, Japan, Republic of Korea, Malaysia, Philippines, Russia, Singapore, Thailand and Viet Nam. Also attending the workshop were members of the United Nations World Ocean Assessment Group of Experts from Australia (Dr. Peter Harris), China (Dr. Juying Wang), Korea (Dr. Chul Park) and the United Kingdom (Mr. Alan Simcock).

The workshop trialled a methodology for a rapid regional ocean assessment applied to the South China Sea (SCS).

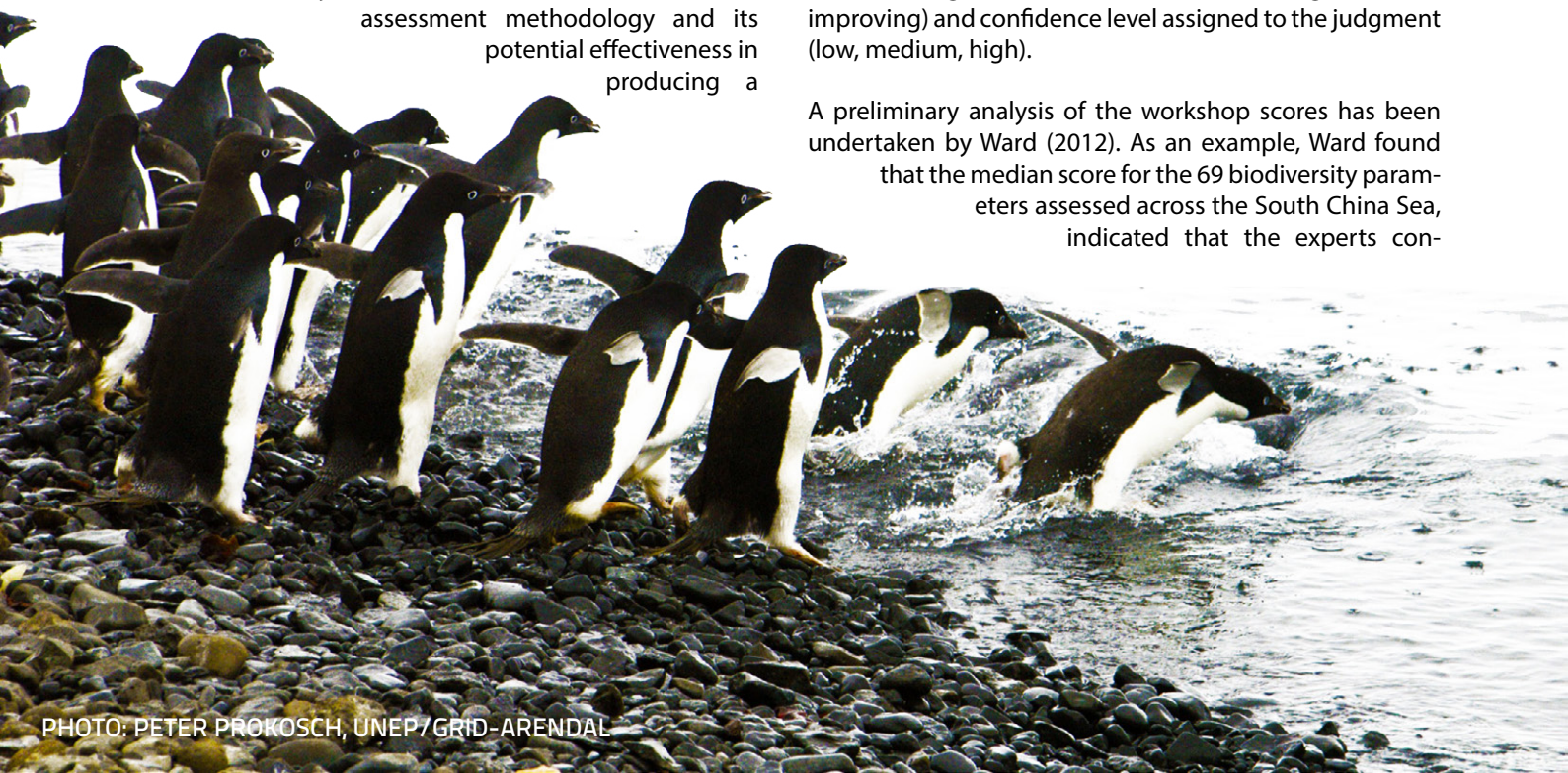
The objectives included an evaluation of the assessment methodology and its potential effectiveness in producing a

credible assessment, both for the region and national jurisdictions. The workshop demonstrated the methodology and the participants produced an indicative assessment of biodiversity in the region.

The workshop methodology used an expert elicitation process—a methodology that synthesises the subjective judgement of experts focusing on qualitative aspects of biodiversity and ecosystem health. Expert elicitation is essentially a scientific consensus methodology. The process consisted of three phases: a pre-workshop review to select the assessment parameters (such as habitats, species and processes); the reference point or benchmark against which the assessment of current condition would be compared (1900 was chosen); and the scoring system to be used (definitions for the assigned condition, e.g. what was meant by *very poor* condition) and the definition of time frames so that trends in condition could be included (*current* was considered 2007 to the present and *future* was the next 5 years).

