APN
ASIA-PACIFIC NETWORK FOR
GLOBAL CHANGE RESEARCH

Annual Report
2014–2015

ASIA-PACIFIC NETWORK FOR
GLOBAL CHANGE RESEARCH

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FISCAL YEAR 2014 AT A GLANCE

In total

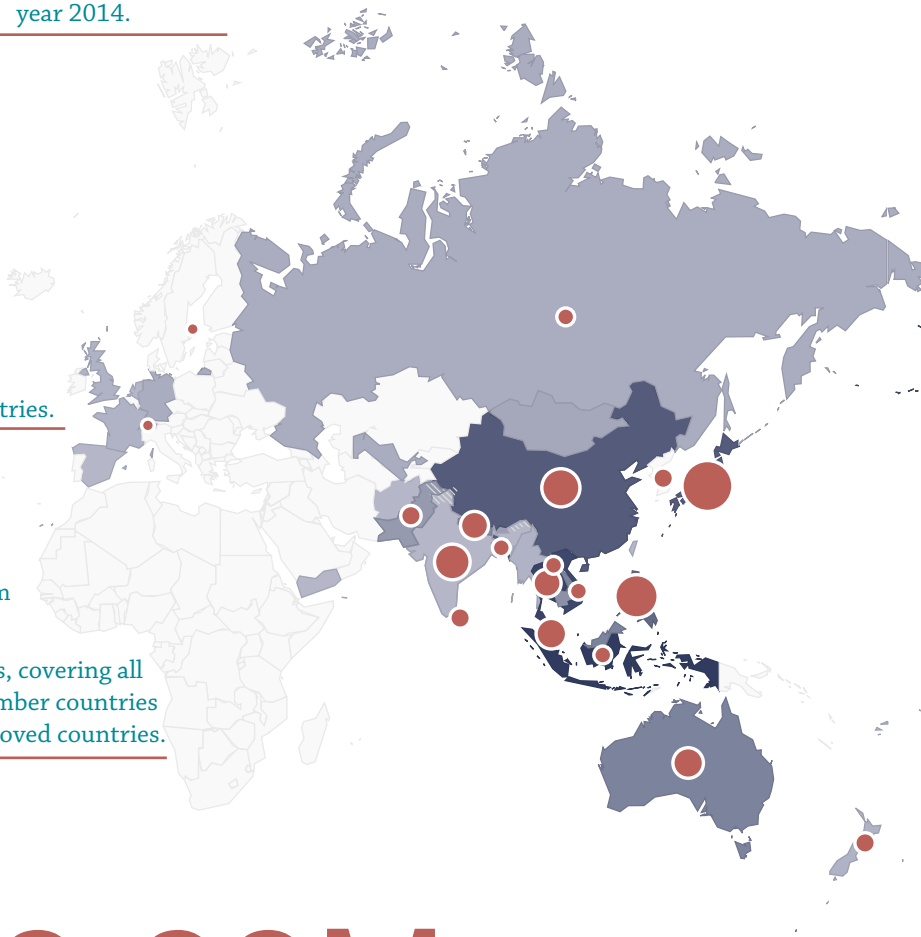
98 projects ongoing or completed in fiscal year 2014.

... conducted by project leaders from

21 Countries.

...with collaborators from

41 countries, covering all APN member countries and approved countries.



$3.23M allocated for scientific activities under core programmes, frameworks and others.

Of all project leaders and collaborators:

72% are from developing countries.

26 projects completed in Fiscal Year 2014

43 young scientiststs participated in 2 PDTW workshops.

MESSAGE FROM THE STEERING COMMITTEE CHAIR AND SECRETARIAT DIRECTOR

It is our privilege to share with you the APN Annual Report 2014–2015.

Fiscal year 2014, which runs from 1 April 2014 to 31 March 2015, has been a year of significant accomplishments for APN as it completes 20 years of delivering the mission of enabling developing countries in the region to successfully address global change challenges.

At the turning point of two decades of operation, APN conducted a review of its work in the third Strategic Phase (2010–2015), which not only looked at the achievements in fulfilling APN's mission statement, but also addressed the challenges and opportunities as it moves towards a new phase. Results of the review were fed into the work of a strategic planning team, which resulted in the development of the Fourth Strategic Plan, a guide for the scientific and institutional actions over the upcoming five-year phase.

Over the fiscal year, more than 50 new and continuing collaborative research and capacity development projects were being conducted by project leaders and their collaborators under APN's core programmes of ARCP and CAPaBLE, thematic frameworks of CAF, LCI and B&ES, as well as other focused activities. These projects, together with a range of activities focusing on knowledge sharing and exchange, capacity development and science-policy linkages either conducted in-house by APN alone or in collaboration with various partners, have defined a fruitful fiscal year 2014 for APN.

The three thematic Frameworks also saw exciting progress in 2014. New activities under the Climate Adaptation Framework (CAF) and Biodiversity and Ecosystem Services (B&ES) Framework were under way; while project leaders and collaborators of the Low Carbon Initiatives (LCI) Framework began an effort to synthesise and share results in the form of policy briefs. Additionally, recognising the increasing importance of realising a resource-efficient and sound material cycle society in the region, a 3R (reduce, reuse, recycle) scoping workshop was organised with the objective of identifying opportunities for cooperation via a thematic framework approach.

APN members from individual member countries played an increasingly active and important role in designing and promoting APN activities in their own countries and sub-regions. Recognising the need to maintain the active engagement of members, Sub-Regional Committees (SRCs) were institutionalised and officially included in the APN Framework Document as organs of APN. In 2014, both South Asia and Southeast Asia

SRCs held their annual committee meeting to identify future activities for the Fourth Strategic Phrase.

We continue our efforts in enhancing science-policy linkages as a hallmark of APN activities. In January 2015, we successfully organised the second sub-regional Science-Policy Dialogue in collaboration with the Royal Government of the Kingdom of Bhutan as well as international and regional partners. APN also actively participated in international science-policy events such as the SBSTA research dialogue and IPBES meetings. We also organised meetings that brought together scientists and policy makers to exchange knowledge and ideas at the local levels in Guangdong, China, and in Hyogo, Japan. Lastly, of course, many APN projects have a component of building or strengthening links between the scientific research and policy-making communities.

Likewise, many projects also embed capacity building as an important component in their activities. In this way, hundreds of young scientists and researchers were given opportunities to improve their technical capacity and soft skills required for their research careers. For the first time, APN's signature annual Proposal Development Training Workshop (PDTW) was open to public applications from inside the Asia-Pacific region. A national PDTW was also held in Bhutan to enhance the capacity of Bhutanese scientists and practitioners. Combined, the two PDTWs provided more than 40 young people with hands-on training and yielded two proposals funded by the APN.

We sincerely thank all APN members for sharing their invaluable expertise and experience for advancing the work of APN. We would also like to thank all donor countries and other member countries for their support in cash and in kind that made possible our accomplishments in this fiscal year. Finally, we extend our heartfelt appreciation to all invited experts, external reviewers, as well as project leaders and collaborators, and our various partners in the global change community. We look forward to working with you very closely in the future.

Peldon Tshering
Chair, APN Steering Committee

Hiroshi Tsujihara
Director, APN Secretariat

APN OVERVIEW

▲ *"Heroes beyond the coast." Photo by Noel Perez Labutap (CC BY-NC 4.0)*

APN OVERVIEW

The Asia-Pacific Network for Global Change Research (APN) is a network of 22 member country governments that fosters regional collaborative research on global change, improves scientific and technical capabilities of developing countries in the region, and strengthens interactions between policy makers and the science community.

APN was established in 1996 to fulfil the objectives of a US-Japan Partnership established in 1992, by which the two countries reaffirmed and strengthened their commitment to global change research by supporting regional approaches to global change research and networking of regional global change research institutes.

APN believes that close interaction between policy makers and scientists are of utmost importance. Thus, APN's Inter-Governmental Meeting (IGM), the decision-making organ of APN comprising policy makers of member countries, works closely with the scientific organ of APN, the Scientific Planning Group (SPG) comprising prominent scientists of member countries, in a unique structure that requires active dialogue between the two groups in decision-making processes.

Vision

An Asia-Pacific region that is successfully addressing the challenges of global change and sustainability

Mission

The mission of APN is to enable investigations of changes in the Earth's life support systems and their implications for sustainable development in the Asia-Pacific region through support for research and science-based response strategies and measures, effective linkages between science and policy, and scientific capacity development. APN, therefore, supports investigations that will:

- Identify, explain, project and predict changes in the context of both natural and anthropogenic forcing;
- Assess potential regional and global vulnerability of natural human systems; and
- Contribute, from the science perspective, to the development of policy options for appropriate responses to global change and sustainable development.

Main Activities

Implementing its work according to its guiding principles some of which include ensuring high scientific quality and regional relevance, and recognising the special challenges of developing countries, APN works towards fulfilling its mission by undertaking a combination of activities, including funding support for regional research and capacity development projects through calls for proposals, focused framework activities, sub-regional science-policy dialogues, capacity development activities engaging young scientists from developing countries, as well as regular synthesising of global change research outputs in the region.

HIGHLIGHTS OF FISCAL YEAR 2014

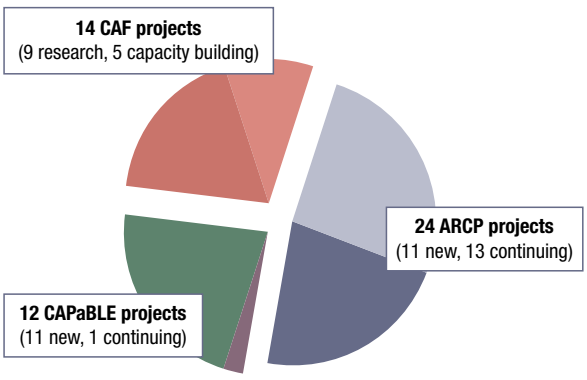
"Soraai." Photo by Dilli Bhattarai (CC BY-NC 4.0)

CALL FOR PROPOSALS

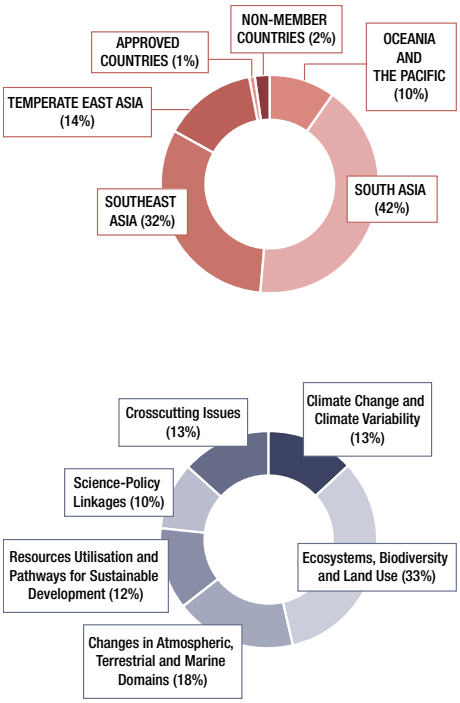
The 2014 Call for Proposals was launched on 20 June 2014, inviting proponents to submit proposals under the Capacity Development Programme (CAPaBLE). A total of 61 summary proposals for the CAPaBLE Programme were received, 20 of which, after further development, were allocated to APN's Scientific Planning Group (SPG) and Capacity Development Committee (CDC) to undergo a two-step review process.

A Call for Expressions of Interest (EOI) for Focussed Activities under APN's Climate Adaptation Framework (CAF) was also launched at the same time. A total of 68 EOIs were received and 24 EOI proponents were invited to submit full proposals, which were then allocated to APN's SPG and CDC to undergo a two-step review process.

Eight proposals under the CAPaBLE Programme and twelve proposals under CAF were approved for funding by the 20th IGM. As two approved proposals under CAF were combined into one project, eleven CAF projects in total were approved for funding for implementation during fiscal year 2015.



Composition of new and continuing projects managed by the APN in fiscal year 2014.



Regional distribution of summary proposals received in 2014 (top) and thematic distribution of 2014 ARCP and CAPaBLE projects (bottom)

PROJECT MANAGEMENT

In fiscal year 2014, APN supported and managed 24 regional research projects (13 continuing multi-year projects and 11 newly approved projects) under the ARCP Programme and 12 projects under the CAPaBLE Programme (1 continuing multi-year project and 11 newly approved projects). In addition, APN managed 9 regional research and 5 capacity development projects under CAF.

APN also supported over 40 other continuing multi-year projects under core programmes and frameworks that are still ongoing during the fiscal year 2014.

RELATED PUBLICATIONS

- **APN Third Strategic Phase Report (2010-2015)**
  www.apn-gcr.org/r/3sp
- **APN Fourth Strategic Plan (2015-2020)**
  www.apn-gcr.org/r/4sp

STRATEGIC REVIEW AND PLANNING

A committee comprising members of the IGM, SC and SPG provided a review of APN's work in the five-year phase between 2010 and 2015. The review resulted in the "Third Strategic Phase Report", which not only takes into consideration what APN has accomplished, but also outlines the challenges it faces as it strategically moves forward into the future. Another task team was appointed by the 19th IGM to take charge of formulating a strategic plan for the fourth strategic phase (2015–2020). The Fourth Strategic Plan, which takes inputs from the Third Strategic Phase Report and builds on the relevant information of the previous Strategic Plan, provides guiding principles and an action agenda for APN's scientific research and capacity development as well as network development and institutional management for the upcoming five-year phase.

