

**FINAL REPORT for APN PROJECT
CBA2010-04NSY-Dhaka**



- Making a Difference -

Scientific Capacity Building & Enhancement for Sustainable Development in Developing Countries

Carbon Governance in Asia: Bridging Scales and Disciplines

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Carbon Governance in Asia: Bridging Scales and Disciplines

Project Reference Number: [CBA2010-04NSY-Dhaka](#)
Final Report submitted to APN

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OVERVIEW OF PROJECT WORK AND OUTCOMES

Non-technical summary

A three-day- capacity building workshop titled “Carbon Governance in Asia; Bridging Scales and Disciplines” has been held 1-3 November 2010. The workshop invited young researchers from the Asia-Pacific region, competitively selected along a set of criteria through an open call. Established senior scholars from Asia (including Japan), North America and Europe played mentoring roles to the young researchers before and during the workshop. The workshop provided a platform for young researchers to present their work, to discuss and to get feedback and suggestions for improvement of their research from the established senior scholars. It also provided opportunities for scholars to interact with decisions makers and to grasp the reality of actual decision making for carbon governance. The participants were made aware of the challenges and needs for bridging the various disciplines while tackling a topic such as carbon governance that spans over multiple sectors, disciplines and approaches. The human network developed during this workshop has potentials to assist both senior and young scholars in finding avenues for future collaboration which the organizers will foster, especially on some of the thematic issues such as carbon governance related to REDD and the multi-level governance of carbon.

Objectives

The main objectives of the project were:

1. Bringing together leading Asian-Pacific researchers from various natural- and social sciences to enhance their interdisciplinary capacity, stimulate dialogue, and initiate disciplinary synergies toward sustainable development.
2. Enabling early-career researchers from the Asia-Pacific region to present their research at an international workshop and to receive feedback and support from established colleagues, and bringing these young researchers in contact with the regional and global research communities and projects.
3. Initiating the implementation of the Flagship Activity on Earth System Governance and the Climate System that has been jointly developed by the Earth System Governance Project and the Global Carbon Project and that is outlined in the Earth System Governance Project Science and Implementation Plan.
4. Stressing the importance of multi-level governance of carbon including actors such as cities and municipalities in designing an optimized carbon governance regime with a focus on the Asia Pacific region.

Amount received and number years supported

The Grant awarded to this project was:

US\$ 29,630 for 1 Year 2010/2011

Activity undertaken

Capacity Building Workshop on Carbon Governance in Asia: Bridging Scales and Disciplines. The workshop was held at the United Nations University, Institute for Advanced Studies, 1-3 November 2010, Yokohama, Japan.

Results

The workshop brought together 12 early career scientists, 7 leading scientists, and 16 other participants, including policy makers and APN secretariat, from all over the Asia Pacific region and from a variety of scientific, mostly social science disciplines. In three intense days, by presentations, discussions, tutorials, and social events, all participants worked hard and achieved the objectives of the workshop. In addition, numerous valuable new research connections and potential collaborations have emerged.

Relevance to APN's Science Agenda and objectives

The capacity building workshop on "Carbon Governance in Asia: Bridging Scales and Disciplines" adhered to the mission of APN as it provided new insights and enhanced research capacity as well as an exchange of knowledge of potential regional and global vulnerability of human systems in regard to changing natural systems due to climate change (APN mission 2); and contributed, from the science perspective, to the development of policy options for appropriate responses to global change, here carbon governance, that will also contribute to sustainable development (APN mission 3).

The workshop contributed to all four goals of APN. First, it supported and increased cooperation and collaboration on carbon governance in Asia – An area of global change research very relevant to Asia as a key region that due to its rapid economic growth already dominates global carbon emissions and will and needs to play a greater role for global carbon management in the foreseeable future (APN goal 1). Second, the inclusion of policy makers from the municipal, national, and regional level in the presentations and discussions provided a valuable opportunity for interaction including a mutual learning process between scientists and policy makers (APN goal 2). Third, as a capacity building workshop, this project directly and explicitly addressed improvement of scientific capabilities of the participants from all over the Asia Pacific region. The format of the workshop facilitated transfer of know-how from a variety of perspectives and disciplines on the challenge of carbon governance in Asia (APN goal 3). Finally, the capacity building workshop on "Carbon Governance in Asia: Bridging Scales and Disciplines" has been a joint initiative, organised and developed by the joint ESSP Global Carbon Project, and the IHDP core project on Earth System Governance, and has been fully embedded in the global change research programmes (APN goal 4).