The participants considered the components of biodiversity, ecosystem health and pressures listed in Table 1 and assigned grades to their condition and trend. In all, 104 parameters were considered and given a score from 1 to 10 describing the condition, trend (declining, stable or improving) and confidence level assigned to the judgment (low, medium, high).

A preliminary analysis of the workshop scores has been undertaken by Ward (2012). As an example, Ward found that the median score for the 69 biodiversity parameters assessed across the South China Sea, indicated that the experts con-





Biodiversity	Ecosystem Health	Pressures
Habitat Quality (24)*	Physical and Chemical Processes (18)	Climate Change and Variability (1)
Species and Groups of Species (32)	Pests, Invasive species, Diseases and Algal Blooms (9)	River Discharges (1)
Ecological Processes (13)		Coastal Urban Development (1)
		Coastal Wetland Development (1)
		Land Reclamation (1)
		Fishing (1)

\* Number of parameters assessed is shown in brackets.

Table 1. South China Sea parameters scored for condition and trend in condition

sidered that the Best 10% of the biodiversity of the region is in *Good* condition, and approaching the *Very Good* grade. However, for the *Most* category, representing 80% of the biodiversity of the region, the condition was graded as *Poor* and the Worst 10% was graded as *Very poor* (Figure 1). The experts assigned these scores with an average confidence level of 1.7, which equates to a level between *High* and *Medium*. The complete workshop results are available in Ward, 2012, and at [www.grida.no](http://www.grida.no).

In general it was found that the workshop methodology can be used to build a formal (i.e. well-developed, structured, systematic, transparent, traceable, and documented) expert elicitation procedure that can be used both at a regional and national scale to produce a rapid integrated marine assessment. However, participants stressed the need to find a good spread of experts with the relevant knowledge and experience to make judgments and also to provide key supporting evidence for these judgements when available.

The reporting for the WOA will be carried out by the Group of Experts (GOE) under the supervision of the Ad Hoc Working Group of the Whole. The GOE will be assisted by members from a Pool of Experts, nominated by UN Member States. It is hoped that many of the participants at the Bangkok workshop will join the Pool of Experts and participate in the reporting process.

## References

Ward Trevor J., 2012. Workshop Report: Regional Scientific and Technical Capacity Building Workshop on the World Ocean Assessment (Regular Process), Bangkok, Thailand. 17–19 September 2012. UNEP/COBSEA, Bangkok October 2012

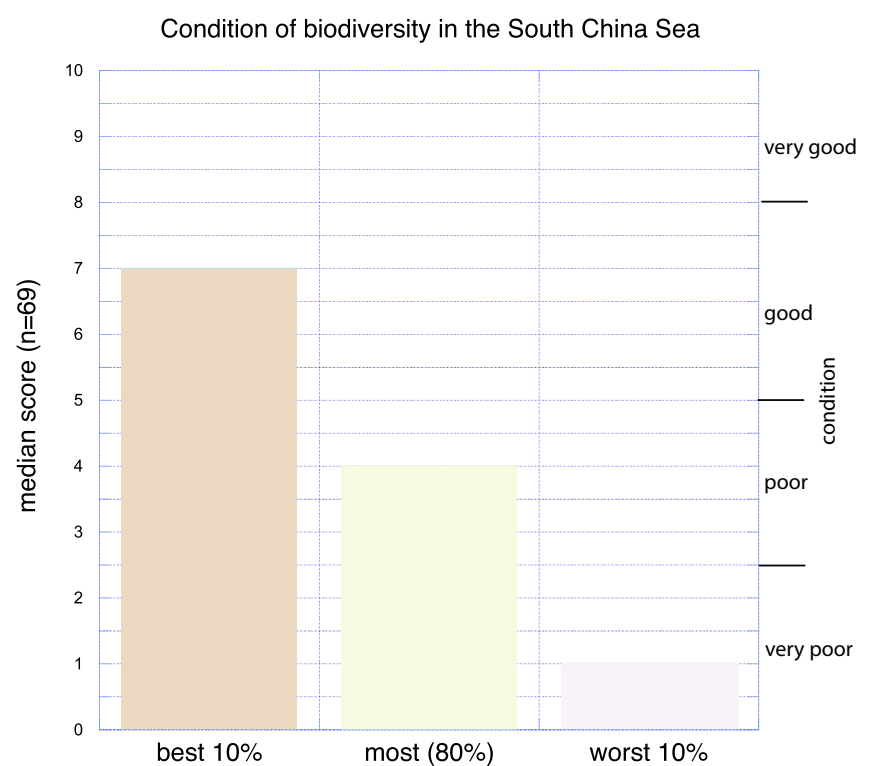


Figure 1. Median score for the condition of all biodiversity parameters (habitats, species and species groups and ecological processes) in the Best 10%, Most, and Worst 10% of places/occurrence in the South China Sea region, as determined by the workshop participants.