SUB-REGIONAL COOPERATION MEETINGS

At the 19th IGM/SPG meeting, Sub-Regional Committees were institutionalised under the APN Framework Document as an organ of APN. The South Asia (SA) and Southeast Asia (SEA) Sub Regional Committees (SRC) held their annual cooperation meetings in Bhutan in January 2015 and in Lao PDR in July 2014, respectively. The SA-SRC conducted the second APN Science-Policy Dialogue in Bhutan as a committee activity. During the SEA-SRC Meeting, members invited Myanmar and discussed opportunities for Myanmar to become a member country of APN. Both the SA and SEA committees conducted an evaluation of their activities in the third strategic phrase and identified future activities for the Fourth Strategic Phrase. The Temperate East Asia committee meeting was deferred to fiscal year 2015.

Participants of the SEA SRC Meeting, July 2014 (top) and SA SRC Meeting, January 2015 (bottom).

CLIMATE ADAPTATION FRAMEWORK

At International Institute for Environment and Development (IIED)'s 8th Annual Community Based Adaptation Conference held in Kathmandu, Nepal on 30 April 2014, APN officially announced funding support for 13 projects under its Climate Adaptation Framework (CAF) to help link climate change adaptation with disaster risk reduction and loss & damage. Through a partnership approach, the projects are expected to strengthen science-based adaptation activities of APN countries through enhancing research, capacity development and regional networking.

RELATED PUBLICATION

- **Linking Disaster Risk Reduction, Climate Change Adapatation and Loss & Damage: Activities under the APN Climate Adaptation Framework**
  www.apn-gcr.org/r/cafpub

LOW-CARBON INITIATIVES FRAMEWORK

A side session highlighting the outcomes of projects under the Low Carbon Initiatives (LCI) Framework was organised in Bogor, Indonesia, at the Third Annual Meeting of Low Carbon Asia Research Network (LoCARNet). Six LCI project representatives presented key findings and recommendations from their respective projects. Building on this a plan for preparing a set of policy briefs was discussed and developed. The policy briefs, officially published in November 2015, are considered a useful tool for synthesising and disseminating findings and policy recommendations derived from LCI projects.

BIODIVERSITY AND ECOSYSTEM SERVICES FRAMEWORK

The Biodiversity and Ecosystem Services (B&ES) Framework was launched to support efforts to identify drivers and pressures for biodiversity change that influence ecosystem services, to assess the impacts of biodiversity loss and vulnerability to the shrinking of ecosystem services, to predict changes in biodiversity and ecosystem services through model-based scenarios, and to mitigate and adapt to the depletion of biodiversity and ecosystem services. In fiscal year 2014, APN supported two regional research projects and three capacity building projects whose objectives are in line with the thematic interests of the B&ES Framework, with research focus including land, coastal and marine domains. APN believes this Framework will be instrumental to the work of IPBES.

PAN-ASIA RISK REDUCTION (PARR) FELLOWSHIP PROGRAMME

In response to the challenge of Risk Reduction in Asia, an international alliance of science-focused research, education and capacity building organisations—referred to as the "PARR Alliance"—proposed the design, development and facilitation of a Pan-Asia Risk Reduction (PARR) Fellowship Programme. The PARR Programme offers unique research, training and educational opportunities to Asian researchers, practitioners, and policy makers to enhance their capabilities for advancing and applying knowledge on critical issues of global environmental change and human environmental security in the Asia-Pacific region. With financial support from APN, START International, the Oscar M. Lopez Centre and International Centre of Excellence of Integrated Research on Disaster Risk (IRDR), a total of 13 science and policy-practice fellows from throughout Asia received training to advance their knowledge and skills in research and action on risk reduction.

APN AT UNFCCC SBSTA 40

APN was represented at the sixth meeting of the UNFCCC SBSTA research dialogue held in Bonn, Germany on 7 June 2014. The research dialogue brought together approximately 70 participants from the policy-making community representing major UNFCCC parties. In his oral presentation, Dr. Andrew Matthews of the APN Steering Committee introduced APN's latest publications and activities that are relevant to the work of the Convention, highlighting examples from the new CAF Framework, which supports regional research and capacity building on climate change adaptation, disaster risk reduction, and loss and damage.

UNclimatechange/Flickr (CC BY 2.0)

RELATED RESOURCE

- **Webcast of SBSTA40 Research Dialogue at the UNFCCC website**
  www.apn-gcr.org/r/sb40

3R SCOPING WORKSHOP

A team of 3R (reduce, reuse, recycle) experts from the Asia-Pacific region and representatives of APN's Scientific Planning Group (SPG) attended a scoping meeting from 10–11 June 2014 in Kobe, Japan, to discuss possible priority topics and activities to be conducted under a new 3R framework. The workshop also discussed opportunities for funding and collaboration with existing networks to leverage and promote outcomes of 3R research and capacity development activities. In consultation with experts in the Workshop, APN started an initiative to develop a 3R component or framework in an effort to contribute to realising a resource-efficient and sound material cycle society in APN member countries.

PROPOSAL DEVELOPMENT TRAINING WORKSHOPS

Starting from 2014, Proposal Development Training Workshops (PDTWs) are held at the sub-regional level, rotating every year among the three sub-regions of APN. For the first time, the PDTW was open to any interested participants who were selected based on criteria established by the SPG and CDC. The first open, competitive call for PDTW applications was launched in April 2014, resulting in 95 submissions from interested persons in the region. The 2014 PDTW was held in Vientiane, Lao PDR from 8 to 11 July 2014 back-to-back with the SEA-SRC meeting. The workshop trained 23 young scientists and resulted in four summary proposals, among which 2 were eventually awarded funding by APN. In collaboration with the National Environment Commission of Bhutan, APN organised a national PDTW in Bhutan to enhance the capacity of Bhutanese scientists and practitioners. The workshop was attended by 20 participants.

APN AND ICCCAD SESSION ON LOSS AND DAMAGE AT APAN FORUM

APN, in collaboration with the International Centre for Climate Change and Development (ICCCAD) and International Institute for Environment and Development (IIED), held a session themed "Knowledge Foundations of Loss and Damage Systems" at the Fourth Annual Asia-Pacific Climate Change Adaptation Forum in Kuala Lumpur, Malaysia on 1 October 2014. APN project leaders and international experts were invited to share knowledge on key issues related to loss and damage associated with climate change, with a focus on developing and improving loss and damage knowledge systems. The session also provided a venue for participants to develop potential partnerships that will benefit the science, policy and practitioner communities of the Asia-Pacific region.

INTERNATIONAL EXPERT MEETING ON AIR POLLUTION CONTROL

Amid increasing public attention over the adverse natural and social-economic impacts of atmospheric pollution, APN in collaboration with Hyogo Prefectural Government of Japan and with Beijing Normal University organised an international expert meeting on "Air Pollution Control in Urban Asia-Pacific" in Zhuhai, China from 27 to 29 October 2014. A multidisciplinary group of international experts shared latest knowledge on regional urban air pollution and available countermeasures, and identified future opportunities for collaboration in research and capacity development in the field.

RELATED PUBLICATION

- **Proceedings of Expert Meeting on Air Pollution Control in Urban Asia Pacific**
  www.apn-gcr.org/r/emapc

INTERNATIONAL SYMPOSIUM ON HOKUSETSU SATOYAMA

Attended by about two hundred participants, an international symposium on Hokusetsu Satoyama was held on 30 November 2014 in Takarazuka City, Hyogo Prefecture. The symposium, organised by APN and Hyogo Prefectural Government, featured both domestic and overseas keynote speeches and case studies on management of satoyama-like ecosystems and possible effective use of natural resources. Participants expressed their understanding of the benefits and values that satoyama offers. In closing, the symposium announced the "Hokusetsu Satoyama Declaration", which incorporates the ideas of The International Partnership for the Satoyama Initiative (IPSI, http://satoyama-initiative.org) to work towards making Hokusetsu Satoyama an ideal representation of satoyama globally.

RELATED PUBLICATION

- **Policy Brief: Science-Policy Dialogue on Global Environmental Change: Reducing Risk and Increasing Resilience in South Asia**
  www.apn-gcr.org/r/saspd-pb

SOUTH ASIA SCIENCE-POLICY DIALOGUE

APN's second sub-regional Science-Policy Dialogue themed "Global Environmental Change: Reducing Risk and Increasing Resilience" was jointly organised by APN and the National Environment Commission, Royal Government of Bhutan from 19 to 21 January 2015 in Thimphu, Bhutan. The Climate and Development Knowledge Network (CDKN) and LoCARNet partnered with APN to organise the dialogue. The event was attended by over 50 international and local participants, who identified gaps and issues in the area of science-policy engagement, communication and knowledge management in South Asia. Further, participants identified research and capacity development needs to address climate change issues in the region. Participants highlighted the importance of regional dialogues as a tool to strengthen regional collaborative and collective action to address climate issues. A policy brief was published based on discussion points of the dialogue.

TWENTIETH IGM IN NEPAL

The 20th Joint IGM/SPG Meeting was held in Kathmandu, Nepal from 25 to 27 March 2015, hosted by the Government of Nepal. On the occasion of celebrating 20 years of accomplishments in engaging the scientific research and policy-making communities, APN released its third strategic phase report and launched a new strategic plan for a five-year period starting from 2015. The IGM also approved funding for new and continuing activities in fiscal year 2015, which will connect and build the capacity of researchers in the region in their effort to tackle the multiple challenges of global environmental change.

RELATED PUBLICATIONS

- **Proceedings of the 20th IGM/SPG Meeting**
  www.apn-gcr.org/r/igmp2015
- **APN Third Strategic Phase Report (2010-2015)**
  www.apn-gcr.org/r/3sp
- **APN Fourth Strategic Plan (2015-2020)**
  www.apn-gcr.org/r/4sp

COMMUNICATION AND OUTREACH

In fiscal year 2014, the Secretariat communications team took a more active approach in disseminating information products both from project outputs and from in-house efforts, resulting in higher exposure of outputs via information briefs. Project outputs are better highlighted in various channels including the APN website, social networks, emails and printed publications. Further, interactive web visualisations were developed for the 20th anniversary of the APN to show its history and the dynamism of APN projects in terms of geographic distribution.

APN organised and participated in various national and international events of both science and policy-making communities throughout the region. These activities not only helped disseminate project outputs but also helped raise APN's visibility in the region. A summary is available in Major Events, page 55.

In May 2014, APN unveiled a redesigned logo set to mark the arrival of its 20th Anniversary and fourth strategic phase. The new logo set added a modern touch to APN's longstanding visual identity and was designed to increase the awareness of APN and its contribution to strengthening the global change research and policy communities in the Asia-Pacific region. The logo has been consistently used in official communications, websites, printed materials, and project-related outputs.

FISCAL YEAR 2014 COMPLETED PROJECTS

▲ *"Sea Gypsies." Photo by Meycel C. Amarille (CC BY NC 4.0)*

▲ *"Elephant habitat in Corbett National Park, India." Photo by Rajarshi Banerji (CC BY NC 4.0)*

REGIONAL RESEARCH: **THE ARCP PROGRAMME**

APN supports regional-based global change research activities through its main pillar of activities, the Annual Regional Call for Research Proposals (ARCP). In its third Strategic Phase (2010–2015), APN selected high quality projects that fit within the four specific areas of the APN Scientific Research Agenda:

- Climate Change and Climate Variability
- Ecosystems, Biodiversity and Land Use
- Changes in Atmospheric, Terrestrial and Marine Domains
- Resources Utilisation and Pathways for Sustainable Development

These themes are interrelated and involve the interface of natural, social and political sciences. APN also supports research on crosscutting issues, science-policy linkages and the human dimensions of global change.

In fiscal year 2014, 6 regional research projects were completed and are highlighted in this section. The ARCP projects that are ongoing throughout the fiscal year are listed in Ongoing Projects, page 47.

ARCP2012-08CMY-Jung

Impacts of Global Warming on Coastal and Marine Ecosystems in the Northwest Pacific

Comparative studies were conducted by a team of natural and socioeconomic scientists to evaluate regional differences in responses of marine ecosystems to changes in the NOWPAP sea area (covering parts of China, Japan, Republic of Korea and Russia). The project team confirmed that a strong climatically-induced ecosystem regime shift occurred in the NOWPAP region in the late 1980s. Results indicate that such changes and their subsequent ecological impacts often occur with several years of time lags, and the impacts vary among layers of the ocean and among different fish assemblages.

Outputs

- A retrospective analysis of spatial and temporal variability in oceanographic conditions and recruitments of major fish species in the NOWPAP sea area, using data collected and compiled by each country over the last 40 years;
- A forecast of changes in potential production of fisheries resources; and
- An evaluation of climate-change-induced risks and vulnerabilities in fisheries-dependent sectors across NOWPAP countries.

Outcome

The results provided decision makers with a scientific basis for developing policy strategies that incorporate regional differences in marine ecosystems and in the vulnerability and adaptation of fisheries industries to climate change. The research is expected to contribute to better understanding of the status and outlook of marine ecosystems supporting fisheries in the Northwest Pacific and the urgency and importance for adapting the fisheries sector to climate change.

ARCP2009-04CMY-Shrestha

Impacts of Global Change on the Dynamics of Snow, Glaciers and Runoff over the Himalayan Mountains and their Consequences for Highland and Downstream Regions

By assessing published literature and using climatological and hydrological models, the project team examined the global change impacts on Himalayan snow, glacier and runoff, and their impact on the hydrological systems of highland and downstream regions. The study projected significant reductions in runoff during dry periods and in the arid regions in all the studied areas, i.e., the Indus, Ganges and Brahmaputra basins. As the change in water availability caused by changes in snowmelt and glacial melt affect people's livelihood and economic activities in different ways depending on their altitude, the project recommends that separate adaptation strategies be developed for these altitudinal areas.

Outputs

- Development of climate change scenarios and assessment of impacts on runoff corresponding to base and future scenarios at sub-basin scales in the studied areas;
- Assessment of snow and glacier melt and their contribution to total runoff; and
- Techno-economic analysis of integrated water resource management in the Koshi basin in the context of global change.