Self evaluation

The workshop was well structured, and very good logistics and planning made the workshop effective. The three workshop organizers were very enthusiastic and extremely collaborative. The participants were balanced and active (both senior and early career). However one of the lessons learned is that more time is needed for in depth (one on one) tutorial sessions to improve scientific methods of papers presented by many of the early career researchers.

Potential for further work

There is a good opportunity to use human network developed in this workshop to follow up to develop thematic focused groups related to carbon governance issues and opportunities in relation to REDD, energy system transitions and the multi-level governance. The Global Carbon Project and the Earth System Governance Project will follow up the outcomes of this workshop.

Publications

This workshop did not produce any publications directly. Inspired by the exchanges of knowledge and information, and enabled by the new collaborations and connections from the workshop, a number of publication ideas have emerged and will be followed up by the participants, if necessary with the support of the organizing institutions. In particular, possibilities for an edited volume from the papers of the early career researchers will be pursued if there will be willingness to work and improve the existing papers.

A detailed web-page has been developed by the organizers to share the content and outcomes of the workshop to all participants and the broader community. This website is publicly available at <http://www.gcp-urcm.org/CG>. An online proceeding of the workshop includes pdf files of all the presentations (<http://www.gcp-urcm.org/CG/Presentations>), profile of participants (<http://www.gcp-urcm.org/CG/Participants>) and other information. CD ROMS have been prepared for all project documents including the workshop materials.

In the week after the workshop, the annual APEC summit took place at the same venue as the workshop. The last session of the workshop therefore also served as an opportunity to summarize the policy relevant findings from the workshop. This has been a good opportunity to stress the importance, but also to illustrate the difficulty of a science policy dialogue to the early career participants. Key messages from the workshop were drafted after the session and disseminated widely. This document is available at [http://www.gcp-urcm.org/files/CG/GCP ESG UNU-IAS Announcement.pdf](http://www.gcp-urcm.org/files/CG/GCP_ESG_UNU-IAS_Announcement.pdf)

Acknowledgments

In addition to APN, support was provided by National Institute for the Environmental Studies (NIES), Japan, in the form of covering staff-time and direct costs of the three Global Carbon Project staff (based at NIES) and four NIES staff members, and by all the researchers who participated/organized this event. The Earth System Governance Project provided in-kind contributions to this project, especially as staff-time, support to all aspect of the project organization, and the web-based discussion forum for participants prior to the workshop. The United Nations University Institute for Advanced Study provided in-kind support through their staff-time to help logistics and the direct support of providing the workshop-venue free of cost.

The lead scientists spent their valuable time in supporting the selection process and in reading through the papers of early career researcher and made efforts to provide useful feedback and suggestions. The workshop also received meaningful support to provide decision makers' perspective by Mr. Kazuhiko Takemoto, Former Vice Minister of the Ministry of Environment Japan and the representatives from the Tokyo Metropolitan Government, Ms. Toshiko Chiba and Ms. Yuko Nishida.

Preface

Pathways of regional development are sequences of interrelated changes in social, economic and governance systems that vary spatially and temporally to have different carbon consequences. These mutual interdependencies place demands on the science community to establish a common knowledge base to support policy and an integrated systems of governance. Asia is a key region that is already dominating the global carbon scene. Huge differences in welfare, governance, and carbon trajectories in Asia require a better understanding of the carbon management challenges across scales. By bringing researchers from the multiple disciplines together, this workshop addressed low-carbon development pathways for Asia.

1.0 Introduction

Pathways of regional development are sequences of interrelated changes in social, economic and governance systems. They vary from place to place and over time, in ways that are likely to have different net consequences for carbon stocks and fluxes, which in turn may constrain or in other ways feed back upon development processes. Thus, the climate problem is not just a cumulative and systemic problem at the global level but has different features causes, and impacts at different levels of governance. These mutual interdependencies and feedbacks place demands on the science community to establish a common, mutually agreed knowledge base to support policy debate and action, and to develop integrated systems of governance, from the local to the global level, that ensure the sustainable development of the coupled socio-ecological systems.