# Needs Assessment for Capacity Development for Integrated Marine Biogeochemistry and Ecosystem Research in the Asia-Pacific Region

Reference No.: CBA2012-06NMY-Zhang

Project Leader: Prof. Jing Zhang

Metadata: <http://www.apn-gcr.org/resources/items/show/1766>

IMBER Regional Project Office (RPO), IMBER Capacity Building Task Team

An international workshop on “Needs Assessment for Capacity Development for Integrated Marine Biogeochemistry and Ecosystem Research in the Asia-Pacific Region” was held from 31 July to 4 August 2012 at the East China Normal University (ECNU) in Shanghai, China. The meeting was initiated by the Capacity Building Task Team (CBTT) of the Integrated Marine Biogeochemistry and Ecosystem Research (IMBER) project to assist countries in the region to make appropriate contributions to regional and international IMBER-related science.

Financially supported by IMBER, APN and the ECNU, the workshop brought together 20 marine scientists and capacity building experts to discuss existing capacity building initiatives and case studies, assess capacity building needs and consider potential collaboration for future capacity development. The international organizations involved in this effort included IMBER, APN, SCOR (Scientific Committee on Oceanic Research), IOC/WESTPAC (Intergovernmental Oceanographic Commission, Sub-commission for the Western Pacific) and POGO (Partnership for Observation of the Global Oceans).

Professor Yunxuan Zhou, Director of the State Key Laboratory of Estuarine and Coastal Research (SKLEC), welcomed workshop participants. Oral presentations were followed by a roundtable discussion of the issues raised. It was recognized that a diverse range of issues require attention and that future capacity development will need to be prioritized. Breakout groups considered the actions that are needed and possible approaches. Plenary discussions then considered possible outcomes and developed an integrated set of future actions.

## Marine Capacity Building Problems and Challenges at the Global Level

Two inter-locking challenges complicate the role of international research projects in regional capacity building: creating regional capacity-building activities from a global project; and creating long-term, sustained efforts from



*Figure 1. Capacity building needs assessment workshop participants*

a project with a limited life-span. Different approaches (including incentives, monitoring and evaluation, follow-ups and legal frameworks) are needed to deal with these two issues.

In addition to the problems associated with the need for different approaches for global and regional capacity building activities, other constraints and challenges for the implementation of capacity building activities for projects such as IMBER include:

- The emergence of new research questions that represent global challenges that may be difficult to address for specific regions,
- The development of specific tools to promote capacity building at the regional level to meet the challenges of global change science,
- New management approaches towards a sustainable and healthy marine ecosystem,
- Globalization and the need for better governance of human-nature interactions, including innovative, sustainable use of marine and coastal resources, and
- Identification and nurturing of potential research funding to support the long-term capacity building activities.

## Ongoing Regional/National Capacity Building Activities in Marine Sciences

The overall synthesis suggested that current capacity building initiatives and efforts in this region do not cater to the tremendous need for capacity development, and have skewed coverage geographically. Integrated and multi- or cross-disciplinary research and approaches need considerable attention at national and regional levels. The need for regular and continuous capacity enhancement efforts was also emphasized.

At the national level, a strategic, structured and systematic approach is somewhat lacking. Most institutions are constrained in assessing their capacity building by “when and what” becomes available, and do not necessarily cover the capacity enhancement needs of individuals or organizations, and obvious gaps exist. On a regional level, countries do not have an equal level of capacity building opportunities. The reach and scope of national, regional and international institutions is limited and therefore, does not always trickle down to where it is actually most needed.

Issues that are common to many countries in the region include maintaining the “critical mass” of new scientists by reducing the “brain drain”, attracting students into marine science-related careers, and creating opportunities for early- and mid-career professionals.

## Capacity Development Needs for Marine Science in the Asia-Pacific Region

In the Asia-Pacific region, capacity development needs for marine science are predominantly driven by social and economic priorities. Three marine research topics were identified as priorities for capacity building efforts in this region: climate change impacts, ecosystem health and food security. Challenges faced by these issues include sustained funding support for research infrastructure, technical capability for data acquisition and analysis, and the need to develop models. The need for more collaboration to share facilities and expertise for research, and recognition that there should be joint efforts between natural and social scientists to address the issues were noted.

It was also recognized that not all countries in this region are at the same level of capacity and there should be greater support from more advanced countries to raise the level of those countries that need and desire that support.

## What Can be Done to Advance Capacity Building in the Asia-Pacific Region?

Several recommendations were proposed to help enhance the regional marine research capacity:

- Current capacity building practices and achievements for marine research and education should be examined and evaluated regionally and globally.
- Capacity building in the Asia-Pacific region is assisted by resources from international organizations (Matrix 3 on the workshop website). It is important for scientists in the region to be aware of these resources and to utilize them to the fullest extent possible.
- IMBER should consider partnering with the regional/international organizations to build a platform and conduct specific capacity building activities that meet regional research priorities.
- The locations of capacity building activities should be shifted from region to region with particular skew to developing countries to help promote regional research contributions and regional capacity building efforts.
- IMBER could establish a mentoring programme for programme-wide networking activities, which would identify scientists who are well qualified and who are also good educators/tutors. An award scheme to attract more potential mentors was also suggested.
- Building an IMBER “alumni” network of IMBER-related students and early-career researchers and mentors should help create a strong IMBER community.
- More dedicated financial resources for capacity building activities targeting the regional needs should be further explored.