Outcome

The project has contributed to a better understanding of consequences of global change impacts on snow and glacial melt to highland and downstream regions in the Himalayan mountains, and provided science-based information for policy makers to develop and implement holistic, altitude-specific adaptation strategies to cope with the impacts of global change.

ARCP2012-05CMY-Zhen

Holistic Assessment of Land-use Change and Impacts on Ecosystem Services of Wetlands

This project investigated the impacts of land-use change on ecosystem services in three wetlands of international importance in China, Bangladesh and Indonesia. Background data was gathered through desktop studies and data collection using participatory rural appraisal, household surveys and key informant surveys. Subsequently, the team conducted an impact assessment of land-use change on ecosystem services using the InVEST model approach and statistical analysis. The findings of the project were disseminated at international conferences and through interviews with the media and non-governmental organisations.

Outputs

- A set of evaluation methods was developed for assessing the impacts of land-use change on ecosystem services;
- A decision support tool was established as a reference for land use policy-making; and
- Nine journal papers have been published or are under review at the time of writing, which are important for dissemination of the findings.

Outcome

The assessment criteria, methods and techniques developed and used are expected to contribute to the improvement of technical capabilities of participating countries. The project provided information for wetland decision-making, increased public awareness, and built young scientists' capacity to use the InVEST model and other tools to provide sound decision support. It also forged links with a number of regional and international networks, which will lead to potential further cooperation and knowledge exchange.

ARCP2013-11CMY-Yabe

GEOSS/Asian Water Cycle Initiative/Water Cycle Integrator (GEOSS/AWCI/WCI)

Recognising the fundamental linkages among water, land use, carbon cycle, ecosystem services and securities of food, energy and health, the "GEOSS Water Cycle Integrator (WCI)" was initiated to develop effective means for sharing water cycle and related Earth observations and information for sound decision-making. The project supports the development of the functions of GEOSS WCI by setting up "workbenches", where partners can share data, information and applications in an interoperable way, exchange knowledge and experiences, deepen mutual understanding and work together effectively.

Outputs

- Development of a workbench and application in pilot cases in Cambodia, Pakistan, Indonesia, Myanmar, Viet Nam and Japan;
- New data submission to the Data Integration and Analysis System of Japan (DIAS);
- Development of country Project Design Matrices for proposing activities in collaboration with donor organisations; and
- Symposia, meetings and a training course on climate change assessment techniques.

Outcome

A fully functional workbench has been developed and used in Cambodia, resulting in an integrated system that provides near-real time information on precipitation, soil moisture as well as rice production to local communities. Remarkable achievements were made in Pakistan, Indonesia, Myanmar, Viet Nam, among others. The in situ data submitted to DIAS contributed to the ongoing expansion of its various data sets. The symposia, meetings and the training course provided opportunities for representatives to exchange ideas and to promote the adoption of well-tested approaches into operational use.

ARCP2009-08CMY-Iqbal

Assessment of Food and Water Security in South-Asia under Changing Climate Scenario Using Crop Simulation and Water Management Models, and Identification of Appropriate Strategies to Meet Future Demands

The project assessed food and water security in South Asia using crop simulation and water management models. Results of the project were synthesised at the regional level in order to highlight the synergies of production systems in different agro-climatic regions. These are expected to contribute to the identification of appropriate adaptation strategies and provide guidance to national planners and policy makers for introducing necessary adaptive measures.

Outputs

- A training workshop on the operation and use of crop simulation models held in Sri Lanka;
- Research papers published in academic journals and synthesis reports; and
- Research results disseminated via three national seminars for policy makers and planners in Bangladesh, Pakistan and Sri Lanka.

Outcome

The project played a significant role in sensitising issues of food security and water scarcity in South Asia in the wake of climate change. The research results are expected to provide national planners and policy makers with a scientific basis for managing agricultural production and food security issues. The project improved the capacity of 15 young scientists in the use of crop simulation models and water management models. A strong institutional linkage was established whereby participating countries are better equipped to work jointly on future projects.

ARCP2013-28RUF-David

Integrated Vulnerability Assessment of Coastal Areas in Southeast Asia

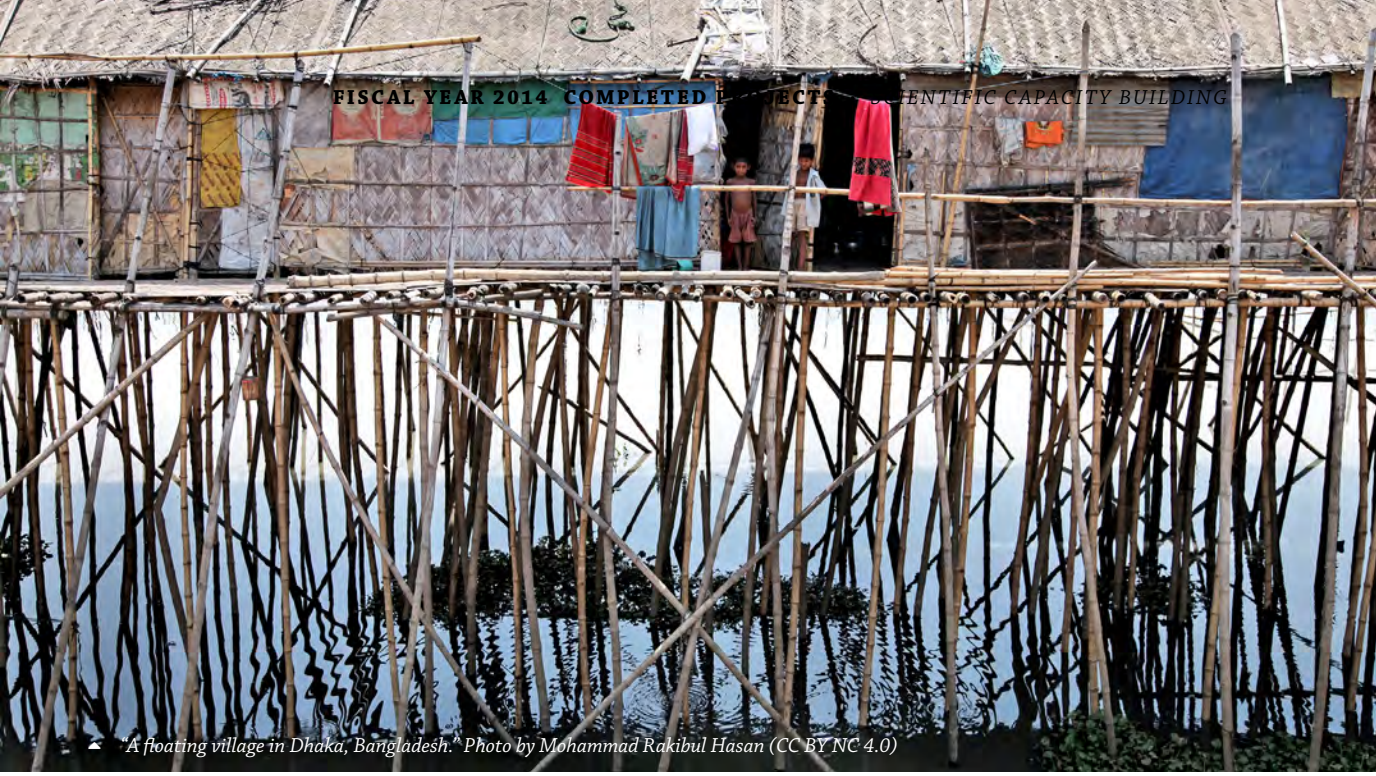
An integrated analysis was conducted on the effect of social, economic and environmental factors in Southeast Asia on the vulnerability of human communities, and their implications for coastal system management and adaptation capacities. Using modelling and on-the-ground biophysical and socioeconomic evaluations, the project contributed to addressing knowledge gaps in the vulnerability of Southeast Asian coasts to climate change. Existing common coastal issues were identified through analysing various case studies of climate vulnerability assessments in the region, and the shared knowledge was synthesised and integrated as a tool to support decision-making.

Outputs

- A GIS-based assessment that identified sites of high climate exposure and natural/societal sensitivity using satellite images and data from sectoral/national databases; and
- A workshop focusing on sharing insights from site-specific, country-wide and regional vulnerability assessments.

Outcome

Results from this collaborative effort in Southeast Asia will benefit policy and decision makers in selecting strategic and sustainable adaptation measures to reduce the future impact of global environmental change. The project reinforced the recommendation that site-specific interventions are needed to mitigate flooding and land loss due to submergence/erosion and preservation of coastal habitats.



"A floating village in Dhaka, Bangladesh." Photo by Mohammad Rakibul Hasan (CC BY NC 4.0)

SCIENTIFIC CAPACITY BUILDING: **THE CAPaBLE PROGRAMME**

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

In fiscal year 2014, 15 projects funded under the CAPaBLE Programme were completed. Thematic areas of these projects encompassed climate change and climate vulnerability; resource utilisation and pathways for sustainable development; changes in the atmospheric, terrestrial and marine domains; ecosystems, biodiversity and land use; crosscutting issues; and science and policy linkages.

CBA2011-13NSY-Tolentino

Institutionalising Agroforestry as a Climate Change Adaptation Strategy through Local Capacity and Policy Development in Southeast Asia

The main objectives of the project were to strengthen the capacities of junior lecturers engaged in agroforestry education programmes, community development workers and agricultural technicians involved in research and extension programmes at local levels. In doing so, the project also aimed to mainstream agroforestry in the development programmes of local government units and agencies in Indonesia, Malaysia, Thailand, Philippines, Lao PDR and Viet Nam.

Outputs

- Six national training programmes on promoting different climate change mitigation and adaptation strategies in the participating Southeast Asia countries;
- A policy dialogue with different policy-making bodies at the national and local levels for the integration of agroforestry in their development programmes; and
- Documentation of climate change adaptation strategies of upland farmers in selected areas using interviews, focus group discussions and in situ observations of the farms.

Outcome

The national training imparted new knowledge to 129 junior agroforestry lecturers and agricultural technicians, and resulted in about 7 action plans in Indonesia and 21 institutional action plans in the Philippines. The national policy dialogues contributed to the promotion of agroforestry in the policy agenda and provided a venue for deliberation on issues related to agroforestry in each country. Further, the data gathered from the documentation process has led to the development of a data-gathering tool that will be useful in future surveys.

CBA2011-10NSY-Ngari

International Workshop on Climate and Oceanic Fisheries

The international workshop was organised in Rarotonga, Cook Islands, from 3 to 5 October 2011 to consider strategies for reducing climate risks for oceanic fisheries and ensuring the sustainability of food production using such products and technologies. The workshop's main objectives were to review the effects of climate and climate variability on oceanic fisheries; identify appropriate fisheries risk assessment or management evaluation tools; evaluate the implications of climate change on food security, livelihoods and economic growth; recommend adaptation and management measures for oceanic fisheries, and develop climate services for fisheries in the Pacific.

Outputs

- Recommendations for the provision of improved climate services to the fisheries communities to most National Meteorological and Hydrological Services, and fisheries agencies in Pacific Island Countries;
- Development and application of methodologies and practices utilising weather and climate risk management tools for fishers; and
- Transfer of production and traditional technologies to developing countries in the region.

Outcome

As a result of the workshop, methodologies and practices using climate risk management tools were developed and used in Pacific Island Countries including the Cook Islands, which further opened up opportunities for developing communication tools to support governments and fisheries communities in the region.

CBA2012-17NSY-Pradhananga

Preparation of Next Generation Leadership in Sustainability: An Approach in the Asia-Pacific Region

The Small Earth Nepal (SEN), in collaboration with the Consortium for Capacity Building at the University of Colorado, Boulder and the International Centre for Integrated Mountain Development (ICIMOD), organised the Asia-Pacific Graduates' Youth Forum on Green Economy from 25 to 29 September 2012 in Kathmandu, Nepal. As a follow-up event, a National Graduates' Workshop on Green Economy was held on 28 July 2013.

Outputs

- Asia Pacific Graduates' Youth Forum on Green Economy, which produced a declaration on "Adaptation and Mitigation Strategies for Climate Change through Green Economy Initiatives" as an input to policy- and decision-making processes;
- Peer-reviewed proceedings from the workshop was published and widely disseminated; and
- Engagement of selected young people at UNFCCC COP18 held in Doha.

Outcome

The events brought together 75 motivated young people from 14 countries across the Asia-Pacific region whose capacity has been enhanced through the exchange of knowledge, experiences and activities carried out on different themes such as sustainable agriculture, renewable energy, eco-tourism, forestry and biodiversity conservation, and techniques for climate adaptation. After their involvement in project activities, the young participants were more motivated to engage in other programmes regarding green solutions as well as different leadership programmes.

CBA2013-15NSY-Heinrich-Sanchez

Building Capacity on Marine Litter Management in the NOWPAP (Northwest Pacific Action Plan) Region

In order to enhance capacity for effective management of marine litter in NOWPAP member states (China, Japan, Republic of Korea and Russian Federation) as well as implementation of the NOWPAP Regional Action Plan on Marine Litter (RAP MALI), a two-day workshop was organised in collaboration with relevant international organisations focusing on strengthening regional cooperation by sharing best practices for marine litter management, including policy measures implemented in the region.

Outputs

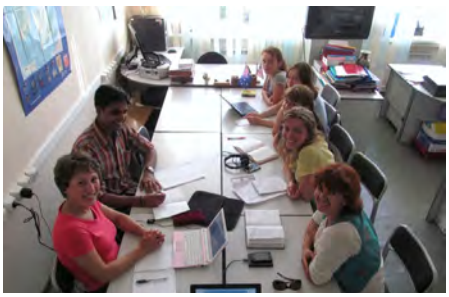
- A regional workshop involving policy makers, local governments, and NGO representatives for collaborative actions against marine litter; and
- A beach clean-up campaign, which further strengthened regional cooperation among NOWPAP member states.

Outcome

The activities enhanced knowledge and skills on marine litter management of National NOWPAP marine litter focal points and of International Coastal Clean-up (ICC) national coordinators. The project also further enhanced cooperation in the NOWPAP region in dealing with marine litter, and awareness on the capacity needed for cooperation within local marine litter networks.

CBA2013-11NSY-Pakharkova

Scale in Earth System Governance: Local Case Studies and Global Sustainability



The "Scale in Earth System Governance: Local Case Studies and Global Sustainability" summer school was held at the Siberian Federal University in Krasnoyarsk, Russian Federation from 15 to 29 July 2013. The summer school focused on the issue of scale in environmental governance, with a particular emphasis on the issues of local governance and interlinkages of local actors and institutions with existing and emerging national and global environmental regimes.

Output

- A 15 day summer-school attended by 23 participants, 7 faculty members and 2 co-chairs, which was jointly held by the Siberian Federal University, the Central European University, the Russian State Hydrometeorological University, and the Earth System Governance Project.

Outcome

The summer school increased understanding of early-career researchers on issues of scale in analysing governance for sustainable development. It brought together a community of researchers working on the topics concerned to jointly learn and stimulate dialogue, and initiate new research endeavours. The linkage created among early-career governance researchers in Asia and Europe is expected to contribute to further work under the research framework of the Earth System Governance Project.

CBA2013-05NSY-Sutrisno

Implementation of Multi Sensors Remote Sensing Technology for Sustainable Disaster Management

An international capacity building workshop was held to enhance sharing of knowledge and exchanging ideas for developing new technologies in remote sensing sciences among leading and early-career scientists, especially those from developing countries that are most vulnerable to disasters related to climate change and climate variability. Experiences and technology from leading countries including Japan, Singapore and Switzerland were shared at the workshop.

Outputs

- Participation opportunities for 26 aspiring young scientists from the Asia-Pacific region were provided; and
- Research results were published to broaden the scientific capabilities and sharing of knowledge to the wider community.

Outcome

The Scientific and technical capabilities of early career/young scientists in remote sensing technology for disaster management were improved though participation at the workshop. Participants were better informed about available technology to protect and restore the health and integrity of ecosystems in their respective countries. The network developed through the event is also expected to lead to further cooperation among various participants.

CBA2012-18NSY-PAGES

A Compass for Future Earth — PAGES 2nd Young Scientists Meeting and 4th Open Science Meeting

This project enabled 25 early-career researchers from the Asia-Pacific region to participate in the second Young Scientists Meeting and the fourth quadrennial Open Science Meeting of Past Global Changes (PAGES) — a core project of the International Geosphere-Biosphere Programme (IGBP), held in mid-February 2013 in Goa, India. The meetings contributed to promoting regional cooperation in research and science-policy-public interaction on topics such as monsoon, sea-level rise and the coastal zone, regional climate variability, river systems and estuaries, land-cover change, biodiversity, ecosystem processes, and ocean circulation.

Outputs

- A young scientist meeting comprising topical sessions with talks and poster presentations, where participants presented and discussed their research results;
- A series of programme items on professional skill development as an educational component of the project;
- A special issue in the internationally established peer-reviewed open access journal Climate of the Past; and
- A report in the AGU's Eos, authored by three of the early-career scientists.

Outcome

Twenty-five young scientists partially or fully funded by APN participated in the meetings and improved their knowledge on the scientific disciplines they are pursuing, honed their soft skills required for successful researchers, and broadened their international network thus benefitting their research careers.

CBA2013-08NSY-SOLAS

Capacity Building on Surface Ocean-Lower Atmosphere Study: The SOLAS Summer School

With the aim of promoting understanding of the biogeochemical-physical interactions and feedbacks between the ocean and atmosphere, the International SOLAS Project (surface ocean-lower atmosphere study) organised the sixth SOLAS International Summer School in Xiamen, China from 23 August to 2 September 2013, which immersed early-career scientists in sciences related to biogeochemical-physical interactions between the ocean and lower atmosphere, and provided them with the skills necessary for their future scientific careers.

Output

A two-week training programme including plenary lectures covering a wide range of topics related to surface ocean-lower atmosphere studies, interactive group work, hands-on practice, laboratory work, and field work aboard a local vessel.

Outcome

The programme improved participants' capacity in conducting sound and cutting-edge interdisciplinary scientific research within the context of SOLAS and global environmental change issues. In addition, a long-standing network among all participants and lecturers was established at the international and regional levels.

CBA2013-12NSY-MAIRS

Promoting Sustainability Science in Monsoon Asian Region

The MAIRS Open Science Conference (OSC) was held from 7 to 10 April 2014 in Beijing, China. The objectives of the conference were to present the latest research of integrated studies and sustainability science dealing with environmental change in Asia, to promote successful projects/cases of multidisciplinary studies, to recognise the crucial gaps of science contribution to sustainable development of Asian countries, and to build capacity of young scientists who are interested in global change and sustainability science.

Output

A four-day interactive conference where seventeen presentations and six poster presentations were provided by APN-supported young scientists from Asia, including Bangladesh, India, Iran, Malaysia, Mongolia, Nepal, Pakistan, Russia, and Thailand.

Outcome

The MAIRS OSC conference provided an ideal opportunity for young scientists to meet people from different disciplines and build lasting networks within global change and sustainability research groups. The links they established with international programmes such as APN, WCRP, LOICZ, iLEAPS, IGAC, Future Earth and MAIRS have provided them with opportunities to be involved in national and international global change research in the future.

CBA2012-15NSY-Hiwasaki

Capacity Building to Strengthen Resilience of Coastal and Small Island Communities against Impacts of Hydro-Meteorological Hazards and Climate Change

Targeting coastal and small island communities with the aim of developing capacity of scientists and non-scientists, this project focuses on developing and imparting information, education and communication materials in local languages in Indonesia and the Philippines that integrate scientific knowledge with local and indigenous knowledge.

Outputs

- Two regional workshops held in Indonesia and the Philippines, respectively on integrating local and indigenous knowledge with scientific knowledge for climate change adaptation and disaster risk reduction;
- Policy briefs and academic papers published in peer-reviewed journals based on action research conducted at three sites in each country; and
- Development of a tool to integrate local and indigenous knowledge with scientific knowledge.

Outcome

Scientists and non-scientists in all countries involved—Indonesia, Philippines, as well as Japan and Timor-Leste—learned to work with local and indigenous knowledge related to climate change and hydro-meteorological hazards and climate change adaptation. The events, knowledge products and tools developed are expected to result in development of policies, community action plans and climate change adaptation measures that incorporate local and indigenous knowledge.

CBA2013-14NSY-Maity

Promoting Algaculture in Trapped Waters as Sustainable Aquafarming and Adaptive Climate Mitigation in Inundated Coastal Areas

The project consists of capacity building and action research components in promoting algaculture in the coastal village of Sundarban in India as a sustainable alternative livelihood option and climate-smart aquafarming for community-based climate mitigation. Trapped seawater has been used for cultivation of local algal flora suitable for culturing along with fish. The algae can be substantially used as food feed and fodder by the marginal climate vulnerable community.

Outputs

- A technological cooperation module featuring hands on training on algaculture preparation, management and monitoring of growth, harvesting of algal biomass and usage; and
- A research component focusing on carbon sequestration in algaculture and economic analysis over return on investment.

Outcome

The project has raised awareness of algaculture-cum-fisheries as a sustainable alternative livelihood for coastal communities. It generates academic interest amongst young researchers and stakeholders through workshops and seminars. The project also raised climate change awareness and improved environmental education in relation to coastal habitat and its conservation priorities, demonstrating that algaculture techniques can be replicated in other areas of the region.

CBA2013-04NSY-WCRP

International Conference on Regional Climate CORDEX 2013

The International Conference on Regional Climate – CORDEX 2013, held in Brussels, Belgium from 4 to 7 November, was jointly organised by the World Climate Research Programme (WCRP), the European Commission and the Intergovernmental Panel on Climate Change (IPCC), and was attended by over 500 participants from 97 countries. The conference brought together the international community of regional climate scientists and stakeholders with a particular emphasis on the production, assessment and use of Regional Climate information and the CORDEX initiative.

Outputs

- 90 participants were supported financially to attend the conference.
- Launch of the APN book—Climate in Asia and the Pacific: Security, Society and Sustainability (http://www.apn-gcr.org/r/climate-book)

Outcome

- By supporting Asia-Pacific regional scientists to attend the conference and offering them an opportunity to interact and network with the 500+ scientists from 97 nations who attended this major event, the project has helped improve the scientific and technical capabilities of nation(s) from Asia and the Pacific based on exchange of know-how and technology;
- Outcomes of the conference also made a measurable scientific contribution to Working Group II of the fifth Assessment Report (AR5) of the IPCC. The conference showcased results of the regional climate model intercomparison project and provided an opportunity to feature CORDEX and regional climate science in the overall climate science agenda.

CBA2011-09NSY-Aligaen

Climate Change Integrated Education Model: Building Adaptive Capacity for the Next Generation (Malaysia, Indonesia, Thailand, Philippines and Lao PDR)

This project on Climate Change Integrated Education is aimed to integrate climate change issues across learning areas in the basic education curriculum with the end goal of learners studying and solving real world issues, informing and developing them to be responsible in managing their own future without compromising the sustainability of the earth's resources. The project is conducted by engaging teachers, educators and curriculum specialists to design a learning curriculum to present real world issues (i.e. climate change issues) in a real context not only in the classroom but outside as well.

Output

- Two series of workshops were conducted between September 2011 and June 2012 in 5 SEAMEO member countries namely, Malaysia, Indonesia, Philippines, Lao PDR and Thailand.

Outcome

This climate change integrated education project offers very important content, strategies and policies gearing into producing a more informed citizen who will take greater responsibility for sustaining the capacity of the resources that provide ecological services for human existence. In terms of the scientific agenda and policy direction, the project envisions creation of a pivotal impact on the education sector through integration of climate change issues into or across school curricula. In addition, the project would improve scientific literacy of the population especially of young people. This project offers rich, positive and relevant perspectives in all sectors of society and of government leaders towards producing more tangible educational programmes and projects to aid policy formulations for developing full human potential to face the challenges of the 21st century.

CBA2013-17NSY-Bodeker

SPARC (Stratosphere-troposphere Processes and their Role in Climate) General Assembly 2014

The SPARC (Stratosphere-troposphere Processes And their Role in Climate) 2014 General Assembly was held from 12 to 17 January 2014 in Queenstown, New Zealand. SPARC is one of four core projects of the World Climate Research Programme (WCRP) and this General Assembly was strongly supported and endorsed at the May 2013 meeting of the Joint Scientific Committee of the WCRP in Brazil. It was the fifth gathering of SPARC scientists from around the globe, and attracted nearly 300 delegates. General Assemblies are opportunities for SPARC to take stock of what has been achieved, where gaps in the portfolio of research undertaken by SPARC need to be filled, and to define where SPARC needs to be moving to remain responsive to the needs of both its members and the users of SPARC research products.

Output

- Financially supported the attendance of three PhD students and early career scientists from developing countries and countries with economies in transition in the Asia-Pacific region at the 5th SPARC General Assembly.

Outcome

Attendance of such scientists at the SPARC General Assembly provided an opportunity to strengthen regional and international working relationships and to develop regional capability in climate science. The conference profiled the latest research results on relevant areas of societal concern, including climate change and climate variability. One focus of this meeting was to also provide research that is tailored to address the needs of policy makers who, in turn, use this research to guide the development of international policy for the protection of the climate system and to ensure a sustainable global environment.

CBA2012-01CMY-Abawi

Building Scientific Capacity in Seasonal Climate Forecasting for Improved Risk Management Decisions in a Changing Climate

The overall aim of this project is to build local scientific capacity in the use of Seasonal Climate Forecasts for leading scientists within meteorological organisations and professionals involved in the agriculture and water sectors through in-country training workshops. The key objective of the project was to identify climate drivers that have the most influence on rainfall patterns including the onset of monsoon in the participating countries.

Outputs

- In-country visits including five seminars with leading agencies were held in the Philippines, Indonesia and Bangladesh (PAGASA, National Water Resources Board, Bohol Environmental Agency, BMKG, and Bangabandhu Sheikh Mujibur Rahman Agricultural University). Over 150 people from various government agencies, universities and the public attended the five seminars; and

- Two regional workshops were undertaken in Malaysia and Indonesia for participants from Indonesia, the Philippines and Bangladesh.

Outcome

Two workshops provided the opportunity to assess the influence of ENSO-based predictive systems on rainfall variability and potential for forecasting in the region. Participants became confident in the theory of seasonal climate forecasts and operational use of software to undertake further research including studies on the application of seasonal climate forecasts in risk management decisions across climate sensitive sectors. The project has created a network in the region and has strengthened interactions amongst scientists and policy makers, as well as provided scientific input to policy decision-making.

▲ *"Sunset at Culasi, Antique, Philippines." Photo by Remelyn de Ramos (CC BY NC 4.0)*

FRAMEWORKS, FOCUSED ACTIVITIES AND OTHERS

In addition to funding activities under the core programmes of ARCP and CAPaBLE that address APN's science agenda, we also support sets of projects responding to annual emerging thematic needs in the region. These activities have a sharper focus and are in line with ongoing international science-policy initiatives.

In fiscal year 2014, APN completed two projects under the Low Carbon Initiatives (LCI) Framework, two projects under focused activities "Scientific Capacity Building for Climate Impact and Vulnerability Assessments (SCBCIA)" and "Ecosystems, Biodiversity and Land Use (EBLU)" respectively, and an *ad hoc* project approved by the Steering Committee.

LCI2012-01NSY(C)-Maeda

Capacity Building for Implementing a "Measurable, Verifiable and Reportable (MRV)" Model in a Mid-Sized Thai Municipality

The primary objective of the project was to build the capacity of local government officers in Phitsanulok Municipality of Thailand to develop and implement a "measuring/monitoring, reporting and verification (MRV)" framework for quantifying city-level greenhouse gas (GHG) emissions. A pilot global standard city-level GHG accounting tool was tested as part of the project activities.