## Reference

Liuming Hu, Bernard Avril, Jing Zhang. Capacity Building for Sustainable Marine Research in the Asia-Pacific Region. *Eos* (Accepted).

IMBER Newsletter Issue No. 21: <http://www.imber.info/index.php/News/Newsletters/Issue-n-21-September-2012>

IMBER website: <http://www.imber.info/index.php/Science/Working-Groups/Capacity-Building/2012-CB-Workshop>

## About IMBER

IMBER is an international project sponsored by the International Geosphere-Biosphere Program (IGBP) and SCOR that aims to investigate the sensitivity of marine biogeochemical cycles and ecosystems to global change, on time scales ranging from years to decades. The vision of IMBER is to provide a comprehensive understanding of, and accurate predictive capacity for ocean responses to accelerating global change and the consequent effects on the Earth System and human society.



# Institutionalizing Agroforestry as a Climate Change Adaptation Strategy via Local Capacity and Policy Development in Southeast Asia: Experience of PAFERN

Reference No.: CBA2011-13NSY-Tolentino

Project Leader: Dr. Lutgarda Tolentino

Metadata: <http://www.apn-gcr.org/resources/items/show/1691>

Dr. Lutgarda Tolentino, Agricultural Systems Cluster, University of the Philippines Los Baños (UPLB), Philippines

## The Project in Brief

This project was a sequel of the 2009 APN-funded project “Scaling-Up Agroforestry Promotion for Climate Change Mitigation and Adaptation in Southeast Asia”. It envisioned to help sustain the initiatives of the earlier project in promoting agroforestry as a climate change adaptation strategy. This was done by building the capabilities of the local participants in the development programmes, such as junior lecturers from academic institutions who are mainly responsible for transferring new knowledge and skills to students; and local technicians from local government sectors who provide technical assistance to local farmers.

This project recognized the local knowledge of farmers on climate change adaptation, documenting their farm-level evidences of climate change, observed effects of climate change on their agricultural production, and their adaptation strategies. Because institutionalization of agroforestry requires policy advocacy, this project also looked into current issues and concerns that confront agroforestry promotion, and the corresponding measures to help address those concerns so that agroforestry can be advanced as a development strategy in Southeast Asia.

## The Collaborators

This project was implemented through the collaboration of the six country networks of the Southeast Asian Network for Agroforestry Education (SEANAPE), namely: Indonesia Network for Agroforestry Education (INAPE), Lao Network for Agroforestry Education (LaoNAPE), Malaysia Network for Agroforestry Education (MANAPE), Philippine Agroforestry Education and Research Network (PAFERN), Thailand Network for Agroforestry Education (ThaiNAPE), and Viet Nam Network for Agroforestry Education (VNAPE). PAFERN served as the lead institution of this project.

## Project Objectives and Component Activities

The aim of the project was to strengthen the capacities of junior lecturers engaged in agroforestry education programmes, as well as community development workers and agricultural technicians involved in the research and extension programmes at the local and community levels. The other goal of the project was to mainstream agroforestry in the development programmes of local government units/agencies in each of the six collaborating countries. Specifically, it intended to; a)



Figure 1. National training on climate change adaptation strategies in Viet Nam



Figure 2. National training on climate change adaptation strategies in Malaysia

b) implement six national training programmes on promoting different climate change mitigation and adaptation strategies; b) organize dialogues with different policy-making bodies at the national and local levels for the integration of agroforestry in their development programmes; and c) document climate change adaptation strategies of upland farmers in selected areas in Southeast Asia.



*Figure 3. Agroforestry farms documented in the Philippines*

The project collaborators have undertaken the following major project activities:

**1. National Training on Climate Change Adaptation Strategies.** This training was conducted in Indonesia, Malaysia, Thailand, Philippines, Lao PDR and Viet Nam with the aim of enhancing the knowledge and skills of the junior agroforestry lecturers and agricultural technicians/extension workers, and disseminating appropriate climate change adaptation strategies which they could apply in their home institutions or share with the upland farming communities in their respective areas.

**2. Documentation of Climate Change Adaptation Strategies of Selected Upland Farmers.** This component was undertaken to assess the understanding and awareness of selected agroforestry practitioners and upland farmers on the issue of climate change and its impacts to their agricultural production systems; identify the indications and evidences of climate change based on the experiences and observations of the agroforestry practitioners and upland farmers in their agricultural production; identify the impacts or effects of climate change on the agricultural production of the selected respondent-upland farmers; analyse the different mechanisms and strategies that are being employed by the agroforestry practitioners/upland farmers in coping with the impacts of climate change; and formulate recommendations to the concerned national and local development organizations as regards the adoption of appropriate and sound climate change mit-

igation and adaptation strategies. Among the project collaborators that carried out this component were Thailand, Malaysia, Indonesia and the Philippines.