Outputs

- A draft municipal-level GHG Inventory for fiscal year 2012/2013 was developed in the form of an online database and public report;
- Preliminary data was collected for a higher-order and more complicated city-level GHG inventory. A data collection routine and practice was implemented and strengthened the involvement of municipality staff;
- Capacity of 50 municipality staff members was developed on understanding climate change issues, MRV and data collection for municipality- and city-level GHG inventory; and
- Two senior municipality staff members received comprehensive training on Nationally Appropriate Mitigation Actions (NAMAs) and MRV.

Outcome

The outputs of the project provided a crucial foundation for future research work and practical projects relating to sustainable, green, low carbon city development in Phitsanulok City, Thailand. In addition, the project provided a deeper understanding of local government perspectives and identified practical challenges of developing local government capacity on MRV. Phitsanulok Municipality also exchanged their experience with Nonthaburi Municipality after successfully developing a city-level GHG inventory.

LCI2012-02NSY(C)-Guerrero

Strengthening Community Voices in REDD+ Policy

The project aimed at developing the capacity of local communities and local governments to fully participate and contribute in the development of future policy formulation on REDD+ initiatives in the ASEAN region. The project focuses on four pilot sites in Cambodia, Indonesia, the Philippines and Viet Nam, and conducted a benefit sharing workshop, learning exchange trip and regional Policy Workshop on REDD+.

Outputs

- Trained 50 local community participants on REDD+ Benefit Sharing;
- Undertook a Community Partners' Learning Exchange Visit involving 39 participants that provided practical and field-based strategies, tools and approaches on community participation and engagement in REDD+;
- Conducted a Regional Policy Workshop on REDD+ involving 55 representatives from government institutions, community partners, and policy advisers; and
- Identified and informed REDD+ policy makers on critical issues such as Free Prior and Informed Consent (FPIC), land/carbon rights, benefit sharing and community forestry management.

Outcome

The training workshop helped participants develop a common understanding on benefit sharing and equity in payment for ecosystem services. The project identified critical steps that need to be followed for effective community engagement in REDD+. Project results show that for success of REDD+ initiatives, sustained engagement and commitment to forest protection by community partners and other relevant stakeholders is necessary.

CIA2009-03-Lun

Climate Change in the Eastern Himalayas: Advancing Community-Based Scientific Capacity to Support Climate Change Adaptation

The project aims to develop the scientific capacity of local government, scientists, and indigenous people in the Eastern Tibetan Himalayas of northwest Yunnan Province, China, to assist in effectively and sustainably responding to the impacts of climate change through participatory, community-based development of a climate change vulnerability and impact assessment.

Outputs

- Ongoing training and capacity building of project collaborators;
- Establishment of an international Scientific Advisory Group to guide the project;
- A conference and publications at the end of the project to share information and experiences about the successful integration of indigenous knowledge with mainstream science; and
- Development of training manuals and programmes in collaboration with participating NGOs and local government departments.

Outcome

This project has built the capacity of local scientists and the local government to conduct climate impact and vulnerability assessments. Additionally, the data collected during the project will help fill an important data gap on the Eastern Himalayan region in IPCC and other international climate assessments. The information collected during this project will help improve science-policy links and improve methodologies for the inclusion of indigenous knowledge in climate change policy and international assessments.

EBLU2012-01CMY(R)-Takeuchi

Critical Analysis of Effectiveness of REDD+ for Forest Communities and Shifting Cultivation Based on Lessons Learnt from Conservation Efforts in Laos and Thailand

The project consists of an assessment of the potential social, economic and environmental challenges and opportunities of REDD+ for selected communities in Lao PDR and Thailand by drawing lessons from past/ongoing forest conservation policies. Building on the assessment, it provides much-needed scientific evidence on the potential co-benefits of traditional forest management and agroforestry practices by comparing with alternative land-uses in order to develop a participatory community-based MRV mechanism for REDD+.

Outputs

- A biophysical survey that mapped land use-land cover types, measured carbon stocks and biodiversity in different land use-land cover types;
- A socio-economic survey that investigated economic benefits of different land use-land cover types and estimated opportunity cost of REDD+;
- Identification of good land use practices that integrate biophysical and socioeconomic assessments;
- A working manual for carbon stock measurement at the landscape level; and
- Events focusing on capacity building, networking and policy recommendations on good land use practices for local governments.

Outcome

The findings assisted the pro-poor design and implementation of REDD+, improved the wellbeing of forest-dependent communities and integrated traditional agroforestry as an approach to climate change mitigation. Project activities also produced and disseminated relevant research findings and led to a new follow-up project SFR-MMSEA, and strengthened national and local capacity in sustainable forest management.

AOA2012-08NSY-Lansigan

International Conference on Climate Change Impacts and Adaptation for Food and Environmental Security

APN provided funding support to an international conference held from 21 to 22 November 2012, in Los Baños, the Philippines that brought together researchers, academicians, policy makers and planners, development workers, and other professionals in a discussion forum to exchange information and forge linkages towards enhancing capacity to achieve food, environmental, nutritional and health security in the face of climate change.

Output

An international conference attended by 150 participants from 21 countries that focused on the following topics: effects and impacts of climate change on food and environmental security; institutional and economic aspects of climate change science and adaptation; country and regional collaborative experiences for climate change adaptation and disaster risk reduction.

Outcome

The papers presented a wide range of new knowledge along with appropriate, indigenous or local technologies that can be used to address the impacts of climate change—not only as adaptation strategies, but also for mitigation and increasing resilience. The presentations created awareness on research findings, policies and practices on the conference theme in various regions and in Asia-Pacific countries and pointed directions for further capacity development and research in the area.

FISCAL YEAR 2014
ONGOING PROJECTS

▲ *"Fishermen at Bulusan Lake, the Philippines" Photo by Allan F. Castañeda (CC BY NC 4.0)*

ANNUAL REGIONAL CALL FOR RESEARCH PROPOSALS (ARCP)

ARCP2014-01CMY-Meinke	Improving the Robustness, Sustainability, Productivity and Eco-Efficiencies of Rice Systems throughout Asia	Prof. Holger MEINKE, University of Tasmania, AUSTRALIA	CCCV, EBLU
ARCP2014-02CMY-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	CCCV
ARCP2014-03CMY-Quynh	Carbon Fluxes and Emission from the Red River (Viet Nam and China): Human Activities and Climate Change	Dr. Le Thi Phuong QUYNH, Viet Nam Academy of Science and Technology (VAST), VIET NAM	EBLU, RUSD
ARCP2014-04CMY-Miyata	Toward CarboAsia: Integration and Syntheses of Terrestrial Ecosystem Flux Data in Tropics/Subtropics and Croplands in Asia by Activating Regional Tower-based Observation Networks	Dr. Akira MIYATA, National Institute for Agro-Environmental Sciences, JAPAN	EBLU
ARCP2014-05CMY-Manton	Coordinated Regional Climate Downscaling Experiment (CORDEX) in Monsoon Asia	Prof. Michael MANTON, Monash University, AUSTRALIA	CATMD
ARCP2014-06CMY-Li	Assessing Spatiotemporal Variability of NPP, NEP and Carbon Sinks of Global Grassland Ecosystem in Response to Climate Change in 1911-2011	Prof. Jianlong LI, Nanjing University, CHINA	EBLU, CATMD
ARCP2014-07CMY-Tangang	Southeast Asia Regional Climate Downscaling Project (SEACLID)	Prof. Fredolin TANGANG, University Kabangsaan Malaysia, MALAYSIA	CATMD
ARCP2014-08CMY-Prabhakar	Assessing Community Risk Insurance Initiatives and Identifying Enabling Policy and Institutional Factors for Maximising Climate Change Adaptation and Disaster Risk Reduction Benefits from Risk Insurance	Dr. S.V.R.K. PRABHAKAR, Institute for Global Environmental Strategies, JAPAN	CCI
ARCP2014-09CMY-Gomboev	Boreal and Tropical (Monsoonal) Forests and Forest-Steppes in Asia-Pacific Region in Territory of Russia, Mongolia and China: A Comparative Estimation of the Contribution to Softening of Global Climatic Changes and Working Out of Measures on Adaptation to Them	Prof. Bair O. GOMBOEV, Baikal Institute of Nature Management of Russian Academy of Sciences, RUSSIAN FEDERATION	EBLU
ARCP2014-10CMY-Shrestha	Runoff Scenario and Water Based Adaptation Strategies in South Asia	Dr. Madan Lall SHRESTHA, The Small Earth Nepal, NEPAL	EBLU, CATMD
ARCP2014-11CMY-Yamada	Adaptation of Solid Waste Management to Frequent Floods in Vulnerable Mid-Scale Asian Cities	Dr. Masato YAMADA, National Institute for Environmental Studies (NIES), JAPAN	CCCV, EBLU, RUSD

ARCP2014-12CMY-Sellers	Mega-Regional Development and Environmental Change in China and India	Assoc. Prof. Jeffery M. SELLERS, University of Southern California, USA	EBLU
ARCP2014-13CMY-Sthiannopkao	Developing Scientific and Management Tools to Address Impacts of Changing Climate and Land Use Patterns on Water Quality in East Asia's River Basins	Asst. Prof. Suthipong STHIANNOPKAO, Dong-A University, REPUBLIC OF KOREA	CCCV, EBLU
ARCP2014-14NMY(B&ES)-Salmo	Influence of Mangrove Biodiversity on Accumulation of Carbon and Resilience to Sea Level Rise: A Comparative Assessment Among Disturbed, Restored and Intact Mangrove Systems	Dr. Severino G. SALMO III, Department of Environmental Science, School of Science and Engineering, Ateneo de Manila University, PHILIPPINES	EBLU, CATMD
ARCP2014-15NMY-Wu	Comparative Analysis of Pollution Sources at the Hangzhou Bay and Mekong River Mouths	Dr. Jiaping WU, Institute of Islands and Coastal Ecosystems, Zhejiang University, CHINA	EBLU, CATMD
ARCP2014-16NMY-Babel	Developing an Operational Water Security Index and its Application in Selected Diverse Regions of Asia	Prof. Mukand S. BABEL, Water Engineering and Management, Asian Institute of Technology, THAILAND	EBLU, RUSD, SPL
ARCP2014-17NMY-Dey	Impacts of Crop Residue Removal for Biomass Energy on Soil Function; Studies to recommend Climate Adaptive Agricultural Waste Management	Dr Dipayan DEY, Chair (Research & Planning), South Asian Forum for Environment, INDIA	EBLU, RUSD
ARCP2014-18NMY-Heath	Development of an Evidence-based Climate Change Adaptation Toolkit to Help Improve Community Resilience to Climate Change Impacts in Uttarakhand, India	Dr. Lance Clive HEATH, Australian National University, AUSTRALIA	CC&V, SPL
ARCP2014-19NMY(B&ES)-Liang	Coastal Forest Management in the Face of Global Change Based on Case Studies in Japan, Myanmar and the Philippines	Mr. Luohui LIANG, United Nations University Institute for the Advanced Study of Sustainability (UNU-IAS), Tokyo, JAPAN	EBLU, CATMD

- **CCCV:** climate change and climate variability
- **EBLU**: ecosystems, biodiversity and land use
- **CATMD**: changes in atmospheric, terrestrial and marine domains
- **RUSD**: resources utilisation and pathways for sustainable development
- **SPL**: science-policy linkages
- **CCI**: cross-cutting issues

* *The list comprised of all projects ongoing in fiscal year 2014.*

ARCP2014-20NMY-Mishra	Climate Change Adaptation through Optimal Stormwater Capture Measures: Towards a New Paradigm for Urban Water Security	Dr. Binaya Kumar MISHRA, United Nations University - Institute for the Advanced Study of Sustainability, Tokyo, JAPAN	EBLU, RUSD
ARCP2014-21NMY-Sharp	Integrated Solid Waste Management System Leading to Zero Waste for Sustainable Resource Utilisation in Rapid Urbanised Areas in Developing Countries	Dr. Alice SHARP, Sirindhorn Internatonal institute of Technology, Thammasat University, THAILAND	RUSD
ARCP2014-22NMY-Zhou	Assessment of Climate-Induced Long-term Water Availability in Ganges Basin and Impacts on Energy Security in South Asia	Dr. Xin ZHOU, Institute for Global Environmental Strategies (IGES), JAPAN	RUSD, EBLU
ARCP2014-23NSG-Huang	Assessing the Health Effects of Extreme Temperatures and the Development of Adaptation Strategies to Climate Change in the Asia-Pacific Region	Dr. Cunrui HUANG, Griffith University, AUSTRALIA	CC&V
ARCP2014-24NSG-Lokupitiya	Identification of the Best Agricultural Management Practices With Better Greenhouse Gas Benefits in Salinity Affected Areas of South Asia	Dr. Erandathie LOKUPITIYA, Faculty of Science, University of Colombo, SRI LANKA	EBLU, CATMD
ARCP2013-01CMY-Patra	Greenhouse Gas Budgets of South and Southeast Asia	Dr. Prabir K. PATRA, Research Institute for Global Change (JAMSTEC), JAPAN	CCCV, CATMD
ARCP2013-02CMY-Fortes	Seagrass-Mangrove Ecosystems: Bioshields against Biodiversity Loss and Impacts of Local and Global Change along Indo-Pacific Coasts	Miguel FORTES, Marine Science Institute, University of the Philippines Diliman, PHILIPPINES	CCCV, EBLU
ARCP2013-03CMY-Herath	Developing Ecosystem-based Adaptation Strategies to Enhance the Resilience of Rice Terrace Farming Systems against Climate Change	Prof. Anura Srikantha HERATH, Institute for Sustainability and Peace, United Nation University (UNU), JAPAN	CCCV, EBLU
ARCP2013-07CMY-Roy	Coastal Ecosystem and Changing Economic Activities: Challenges for Sustainability Transition	Prof. Joyashree ROY, Global Change Programme, Jadavpur University, INDIA	CATMD, CCI
ARCP2013-08CMY-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, Uintec University, NEW ZEALAND	CCCV, EBLU
ARCP2013-10CMY-Yoo	Toward a Fire and Haze Early Warning System for Southeast Asia	Dr. Jin Ho YOO, APEC Climate Center, REPUBLIC OF KOREA	CCCV, EBLU, CATMD
ARCP2013-12CMY-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	CCCV, CATMD