*Figure 4. Policy dialogue in the Philippines*

**3. Policy Dialogue on Agroforestry.** This activity was implemented to deliberate on the key issues and policy options towards institutionalizing agroforestry in the countries of the project collaborators. This dialogue served as an opportunity to convene the different agroforestry stakeholders, including the implementers of the agroforestry-related policies and programmes. The policy brief that was produced in the 2010 APN-funded project was used as the main reference for the policy dialogues in Lao PDR, Viet Nam and the Philippines.

## Implications

The results and outcome of this project indicated that climate change is indeed a very serious and critical worldwide phenomenon, as indi-

cated by the increasing interest from academic institutions and local governments to receive more training on climate change adaptation strategies. The six collaborating countries are all agricultural countries, and therefore, the impacts of climate change to the agriculture sector have been clearly seen by the stakeholders. This project also revealed that while a number of initiatives have been undertaken in the area of agroforestry education, research and extension, its wide promotion and adoption at the grassroots level is hampered by a number of factors: institutional support system, land tenure arrangements, technical know-how, policies, financial and farmers' preferences. The project concludes that climate change is already being experienced by the upland farmers, and its effects are already observable: higher incidence of pests and diseases, low crop productivity/yield, low farm income, and delays in fruiting and harvesting. Results also point out the need to capacitate the local institutions so that they could effectively communicate or disseminate information about the different climate change adaptation strategies that are appropriate in the farming communities within their respective areas; and finally, strengthen the local knowledge of the upland farmers in adapting to the impacts of climate change.

## ARCP 2012/13 Projects

Project Reference	Project Title	Project Leader	Email
ARCP2012-01CMY-Patra/Canadell	Greenhouse Gas Budgets of South and Southeast Asia	Dr. Prabir K. PATRA and Dr. Josep CANADELL, Research Institute for Global Change (JAMSTEC), Global Carbon Project (GCP) JAPAN/AUSTRALIA	prabir@jamstec.go.jp
ARCP2012-02CMY-Fortes	Seagrass-Mangrove Ecosystems: Bioshields against Biodiversity Loss and Impacts of Local and Global Change along Indo-Pacific Coasts	Prof. Miguel FORTES, Marine Science Institute, University of the Philippines, PHILIPPINES	miguelfortes@gmail.com
ARCP2012-03CMY-Herath	Developing Ecosystem-Based Adaptation Strategies for Enhancing Resilience of Rice Terrace Farming Systems against Climate Change	Prof. Anura Srikantha HERATH, Institute for Sustainability and Peace, United Nation University (UNU), JAPAN	herath@unu.edu
ARCP2012-04CMY-Salik	Impact of Climate Change on Mangroves Ecosystem in South Asia	Mr. Kashif Majeed SALIK, Global Change Impact Studies Centre (GCISC), PAKISTAN	kashif.majeed@gcisc.org.pk
ARCP2012-05CMY-Zhen	Holistic Assessment of Land-use Change and Impacts on Ecosystem Services of Wetlands	Dr. Lin ZHEN, Institute of Geographic Sciences and Natural Resources Research (IGSNRR), Chinese Academy of Sciences, CHINA	zhenl@igsnr.ac.cn
ARCP2012-06CMY-IGBP	An International Geosphere-Biosphere Programme Synthesis Theme on: Global Environment Change and Sustainable Development: Needs of Least Developed Countries	Dr. Ninad BONDRE, Science Editor, the Royal Swedish Academy of Sciences, International Geosphere-Biosphere Programme (IGBP)	ninad.bondre@igbp.kva.se
ARCP2012-07CMY-Mathukumalli	Tracing Nitrogen and Carbon Biogeochemical Processes in the Inter-tidal Mangrove Ecosystem (Sundarban) of India and Bangladesh: Implications of the Global Environmental Change	Dr. Bala Krishna Prasad MATHUKUMALLI, Earth System Science Interdisciplinary Centre, University of Maryland, UNITED STATES OF AMERICA	mbkp@umd.edu
ARCP2012-08CMY-Jung	Impacts of Global Warming on Coastal and Marine Ecosystems in the Northwest Pacific	Dr. Sukgeun JUNG, National Fisheries Research and Development Institute, REPUBLIC OF KOREA	sukgeun.jung@gmail.com
ARCP2012-09NMY-Meinke	Improving the Robustness, Sustainability, Productivity and Eco-Efficiencies of Rice Systems throughout Asia	Prof. Holger MEINKE, University of Tasmania, AUSTRALIA	holger.meinke@utas.edu.au
ARCP2012-10NMY-Li	Development of an Integrated Climate Change Impact Assessment Tool for Urban Policy-Makers (UrbanCLIM)	Dr. Yinpeng LI, International Global Change Institute, Waikato University, NEW ZEALAND	yinpengli@climsystems.com
ARCP2012-11NMY-Quynh	Carbon Fluxes and Emission from the Red River (Viet Nam and China): Human Activities and Climate Change	Dr. LE Thi Phuong Quynh, Institute of Natural Product Chemistry (INPC), VIET NAM Academy of Science and Technology (VAST), VIET NAM	quynhltp@yahoo.com





*The Annual Regional Call for Research Proposals (ARCP) is one of the scientific pillars of the APN to encourage and promote global change research in the Asia-Pacific region that has potential, in addition to improving the understanding of global change and its implications in the region, to contribute to the establishment of a sound scientific basis for policy-making with regard to issues for which global change is an important factor. The ARCP is a competitive process launched in April 1998 to select projects for funding under the Science Agenda of the APN.*