ARCP2013-13CMY-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	EBLU, CATMD
ARCP2013-24NSY-Fidelman	Supporting Governance Institutions for Adaptive Capacity to Environmental Change	Dr. Pedro FIDELMAN, Sustainability Research Centre, University of the Sunshine Coast (USC), AUSTRALIA	CATMD
ARCP2013-25NSY-Shahid	Climate Change Vulnerability and Adaptation in Groundwater-dependent Irrigation System in Asia-Pacific Region	Dr. Shamsuddin SHAHID, Universitit Teknologi Malaysia, MALAYSIA	CCCV
ARCP2013-26NSY-Patankar	Characterising Public and Private Adaptation to Climate Change and Implications for Long-Term Adaptive Capacity in Asian Megacities	Dr. Archana PATANKAR, Regional Centre for Urban and Environmental Studies, All India Institute of Local Self Government, INDIA	CCCV, CCI
ARCP2013-27NSY-Liu	The Impact of Global Warming on Ocean-Atmosphere Feedback Strength at Tropical Indian Ocean	Dr. Lin LIU, First Institute of Oceanography, State Oceanic Administration, CHINA	CCCV, CATMD
ARCP2012-04CMY-Salik	Impact of Climate Change on Mangroves Ecosystem in South Asia	Mr. Kashif Majeed SALIK, Global Change Impact Studies Centre (GCISC), PAKISTAN	CCCV, EBLU
ARCP2012-06CMY-IGBP	An International Geosphere-Biosphere Programme Synthesis Theme on: Global Environment Change and Sustainable Development: Needs of Least Developed Countriess	Dr. Karen SMYTH, International Geosphere-Biosphere Programme (IGBP), SWEDEN	CCI, SPL
ARCP2012-07CMY-Ramanathan	Tracing Nitrogen and Carbon Biogeochemical Processes in the Inter-tidal Mangrove Ecosystem (Sundarban) of India and Bangladesh: Implications of the Global Environmental Change	Dr. Alagappan RAMANATHAN, School of Environmental Sciences, Jawaharlal Nehru University, INDIA	CCCV, EBLU
ARCP2012-19NSY-Kamal	Assessing Climate Change Impacts on Salt Marsh and Sea grass 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.	CCCV, EBLU, CATMD, RUSD
ARCP2012-20NSY-Musafer	Sustainable Biochar Systems in Developing C ountries	Mr. Namiz MUSAFER, Practical Action Sri Lanka, SRI LANKA.	RUSD

SCIENTIFIC CAPACITY BUILDING (CAPABLE)

CBA2014-01CMY-D'Arrigo	ACRE SE Asia – Towards New Weather and Climate Baselines for Assessing Weather And Climate Extremes, Impacts and Risks over SE Asia	Prof. Roseanne D'ARRIGO, Lamont-Doherty Earth Observatory, Columbia University, USA	CCCV
CBA2014-02NMY-Singhruck	Strengthening the Adaptive Capacity of Local Agricultural Communities through the Development of a Seasonal Climate Prediction System	Dr. Patama SINGHRUCK, Center of Excellence for Climate Change Knowledge Management (CCKKM), Chulalongkorn University, Bangkok, THAILAND	CCCV, CCI
CBA2014-03NSY-Cruz	Collaborative Monitoring System for Enhanced Watershed Management in the Philippines	Dr. Rex Victor O. CRUZ, Professor and Chancellor University of the Philippines Los Banos College, PHILIPPINES	EBLU
CBA2014-04NSY-Sharma	A Comprehensive Capacity Building Program on Urban Climate Change Resilience in India	Dr. Divya SHARMA, The Energy and Resources Institute (TERI), New Delhi, INDIA	CATMD
CBA2014-05NSY-Gopal	Capacity Building for Conservation of Biodiversity and Ecosystem Services of Wetlands in Relation to Global Change	Prof. Brij GOPAL, National Institute of Ecology, Delhi, INDIA	EBLU, CCI
CBA2014-06NSY-Hien	Scientific Capacity Building in Climate Change Research Techniques for Non-Governmental Organisations (NGOs) in Viet Nam	Ms. Than Thi HIEN, Centre for Marinelife Conservation and Community Development (MCD), Hanoi, VIET NAM	CCI
CBA2014-07NSY-Jia	International Training on Regional Ecosystem-Climate Interactions	Dr. Gensuo JIA, START Regional Center for East Asia, CHINA	EBLU, CCI
CBA2014-08NSY-Koshy	WCRP-ICTP Summer School on Climate Extremes	Prof. Kanayathu Chacko KOSHY, Centre for Global Sustainability Studies, Penang, MALAYSIA	CCCV, CCI
CBA2014-09NSY-Mathai	Training Workshop and Edited Volume on "Green Growth: Political Ideology, Political Economy and Policy Alternatives"	Dr. Manu V. MATHAI, United Nations University Institute of Advanced Studies (UNU-IAS), JAPAN	RUSD, CCI
CBA2014-10NSY-Carandang	Capacity Development of Local Climate Change Communicators in Southeast Asia	Dr. Wilfredo M. CARANDANG, Executive Director, Southeast Asian Network for Agroforestry Education (SEANAFE), PHILIPPINES	CCI

CBA2014-11NSY-Zhang	IMBER ClimEco4 Summer School: Delineating the Issues of Climate Change and Impacts to Marine Ecosystems: Bridging the Gap Between Research, Assessment, Policy and Management	Prof. Jing ZHANG, East China Normal University, CHINA	CATMD
CBA2014-12NSY-Bora	Capacity Building for Mitigation of Climate Change by use of Precision Agriculture	Dr. Ganesh C. BORA, North Dakota State University, Fargo, USA	EBLU, CCI
CBA2014-13NSY-PARR	Pan-Asia Risk Reduction (PARR) Fellowship Program	Dr. Hassan VIRJI Executive Director, Global Change System for Analysis, Research and Training (START), USA	CCI
CBA2013-01CMY-Rasul	Impact of Climate Change on Glacier Melting and Water Cycle Variability in Asian River Basins	Dr. Ghulam RASUL, Pakistan Meteorological Department, PAKISTAN	CCCV, SPL
CBA2013-02CMY-Hashim	Global Environmental Change and Human Health: Extreme Events and Urbanisation in the APN Region	Dr. Jamal Hisham HASHIM, UKM Medical Centre, MALAYSIA	CCCV
CBA2013-06NSY-Shrestha	Enhancing the Groundwater Management Capacity in Asian Cities through the Development and Application of Groundwater Sustainability Index in the Context of Global Change	Dr. Sangam SHRESTHA, Asian Institute of Technology (AIT), THAILAND	RUSD
CBA2013-07NSY-Dahal	Policy Brief Writeshop for Researchers: An Approach to Promote Greater Science-Policy Interfacing in South Asia	Assoc. Prof. Khem Raj DAHAL, The Small Earth Nepal (SEN), NEPAL	SPL
CBA2013-09NSY-Pascoe	Building Capacity for Socio-Ecological Resilience to Coral Bleaching Events in Indonesia, Malaysia, and Thailand	Dr. Sean PASCOE, Commonwealth Scientific and Industrial Research Organisation (CSIRO), AUSTRALIA	CATMD, CCI
CBA2013-10NSY-Visco	Communicating and Operationalising Site-specific Climate Change Adaptation Strategies in Selected Vulnerable Upland Communities in Southeast Asia	Dr. Roberto G. VISCO, Philippine Agroforestry Education and Research Network, University of the Philippines Los Baños, PHILIPPINES	CCCV, SPL
CBA2013-16NSY-Dargantes	Strengthening the Capability of Colleges of Agriculture in Incorporating Food and Water Security and Climate Change and Climate Variability into Curricular Programmes, Research and Extension Projects and Teaching Modules	Prof. Dr. Buenaventura B. DARGANTES, Institute for Strategic Research and Development Studies (ISRDS), Visayas State University, PHILIPPINES	CATMD, RUSD

FRAMEWORK: LOW CARBON INITIATIVES (LCI)

LCI2013-01CMY(R)-Vashist	Identification of Policy and Institutional Gaps, Drivers and Strategies to Scale-up Low Carbon and Energy Efficient Technology Application in the Construction and Infrastructure Sectors in South Asia	Dr. Sanjay VASHIST, Climate Action Network South Asia (CANSA), BANGLADESH
LCI2013-02CMY(R)-Dhakal	Understanding and Quantifying the Water-Energy-Carbon Nexus for Low Carbon Development in Asian Cities	Dr. Shobhakar DHAKAL, Asian Institute of Technology, THAILAND
LCI2013-04CMY(R)-Macandog	Integrated Sustainability Assessment of Bioenergy Potentials in Asia: An Application of a Hybrid Approach on Trade-offs and Pathway	Dr. Damasa B.M. MACANDOG, University of Philippines Los Baños, PHILIPPINES
LCI2013-05CMY(R)-Jupesta	Low Carbon Urban Infrastructure Investment: Cases of China, Indonesia, and Japan	Dr. Joni JUPESTA/Ms. Takako WAKIYAMA, United Nations University – Institute of Advanced Studies (UNU-IAS)/ Institute for Global Environmental Strategies(IGES), JAPAN

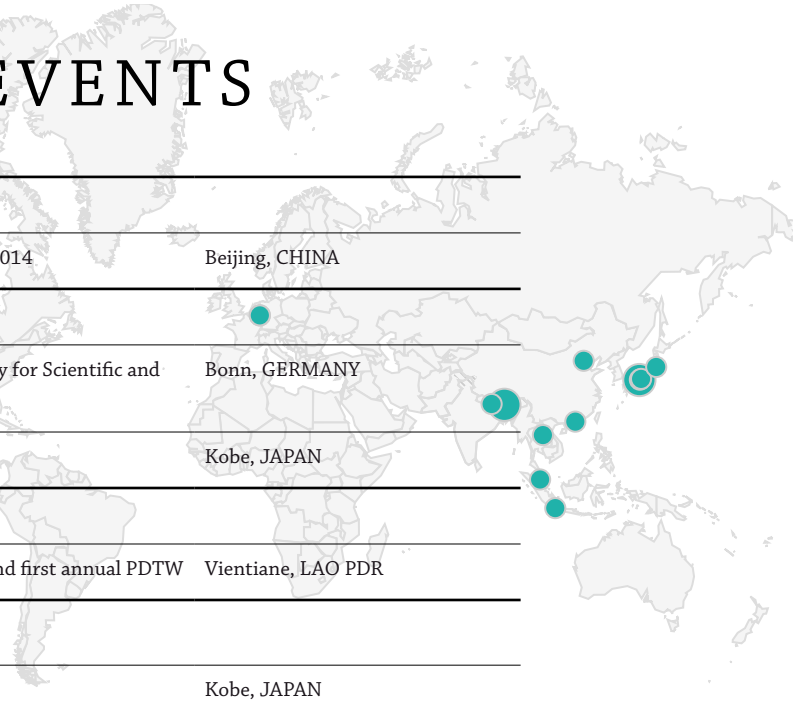
FOCUSED ACTIVITIES (EBLU/RUSD)

EBLU2012-02CMY(R)-Scheyvens	Participatory Approaches to Forest Carbon Accounting to Mitigate Climate Change, Conserve Biodiversity, and Promote Sustainable Development	Dr. Henry SCHEYVENS, Institute for Global Environmental Strategies (IGES), JAPAN
RUSD2012-01CMY(R)-Surjan	Advancing Locally-Based Green Practices to realise Establishment of Sound Material Cycle Society in Asian Cities	Dr. Akhilesh SURJAN, United Nations University (UNU), JAPAN

OTHER APN ACTIVITIES (AOA/OAA)

OAA2014-02SY-SA-SPD & 2014SRC-06SA-Bhutan	Second APN Science-Policy Dialogue: South Asia Global Climate Change: Reducing Risk and Increasing Resilience and 6th South Asia Sub-Regional Committee Meeting	Ms. Peldon TSHERING Chief, Policy & Planning Services, National Environment Commission, BHUTAN
2014SRC-07SEA-Lao PDR & 2014PDTW-01SEA-Lao PDR	7th Southeast Asia Sub-Regional Cooperation (SEA-SRC) Meeting and Proposal Development Training Workshop (PDTW)	Mr. Virasak CHUNDARA, National Resources and Environment Institute, LAO PDR
OAA2014-01SY-The Small Earth Nepal	International Conference on Climate Change Innovation and Resilience for Sustainable Livelihood	Dr. Madan Lall SHRESTHA, Nepal Academy of Science and Technology, NEPAL

MAJOR EVENTS



April 2014	
MAIRS Open Science Conference 2014	Beijing, CHINA
June 2014	
40th session of the Subsidiary Body for Scientific and Technological Advice, UNFCCC	Bonn, GERMANY
3Rs Scoping Workshop	Kobe, JAPAN
July 2014	
Southeast Asia 7th SRC Meeting and first annual PDTW	Vientiane, LAO PDR
September 2014	
28th Steering Committee Meeting	Kobe, JAPAN
October 2014	
APN-ICCCAD Session: Knowledge Foundations of Loss and Damage Systems	Kuala Lumpur, MALAYSIA
International Expert Meeting on Urban Air Pollution Control	Zhuhai, CHINA
November 2014	
International Symposium on Hokusetsu Satoyama	Takarazuka, JAPAN
December 2014	
3rd Annual Meeting of LoCARNet	Bogor, INDONESIA
January 2015	
3rd Plenary of Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES-3)	Bonn, GERMANY
South Asia Science-Policy Dialogue	Thimphu, BHUTAN
South Asia 6th SRC meeting and national level PDTW	Thimphu, BHUTAN
3rd International Workshop on Future Earth in Asia	Kyoto, JAPAN
March 2015	
UN 3rd World Conference on Disaster Risk Reduction	Sendai, JAPAN
20th IGM/SPG Meeting	Kathmandu, NEPAL

PUBLICATIONS

ARCP PROJECT OUTPUTS

ARCP2015-01CMY-Miyata: Toward CarboAsia: Integration and Syntheses of Terrestrial Ecosystem Flux Data in Tropics/Subtropics and Croplands in Asia by Activating Regional Tower-based Observation Networks

Kim, W., Miyata, A., Ashraf, A., Maruyama, A., Chidthaisong, A., Jaikaeo, C., . . . Oki, T. (2015). Flux Pro as a real time monitoring and surveilling system for eddy covariance flux measurement. *Journal of Agricultural Meteorology*, 71(1), 32-50.