Project Reference	Project Title	Project Leader	Email
ARCP2012-12NMY-Roy	Coastal Ecosystem and Changing Economic Activities: Challenges for Sustainability Transition	PROF. Joyashree ROY, Global Change Programme, Jadavpur University, INDIA	joyashreeju@gmail.com
ARCP2012-13NMY-DeCosta	A study on Loss of Land Surface and Changes to Water Resources, Resulting from Sea Level Rise and Climate Change	Dr. G. S. DECOSTA, Open Polytechnic of New Zealand, New Zealand	gregory.decosta@openpolytechnic.ac.nz
ARCP2012-14NMY-Carter	Coral reef and water quality status and community understanding of threats in the eastern Gulf of Thailand	Assoc. Prof. R. W. (Bill) CARTER, Sustainability Research Centre, University of the Sunshine Coast, AUSTRALIA	bcarter@usc.edu.au
ARCP2012-15NMY-Yoo	Toward a Fire and Haze Early Warning System for Southeast Asia	Dr. Jin Ho YOO, APEC Climate Center, REPUBLIC OF KOREA	jhyoo@apcc21.net
ARCP2012-16NMY-Ochiai	GEOSS/Asian Water Cycle Initiative/Water Cycle Integrator (GEOSS/AWCI/WCI)	Mr. Osamu OCHIAI, Associate Senior Administrator, Satellite Applications and Promotion Centre (SAPC), Japan Aerospace Exploration Agency (JAXA), JAPAN	ochiai.osamu@jaxa.jp
ARCP2012-17NMY-Burnett	Assessing the Impact of Climate Change and Development Pressures on Nutrient Inputs into the Mekong River and Tonle Sap	Prof. William C. BURNETT, Florida State University, USA	wburnett@fsu.edu
ARCP2012-18NMY-Sase	Dynamics of Sulphur Derived from Atmospheric Deposition and its Possible Impacts on the East Asian Forests	Dr. Hiroyuki SASE, Asia Centre for Air Pollution Research, JAPAN	sase@acap.asia
ARCP2012-19NSY-Kamal	Assessing Climate Change Impacts on Salt Marsh and Seagrass Ecosystems in the South and South East Asian Coasts	Dr. Abu Hena Mustafa KAMAL, Senior Lecturer, Department of Animal Science and Fishery, University Putra Malaysia, MALAYSIA	hena@btu.upm.edu.my
ARCP2012-20NSY-Musafer	Sustainable Biochar Systems in Developing Countries	Mr. Namiz MUSAFER, Practical Action Sri Lanka, SRI LANKA	namiz.musafer@practicalaction.org.lk
ARCP2012-21NSY-Siswanto	Climate Change and Human Impacts on Marine Biological Production in the Asia-Pacific Marginal Seas	Dr. Eko SISWANTO, Institute of Geospatial Science and Technology, University Teknologi Malaysia, MALAYSIA	ekosiswanto@utm.my
ARCP2012-22NSG-Prayitno	Scoping Workshop to Develop Proposal: Vulnerability Assessment of Mangrove Biodiversity to Climate Change in Southeast Asia	Dr. Joko PRAYITNO, Institute for Environmental Technology, Agency for the Assessment and Application of Technology (BPPT), INDONESIA	joko2812@yahoo.co.id
ARCP2012-23NSG-Crawford	Scoping Workshop to Develop Proposal: Human Responses to Catastrophic Monsoon Events in South Asia, Designing a Spatially Explicit Model in Low-Lying Coastal Areas	Dr. Thomas CRAWFORD, East Carolina University, USA	crawfordt@ecu.edu

## CAPaBLE 2012/13 Projects

Project Reference	Project Title	Project Leader	Email
CBA2012-01CMY-Abawi	Building Scientific Capacity in Seasonal Climate Forecasting (SCF) for Improved Risk Management Decisions in a Changing Climate	Prof. Yahya ABAWI, National Climate Centre, Bureau of Meteorology, AUSTRALIA	y.abawi@bom.gov.au, yahya.abawi@usq.edu.au
CBA2012-02CMY-Hasson	Capacity Building in Advanced Remote Sensing (RS) & Geographic Information System (GIS) Techniques for Studying Snow & Ice Dynamics in Hindu Kush-Karakoram-Himalaya (HKH) Region	Mr. Shabeh UI HASSON, Global Change Impact Studies Centre, PAKISTAN	shabeh.hasson@gcisc.org.pk, shabeh@gmail.com
CBA2012-03NMY-Rasul	Impact of Climate Change on Glacier Melting and Water Cycle Variability in Asian River Basins	Dr. Ghulam RASUL, Pakistan Meteorological Department, PAKISTAN	rasulpmd@gmail.com
CBA2012-04NSY-Kanie	The Exploring Effective Architecture for Emerging Agencies in International Environmental Governance	Dr. Norichika KANIE, Tokyo Institute of Technology, JAPAN	Kanie@valdes.titech.ac.jp
CBA2012-05NMY-Salinger	Rise Up: Pacific Futures	Dr Jim SALINGER, Antarctic, Climate & Ecosystems CRC, University of Tasmania, AUSTRALIA	jim.salinger@utas.edu.au
CBA2012-06NSY-Zhang	International workshop: Needs assessment for capacity development for integrated marine biogeochemistry and ecosystem research in the Asia-Pacific region	Prof. Jing ZHANG, East China Normal University (ECNU), CHINA	jzhang@sklec.ecnu.edu.cn
CBA2012-07NSY-Fuentes	ASEAN Training Workshop on Building Capacity on ABS	Mr. Rodrigo U. FUENTES, Executive Director, ASEAN Centre for Biodiversity (ACB), UPLB, PHILIPPINES	rufuentes2@aseanbiodiversity.org
CBA2012-08NSY-Hongbo	Proposal for an International Workshop on MIS Problems in Northwest Pacific Region	Mr. Hongbo SHANG, NOWPAP DINRAC, Policy Research Center for Environment and Economy, CHINA.	shang.hongbo@prcee.org
CBA2012-09NMY-Hashim	Global Environmental Change and Human Health: Extreme Events and Urbanization in the APN Region	Dr. Jamal Hisham HASHIM, UKM Medical Centre, MALAYSIA	jamal@unu.edu; jamalhas@hotmail.com
CBA2012-10NSY-Zondervan	Governing Critical Uncertainties: Climate Change and Decision-Making in Transboundary River Basins	Dr. Ruben ZONDERVAN, Executive Director, Earth System Governance Core Project of IHDP	ruben.zondervan@esg.lu.se



*The Scientific Capacity Building/Enhancement for Sustainable Development in Developing Countries (CAPaBLE) programme, which was launched in April 2003, is an initiative to realize parts 107 to 114 of the Johannesburg Plan of Implementation (JPOI) for the World Summit on Sustainable Development (WSSD) and is registered as a WSSD Type II Partnership Initiative. Of particular relevance is Part 111 of JPOI:*

*“Establish regular channels between policy makers and the scientific community for requesting and receiving science and technology advice for the implementation of Agenda 21, and create and strengthen networks for science and education for sustainable development, at all levels, with the aim of sharing experiences and best practices, and building scientific capacities, particularly in developing countries”.*

*The CAPaBLE programme is enhancing scientific capacity in developing countries to improve decision-making relating to issues that are directly linked to their sustainable development. This effort is being achieved through a two-track process of capacity enhancement for experienced leading scientists and capacity development for early-career scientists under the APN Annual Call for Proposals.*

<b>Project Reference</b>	<b>Project Title</b>	<b>Project Leader</b>	<b>Email</b>
CBA2012-12NSY-Cruz	Enhancing the LGU Capacity for Implementing Conservation Farming Village and a Strategy for Climate Change Adaptation and Upland Environment	Prof. Rex Victor O. CRUZ, Dean and Professor, College of Forestry and Natural Resources, UP Los Banos, PHILIPPINES	rexcruz@yahoo.com
CBA2012-13NSG-Bora	Capacity Building in Climate Change Mitigation through Precision Agriculture	Dr. Ganesh C. BORA, Assistant Professor and Interim Director, Agriculture and Biosystems Engineering, North Dakota State University, USA	ganesh.bora@ndsu.edu
CBA2012-14NSG-Adiningsih	Creating a Learning Network among Asian Planning Schools for Climate Change Adaptation Education and Enhancing the Interface with the Global Change Science Community	Dr. Hassan VIRJI, Executive Director, START, Washington D.C., USA. And Dr. Erna Sri Adiningsih, APN SEA-SRC; INDONESIA	hvirji@start.org
CBA2012-15NSY-Hiwasaki	Capacity Building to Strengthen Resilience of Coastal and Small Island Communities against Impacts of Hydro-Meteorological Hazards and Climate Change	Dr. Lisa HIWASAKI, UNESCO Jakarta Office, Regional Science Bureau for Asia and the Pacific, INDONESIA	l.hiwasaki@unesco.org
CBA2012-16NSY-Gordov	Capacity Building to Study and Address Climate Change Induced Extremes in Northern Asia	Prof. Evgeny GORDOV, Siberian Center for Environmental Research and Training/Institute of Monitoring of Climatic and Ecological Systems SB RAS, RUSSIA	gordov@scert.ru
CBA2012-17NSY-Pradhananga	Preparation of Next Generation Leadership in Sustainability: An Approach in the Asia-Pacific region	Mr. Dhiraj PRADHANANGA, President, The Small Earth Nepal (SEN), NEPAL	info@smallearth.org.np; dhirajmet@hotmail.com



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# APN Committees and Members

## APN STEERING COMMITTEE (SC) MEMBERS

### Elected members

1. **Cambodia:** Sundara SEM
2. **Republic of Korea:** Eunhae JEONG
3. **Indonesia:** Hermien ROOSITA