ARCP2014-03CMY-Quynh: Carbon Fluxes and Emission from the Red River (Viet Nam and China): Human Activities and Climate Change

Le, T., Billen, G., Garnier, J., & Chau, V. (2014). Long-term biogeochemical functioning of the Red River (Vietnam): Past and present situations. *Regional Environmental Change*, 329-339.

Duong, T. T., Vu, T. N., Le, T. P. Q., Ho, T. C., Hoang, T. K., Nguyen, T. K., Dang D. K. (2014). Seasonal variation of phytoplankton assemblage in Hoa Binh reservoir (North of Vietnam). *Journal of Vietnamese Environment (Journal of Dresden University, Germany)*, 6(1-3).

Le, T. P. Q., Ho, T. C., Duong, T. T., Nguyen, T. B. N., Vu, D. A., Pham, Q. L., Seidler, C. (2014). Water quality of the Red River system in the period 2012 – 2013. *Journal of Vietnamese Environment (Journal of Dresden University, Germany)*, 6(1-3), 191 -195.

Duong, T. T., Le, T. P. Q., Ho, T. C., Vu, T. N., Hoang, T. T. H., Dang, D. K., Lu, X. (2014). Phytoplankton community structure and water quality of Red River (Vietnam). *Journal of Vietnamese Environment (Journal of Dresden University, Germany)*, 6(1-3), 27-33.

Nguyen, T. M. H., Le, T. P. Q., Phung, T. X. B., Rochell-Newall, E., Janeau, J. L., Garnier, J., Billen, G. (2015). Relationship between bacteria and environmental factors in the Red River water of the section from Hanoi to Hung Yen. *Journal of Science and Technology*, Hanoi University of Industry. 28-2015, 61- 65.

Nguyen, T. B. N., Nguyen, T. M. H., Nguyen, B. T., Vu, D. A., Duong, T. T., Ho, T. C. and Le, T. P. Q. (2014). Preliminary monitoring results on contents of some heavy metals in the Red River system. *Vietnam Journal of Science and Technology*, 53(1), 64 – 76.

Vu, D. A., Le, T. P. Q., Nguyen, T. B. N., Nguyen, B. T., Pham, Q. L., Seilder, C. and Phung, T. X. B. (2014). Wastewater quality of the agricultural region (vegetables - flowers - fruit trees) at Phu Dien and Tay Tuu wards (Hanoi). *Journal of Science and Technology Development*, M2-2014 (17), 13 – 21.

Nguyen, T. B. N., Nguyen, T. M. H., Nguyen, B. T., Vu, D. A., Duong, T. T. and Le, T. P. Q. (2014). Preliminary monitoring results on total coliforms and fecal coliforms in the Red River system, section from Yen Bai to Hanoi. *Vietnam Journal of Biology*, 36 (2), 240 -246.

Nguyen, T. B. N., Le, T. P. Q., Nguyen, B. T., Nguyen, T. M. H., Vu, D. A., Duong, T. T. and Ho, T. C. (2014). Agricultural wastewater quality of a vegetable growing area Van Noi commune, Dong Anh district, Hanoi city. *Vietnam Agriculture and Rural development*, 21, 65-71.

ARCP2014-08CMY-Prabhakar: Assessing Community Risk Insurance Initiatives and Identifying Enabling Policy and Institutional Factors for Maximising Climate Change Adaptation and Disaster Risk Reduction Benefits from Risk Insurance

Mia, S., Er, A.C., Prabhakar, S.V.R.K. and Pereira, J.J. (2015). Disaster Risks and Insurance in the Agriculture Sector in Asia: A Review. *Journal of Food, Agriculture and Environment*, 13 (1), 245-249.

Prabhakar, S.V.R.K., Pereira, J. J., Pulhin, J.M., Srinivasa Rao, G.S., Scheyvens, H. and Cummins, J. (2015). *Opportunities of Insurance for Disaster Risk Reduction and Climate Change Adaptation: Challenges and Opportunities*. IGES Research Report 2014-4. Hayama: Institute for Global Environmental Strategies.

Cummins, J., Lipman, A., Feetham, A. (2014). *Preliminary Focus Group Study: Australian Farmer Attitude to On-farm Risk Management and Insurance*. Adelaide, Australia: International Agriculture for Development.

Prabhakar, S.V.R.K., Paul, O., Solomon, D.S. and Raj, S.B. (2015). *An Inductive Approach for The Evidence of Climate Change Adaptation and Disaster Risk Reduction Synergies of Interventions: Challenges And Opportunities*. Bangkok, Thailand: Asia Pacific Adaptation Network.

Prabhakar, S.V.R.K., Abu-Bakar, A., Claudio, C.P.B., Hung, H.V., Solomon, D.S. (2015). What ails the effectiveness of crop insurance? Emerging bottom-up issues and solutions. In: Sawhney, P. and Perkins, M.A. (eds) *Emerging Climate Change Adaptation Issues in the Asia-Pacific Region*. Bangkok, Thailand: Asia Pacific Adaptation Network.

CLIMATE ADAPTATION FRAMEWORK (CAF)

CAF2014-CD01-Wijenayake: Enhancing Capacity of Policy Makers and practitioners in India, Sri Lanka and Nepal on Loss and Damage Related to Slow Onset Events in the Region

Wijenayake, V. (2014). Loss and Damage and Migration. Retrieved from http://outreach.stakeholderforum.org

Wijenayake, V. (2014). Addressing Loss and Damage and Climate Displacement. *Asia Pacific Forum on Loss and Damage Special Edition COP20*. Retrieved from http://lossanddamageforum.org

Wijenayake, V. (2014). Addressing Loss and Damage in South Asia. *Asia Pacific Forum on Loss and Damage*. Retrieved from http://lossanddamageforum.org

Singh, H. (2014). A People-centred Approach to Assess and Address Loss and Damage. *Asia Pacific Forum on Loss and Damage*. Retrieved from http://lossanddamageforum.org

Bolland, J. (2015). A People-centred Approach to Addressing Loss and Damage. *Asia Pacific Forum on Loss and Damage*. Retrieved from http://lossanddamageforum.org

VOICES FROM YOUNG SCIENTISTS

APN plays an active role in building the capacity of young and early-career scientists not only through its funded projects but also in-house activities such as Proposal Development Training Workshops (PDTW). Every year, hundreds of young participants benefited from their attendance at conferences, workshops, hands-on training, research activities funded by APN. This section highlights selected feedback from young scientists involved in APN activities during fiscal year 2014.

"It was a wonderful experience for me to be involved in this project working with international scientists from different disciplines. I learned how climate information and risk management concepts can be applied to drought monitoring and forecasting, agricultural production and water resources management. Thanks a lot APN for this opportunity."

— Adi Ripaldi, Bureau of Meteorology, Indonesia, participant of a workshop under CBA2012-01CMY-Abawi (page 40).

"Participating in the Graudates Forum on Green Economy in 2012 was a turning point in my career journey. I was later also given the opportunity to represent the forum at UNFCCC COP18, Doha where I gained immense knowledge personally and professionally. These programmes go a long way in bringing a positive change in society."

— Rozita Singh (India), a participant of CBA2012-17NSY-Pradhananga (page 28).

"The most important outcome of the summer school is, indeed, the new network of great colleagues and friends. I used my research materials collected and analysed during the School for teaching, and the School faculty also gave me a lot of extremely useful hints for how to make my teaching better. "

— Olga Likhacheva, Pskov State University, Russia, participant of a summer school under CBA2013-11NSY-Pakharkova (page 30).

"We are able to continue improving the SBLP learning project based on the model developed with the help of Mr. Julito Aligaen from RECSAM. We didn't expect that he would come back and talk to us afterwards about integrating climate change into our curriculum."

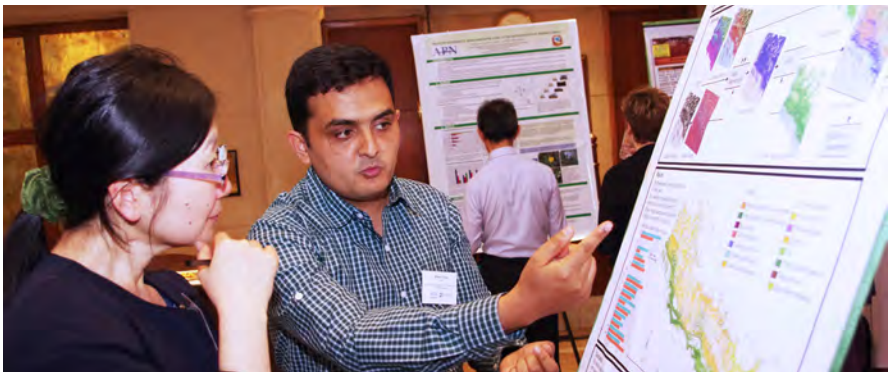
— Betty Jane Lerin, Science Teacher, Praphamontree II School, Samutprakharn, Thailand, participant of CBA2011-09NSY-Aligaen (page 38).

MITRA AWARD FOR GLOBAL CHANGE RESEARCH

The Mitra Award for Global Change Research was established in 2010 in memory of Dr. Ashesh Proshad Mitra, APN SPG Member for India from 1996 to 2007. Dr. Mitra was a doyen in atmospheric research in India, and was recipient of the Padma Bhushan award conferred by the Indian government in recognition of his distinguished service to the nation in the field of scientific research. Dr. Mitra's work was instrumental for the APN to formulate a strong and effective scientific agenda that has successfully led to the international recognition that APN holds today in global change research.

The award recognises outstanding young scientists conducting global change research in the Asia-Pacific region. It is presented in conjunction with the annual APN IGM/SPG Meetings, where a poster session is organised and the winner is selected by SPG members, nFPs and other esteemed members of the science and policy communities.

- **Awardee (2015):** Mr. Shiva Khanal, Department of Forest Research and Survey, Nepal
- **Title of presentation:** Integration of object based image analysis with machine learning algorithm for forest type classification in Nepal



"APN provided a great opportunity for me to present my research studies to global change researchers coming from various countries. It was indeed a great platform to have discussion and a Q&A session related to my research. My participation, and receiving the Mitra Award, is a significant achievement for me. The award has further motivated me to continue research activities in the field of global environment change. Last July/August, I was selected to participate in the 2015 GOFC-GOLD Data Training Initiative organised by START. I look forward to developing new contacts as well as establishing collaboration on research through APN in the near future."

— Mr. Shiva Khanal, Department of Forest Research and Survey, Nepal

PEOPLE IN APN

The Inter-Governmental Meeting (IGM) is the main decision-making body of the APN. The IGM consists of national Focal Points (nFPs) appointed by Member Country governments and approves APN's annual programme of work and budget based on recommendations from the Scientific Planning Group (SPG). The Steering Committee (SC) acts on behalf of the IGM and provides guidance to the Secretariat on scientific, policy and institutional matters. The lists in this section are current at the time of publication.