### nFP for the host of the 18<sup>th</sup> IGM

1. **China:** Chengyong SUN

### Ex-officio (SPG Co-Chairs)

2. **Nepal:** Madan Lall SHRESTHA
3. **Russia:** Alexander STERIN

### Co-opted members

1. B. M. U. D. Basnayake (nFP for Sri Lanka)
1. Louis BROWN (invited expert)
2. Roland FUCHS (invited expert)
3. W. Andrew MATTHEWS (invited expert)
4. Hiroshi TSUJIHARA (donor member)
5. Kazuhiko TAKEMOTO (invited expert)

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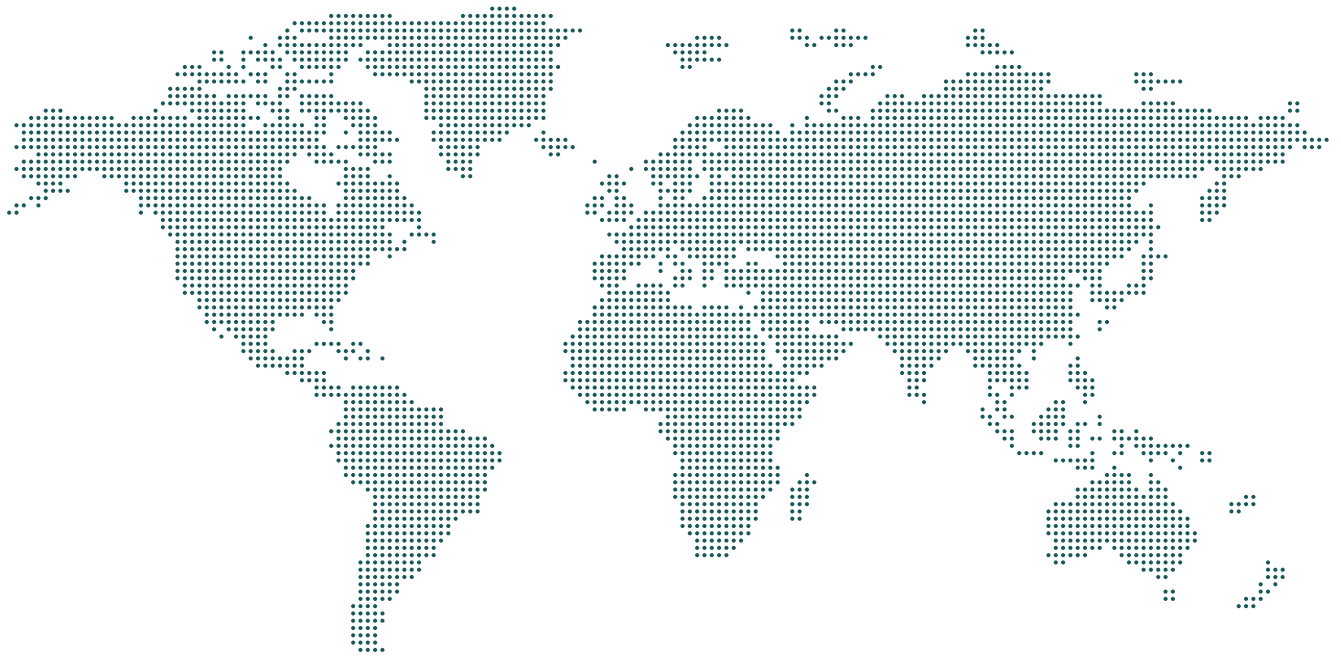
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# Calendar of Global Change Events

## November 2012

12-23	UNCECAR/APN Training Workshop and Proposal Development Training Workshop	Bangkok, THAILAND
21-23	Regional Workshop on Future Earth	Kuala Lumpur, MALAYSIA
26 Nov - 7 Dec	UNFCCC COP18/MOP8	Doha, Qatar

## December 2012

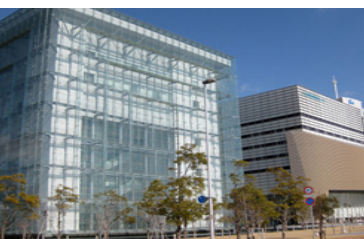
3-5	Third New Commons Workshop with APN, DIVERSITAS, IHDP and UNU-ISP	Kobe, JAPAN
10-14	ASEAN Regional Workshop on Building Capacity in ABS, MALAYSIA (CBA2012-07NSY)	MALAYSIA

## January 2013

14-18	APN Fourth South Asia Sub-regional Cooperation Meeting	Kathmandu, NEPAL
21-26	First Meeting of IPBES Plenary	Bonn, GERMANY
28-31	Earth System Governance Tokyo Conference (CBA2012-04NSY-Kanie)	Tokyo, JAPAN

## February 2013 and Beyond

11-12	Second PAGES Young Scientists Meeting	Goa, INDIA
13-16	Fourth PAGES Open Science Meeting	Goa, INDIA
14-18	Annual Meeting of the American Association for the Advancement of Science (AAAS)	Boston, USA
20-26	1st Plenary of IPBES	Bonn, GERMANY
25-28	Scoping Meeting of Temperate East Asia Members to discuss sub-regional cooperation and PDTWs in the region	Vladivostok, RUSSIA
8-12 April	18th APN Joint IGM/SPG Meetings	Kobe, JAPAN



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