NFP AND SPG MEMBERS

COUNTRY	nFP	SPG Member
AUSTRALIA	*(Identifying nominees is in progress)*	
BANGLADESH	*Faiz AHMED* Ministry of Environment and Forests, Bangladesh Secretariat	*Md. Giashuddin MIAH* Dean, Dept. of Agroforestry and Environment Bangabandhu Sheikh Mujibur Rahman Agricultural University
BHUTAN	*Peldon TSHERING* National Environment Commission	
CAMBODIA	*Sundara SEM* Ministry of Environment	*Veasna KUM* Faculty of Engineering, Zaman University
CHINA	*Chengyong SUN* Ministry of Science and Technology	*Wenjie DONG* Beijing Normal University
FIJI	*(Identifying nominees is in progress)*	
INDIA	*J. R. BHATT* Ministry of Environment, Forest and Climate Change	*Hemant BORGAONKAR (Alternate)* Indian Institute of Tropical Meteorology
INDONESIA	*Sabar GINTING* Ministry of Environment	*Erna Sri ADININGSIH* National Institute of Aeronautics and Space
JAPAN	*Akio TAKEMOTO* Ministry of the Environment	*Kensuke FUKUSHI* The University of Tokyo

COUNTRY	nFP	SPG Member
LAO PEOPLE'S DEMOCRATIC REPUBLIC	*Virasack CHUNDARA* Ministry of Natural Resources and Environment	
MALAYSIA	*Che Gayah ISMAIL* Ministry of Science, Technology and Innovation	*Fariza YUNUS* Malaysian Meteorological Department
MONGOLIA	*Bayarbat DASHZEVEG* Ministry of Environment and Green Development	*Tsogtbaatar JAMSRAN* Mongolian Academy of Sciences
NEPAL	*Mahendra Kumar THAPA* Ministry of Science, Technology and Environment	*Madan Lall SHRESTHA* Academy of Science and Technology
NEW ZEALAND	*Andrew TAIT* National Institute for Water and Atmospheric Research (NIWA)	
PAKISTAN	*Muhammad Irfan TARIQ* Ministry of Climate Change	*Amir MUHAMMED* National University of Computer and Emerging Sciences
PHILIPPINES	*Eriberto C. ARGETE* Department of Environment and Natural Resources	*Henry ADORNADO* Ecosystems Research and Development Bureau (DENR-ERDB)
REPUBLIC OF KOREA	*Joonki KIM* Ministry of Environment	*Soojeong MYEONG* Korea Environment Institute
RUSSIAN FEDERATION	*Andrey V. ADRIANOV* Russian Academy of Sciences	*Alexander STERIN* Russian Research Institute for Hydrometeorological Information – World Data Center
SRI LANKA	*Nihal RUPASINGHE* Ministry of Mahaweli Development and Environment	*Lalith CHANDRAPALA* Department of Meteorology
THAILAND	*Kasemsan CHINNAVASO* Ministry of Natural Resources and Environment	*Jariya BOONJAWAT* Chulalongkorn University
UNITED STATES OF AMERICA	*Luis M. TUPAS* United States Department of Agriculture	
VIET NAM	*Xuan Bao Tam NGUYEN* Ministry of Natural Resources and Environment	*Kim Chi NGO* Viet Nam Academy of Science and Technology

STEERING COMMITTEE (SC)

Elected Members		*Peldon TSHERING*	nFP for Bhutan
		Chengyong SUN	nFP for China
		Sabar GINTING	nFP for Indonesia
		Muhammad Irfan TARIQ	nFP for Pakistan
		Andrey V. ADRIANOV	nFP for Russian Federation
Host of the 20th IGM/SPG Meeting		*Mahendra Kumar THAPA*	nFP for Nepal
Ex Officio Members	**SPG Co-chairs**	*Jariya BOONJAWAT*	SPG Member for Thailand
		Kensuke FUKUSHI	SPG Member for Japan
	Donors Members	*Akio TAKEMOTO*	nFP for Japan
		Joonki KIM	nFP for Republic of Korea
Co-opted Members		*Roland J. FUCHS*	East West Center, United States of America
		Andrew MATTHEWS	National Commission for UNESCO, New Zealand
		Kazuhiko TAKEMOTO	United Nations University, Japan

CAPACITY DEVELOPMENT COMMITTEE (CDC)

SPG Co-Chairs	*Jariya BOONJAWAT*	SPG Member for Thailand
	Kensuke FUKUSHI	SPG Member for Japan
SC Chair	*Peldon TSHERING*	nFP for Bhutan
Invited Experts	*Roland John FUCHS*	East West Center, USA
	Srikantha HERATH	United Nations University
	W. Andrew MATTHEWS	National Commission for UNESCO, New Zealand
	Juan PULHIN	University of the Philippines Los Baños
Donor Member	*Akio TAKEMOTO*	nFP for Japan

SPG SUB-COMMITTEE (SPG-SC)

SPG Co-Chairs	*Jariya BOONJAWAT*	SPG Member for Thailand
	Kensuke FUKUSHI	SPG Member for Japan
Elected SPG Members	*Hemant BORGAONKAR*	SPG Member Alternate for India
	Tsogbaatar JAMSRAN	SPG Member for Mongolia
	Fariza YUNUS	SPG Member for Malaysia

INVITED EXPERTS TO THE SPG

AILIKUN	International Program Office of Monsoon Asia Integrated Regional Study (MAIRS)
Lance Clive HEATH	Australian National University Climate Change Institute
Kanayathu Chacko KOSHY	Centre for Global Sustainability Studies, Universiti Sains Malaysia
Subramaniam MOTEN	Former SPG Member for Malaysia

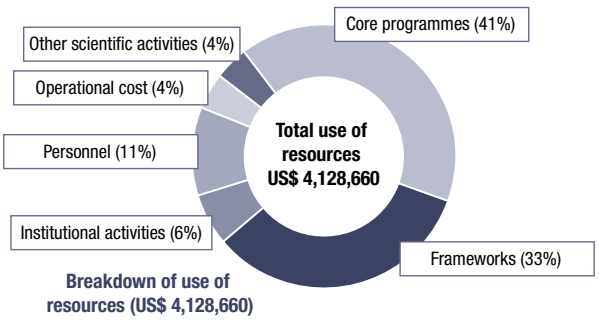
SECRETARIAT

Hiroshi TSUJIHARA, Director

Ryujiro YAMANE Head, Division of Administrative Affairs	*Linda Anne STEVENSON* Head, Division of Communication and Scientific Affairs	*Yukihiro IMANARI* Head, Division of Development and Institutional Affairs
Chieko KODAMA	Administrative Officer	
Taniya KOSWATTA	Coordinator	
Xiaojun DENG	Programme Officer for Communication and Development	
Dyota CONDRORINI	Programme Officer for Scientific and Institutional Affairs	
Rieko TAMURA	Programme Officer for Development and Institutional Affairs	
Huong Long DINH	Programme Fellow for Communication and Scientific Affairs	

FINANCIAL RESOURCES

STATEMENT OF INCOME AND EXPENDITURES IN FISCAL YEAR 2014 (1 APRIL 2014 TO 31 MARCH 2015)



Resources Available

Category			Amount (US$)
Donor contributions			
	Japan	Ministry of the Environment	2,191,850
		Hyogo Prefectural Government	191,630
	Republic of Korea	Ministry of Environment	50,000
	New Zealand	Ministry for the Environment	25,000
Contribution to specific activities		Climate and Development Knowledge Network (CDKN) (GBP8,000)	12,000
Balance brought forward from FY2013 (including committed funds for multiyear projects)			2,427,130
		Total resources received in FY2014	**4,897,610**

Use of Resources

Category	Executed and committed (US$)
Core programmes	1,689,160
Frameworks	1,376,000
Institutional activities	266,000
Personnel	446,000
Operational cost	180,000
Other Scientific activities	146,500
Total use of resources	**4,103,660**

IN-KIND CONTRIBUTIONS AND CO-FUNDING

APN receives in-kind support at various levels:

- The Hyogo Prefectural Government supports the APN Secretariat by providing office space and fixtures, staff time, etc. This in-kind support amounts to more than US$ 230,000 per year.
- APN members, invited experts and external reviewers through reviewing proposals and project reports. Combined with their participation in APN meetings, the in-kind support amounts to almost US$ 600,000 per year.
- APN member countries provided in-kind logistical and administrative support in hosting and organising APN events.
- Project level administrative overheads are covered by the institutions of the project leaders and collaborators. Fourteen out of the 21 completed projects in fiscal year 2014 have clearly indicated in-kind support from the host and partner institutions.
- Low Carbon Asia Research Network (LoCARNet) collaborated with APN in its annual Proposal Development Training Workshop and second Science-Policy Dialogue and provided in-kind contribution amounted to US$ 28,000.

APN expresses special gratitude to its 22 member country governments as well as engaged institutions in APN projects for their support.

CO-FINANCE PARTNERSHIP

The Ministry of Environment of the Kingdom of Cambodia and APN entered into a co-finance partnership, which will increase Cambodian researchers' access to financial resources and create opportunities for regional collaboration among members of the global change research community. Under the new partnership, the Kingdom of Cambodia, through its Ministry of Environment, will provide co-funding for approved APN projects that are proposed by Cambodian researchers from fiscal year 2015.

Under the co-finance partnership, the Ministry of Environment of the Kingdom of Cambodia and APN jointly funded and organised a Proposal Development Training Workshop (PDTW) in Siem Reap, Cambodia from 5–8 October 2015. The workshop involved trainees from Indonesia, Lao PDR, Malaysia, Philippines, Thailand and Viet Nam.

ACKNOWLEDGEMENTS

APN acknowledges all members, partners and stakeholders for their strong support and collaboration in implementing APN's work programme and activities throughout fiscal year 2014. In particular, we would like to express our gratitude to the following organisations that were directly involved in co-organising APN activities or hosting APN projects:

- Beijing Normal University, Zhuhai, China
- Centre for Tibetan Regional Sustainable Development, China
- Climate and Development Knowledge Network (CDKN), United Kingdom
- Cook Islands Meteorological Service, Cook Islands
- Global Change Impact Studies Centre (GCISC), Pakistan
- Hyogo Prefectural Government, Japan
- Indonesian Society for Remote Sensing/ Geospatial Information Agency, Indonesia
- Institute for Development and Innovation (IDI), Nepal
- Institute for Global Environmental Strategies (IGES), Japan
- Institute of Geographic Sciences and Natural Resources Research (IGSNRR), China
- International Centre for Climate Change and Development (ICCCAD), Bangladesh
- Jeju National University, Republic of Korea
- Low Carbon Asia Research Network (LoCARNet), Japan
- Ministry of Natural Resources and Environment, Vientiane, Lao PDR
- Ministry of Science, Technology and Environment, Nepal
- Monsoon Asia Integrated Regional Study (MAIRS), China
- National Climate Centre, Australia
- National Environment Commission, Kingdom of Bhutan
- Non-Timber Forest Products Exchange Programme for South and Southeast Asia, Philippines
- NPO Okinawa O.C.E.A.N., Japan
- Past Global Changes/IGBP, Switzerland
- Philippine Agroforestry Education and Research Network, Philippines
- Siberian Federal University, Russian Federation
- South Asian Forum for Environment, India
- Southeast Asian Ministers of Education Organization Regional Education Center for Science and Math (SEAMEO RECSAM), Malaysia
- START International, USA
- The International Partnership for the Satoyama Initiative (IPSI), Japan
- The Small Earth Nepal, Nepal
- The University of Tokyo, Japan
- U.P. Marine Science Institute, Philippines
- UNESCO Jakarta Office, Indonesia
- United Nations University Institute for Sustainability and Peace, Japan
- University of the Philippines Los Baños (UPLB), Philippines
- Xiamen University, China

ACRONYMS

#

3R (*11*)
Reduce, reuse, recycle

A–G

ARCP (*16*, *46*)
Annual Regional Call for Research Proposals

ASEAN (*41*)
Association of Southeast Asian Nations

AWCI (*20*)
Asian Water Cycle Initiative

B&ES (*9*)
Biodiversity and Ecosystem Services

CAF (*7*, *9*, *10*)
Climate Adaptation Framework

CAPaBLE (*7*, *23*, *50*)
Scientific Capacity Building/Enhancement for Sustainable Development in Developing Countries

CATMD (*47*)
Changes in Atmospheric, Terrestrial and Marine Domains

CCCV (*47*)
Climate Change and Climate Variability

CDC (*7*, *60*)
Capacity Development Committe

CDKN (*13*, *64*)
Climate and Development Knowledge Network

CORDEX (*35*)
Coordinated Regional Climate Downscaling Experiment

EBLU (*39*, *47*, *52*)
Ecosystems, Biodiversity and Land Use

ENSO (*38*)
El Niño Southern Oscillation

GCISC (*64*)
Global Change Impact Studies Centre

GEOSS (*20*)
Global Earth Observation System of Systems

GHG (*40*)
Greenhouse Gases

I–N

ICCCAD (*12*, *64*)
International Centre for Climate Change and Development

ICIMOD (*26*)
International Centre for Integrated Mountain Development

IDI (*64*)
Institute for Development and Innovation

IGAC (*32*)
International Global Atmospheric Chemistry

IGBP (*30*)
International Geosphere-Biosphere Programme

IGES (*64*)
Institute for Global Environmental Strategies

IGM (*5*, *14*)
Inter-Governmental Meeting

IIED (*9*, *12*)
International Institute for Environment and Development

iLEAPS (*32*)
Integrated Land Ecosystem–Atmosphere Processes Study

IPBES (*9*)
Intergovernmental Platform on Biodiversity and Ecosystem Services

IPCC (*35*)
Intergovernmental Panel on Climate Change

IPSI (*13*, *64*)
International Partnership for the Satoyama Initiative

LCI (*9*, *39*, *52*)
Low Carbon Initiatives

LoCARNet (*9*, *13*, *63*, *64*)
Low Carbon Asia Research Network

LOICZ (*32*)
Land-Ocean Interactions in the Coastal Zone

MAIRS (*32*, *64*)
Monsoon Asia Integrated Regional Study

NAMA (*40*)
Nationally Appropriate Mitigation Actions

nFP (*58*)
National Focal Point

NOWPAP (*17*, *27*)
Northwest Pacific Action Plan

P–W

PAGES (*30*)
Past Global Changes

PARR (*10*)
Pan-Asia Risk Reduction Fellowship

PDTW (*11*)
Proposal Development Training Workshop

REDD (*41*, *43*)
Reducing Emissions from Deforestation and Forest Degradation

RUSD (*47*, *52*)
Resources utilisation and pathways for sustainable development

SBSTA (*10*)
Subsidiary Body for Scientific and Technological Advice (UNFCCC)

SC (*60*)
Steering Committee

SCBCIA (*39*)
Scientific Capacity Building for Climate Impact and Vulnerability Assessments

SOLAS (*31*)
International Surface Ocean–Lower Atmosphere Study

SPARC (*37*)
Stratosphere-troposphere Processes And their Role in Climate

SPG (*5*, *7*, *14*, *58*)
Scientific Planning Group

SRC (*8*, *11*)
Sub-Regional Committee

UNFCCC (*10*, *26*)
United Nations Framework Convention on Climate Change

WCRP (*32*, *35*, *37*)
World Climate Research Programme

The Asia-Pacific Network for Global Change Research (APN) is a network of 22 member country governments that promotes global change research in the region, increases developing country involvement in that research, and strengthens interactions between the science community and policy makers.