Asia is a key region which is rapidly growing economically. Asian contributions are already dominating the global carbon emissions. It will play an even greater role for global carbon management in the foreseeable future. However, within Asia, huge differences in welfare, governance systems, and carbon emission trajectories exist and thus pose a carbon governance challenge. A better understanding of the carbon management challenges across multiple scales is necessary for Asia, which is less understood as of now. Such understanding will provide important insights to design an optimized carbon governance structure.

In order to address this, and in response to the 2009 call for proposals under the Asia Pacific Network's Scientific Capacity Building/Enhancement for Sustainable Development in Developing Countries Programme (CAPaBLE), the ESSP Global Carbon Project, and the IHDP core project on Earth System Governance, together with the United Nations University Institute for Advanced studies, developed and organised a capacity building workshop on "Carbon Governance in Asia: Bridging Scales and Disciplines". This workshop has been held 1-3 November 2011 at the premises of the United Nations University, Yokohama, Japan.

The workshop focused on the crosscutting theme of scale within carbon governance in Asia and included local, national, regional, and global aspects – as well inter-scale dynamics - of this research and policy challenge. This scale-based perspective helped raising awareness of the participants and through the dissemination of results also policy-makers and stakeholders of the interdependencies

between scales and the importance of each scale. The workshop also intended to bridge scientific disciplines and creates opportunities to explore future collaborations.

The workshop brought together twelve early career scientists from the Asia Pacific region (from nine countries), seven leading scientists (from four countries), and sixteen other participants, including policy makers (Ministry of Environment Japan, Tokyo Metropolitan Government, and International Tropical Timber Organisation), and from a variety of scientific, mostly social science disciplines. The early career researchers were from Japan, India, China, Indonesia, Bangladesh, Nigeria (on exchange visit to Japan), Nepal, Thailand and Australia. The senior scientists gathered from well-established institutions such as: Colorado State University (USA), University of Minnesota (USA), Australia National University (Australia), National Institute for Environmental Studies (Japan), Tokyo Institute of Technology (Japan), Renmin University (China), and University of Maryland (USA). In three intense days, by presentations, discussions, tutorials, and social events, all participants worked hard and achieved the objectives of the workshop that were:

- Bringing together leading Asian-Pacific researchers from various natural- and social sciences to enhance their interdisciplinary capacity, stimulate dialogue, and initiate disciplinary synergies toward sustainable development.
- Enabling early-career researchers from the Asia-Pacific region to present their research at an international workshop and to receive feedback and support from established colleagues, and bringing these young researchers in contact with the regional and global research communities and projects.
- Initiating the implementation of the Flagship Activity on Earth System Governance and the Climate System that has been jointly developed by the Earth System Governance Project and the Global Carbon Project and that is outlined in the Earth System Governance Project Science and Implementation Plan.
- Stressing the importance of multi-level governance of carbon including actors such as cities and municipalities in designing an optimized carbon governance regime with a focus on the Asia Pacific region.

The workshop has been a focussed capacity-building effort. It primarily has build capacity of the individual researchers both from natural sciences but predominantly social sciences. In addition, it build capacity within the research communities of the two involved global change projects: The Global Carbon Project and the Earth System Governance Project, in terms of new researchers engaged with the projects as well as improved knowledge and skills for researchers already involved with these projects and other existing networks.

In particular, the workshop contributed to enhancing the capacity for the development of the Earth System Governance Flagship Activity on the Climate System. Whilst the science plan of the Earth System Governance Project can be applied to any given problem of global and local environmental change, the project emphasis empirical research on a number of case study areas, the so called 'flagship activities' of the Earth System Governance Project - which all are linked with joint ESSP

projects to ensure the crosscutting nature of the this research. The climate system is one of these flagship activities and is linked to and developed in collaboration with the Global Carbon Project. Even though the study of earth system governance goes beyond the core questions of the Global Carbon Project, there are complementarities between the two initiatives: studies of earth system governance in the context of coupled human and natural systems can be expected to yield insights related to the role of humans and societal institutions as drivers of change as well as the ways that humans are likely to organize themselves in the face of change. In particular, complementarities with the Global Carbon Project lie in research for carbon management and in designing carbon management institutions and multilevel governance for urban and regional carbon management (www.gcp-urcm.org). That is, where the workshop served not only as the first concrete event under this flagship activity, but also as a venue to discuss and further advance this field of research on the interface between the science plans of both projects.

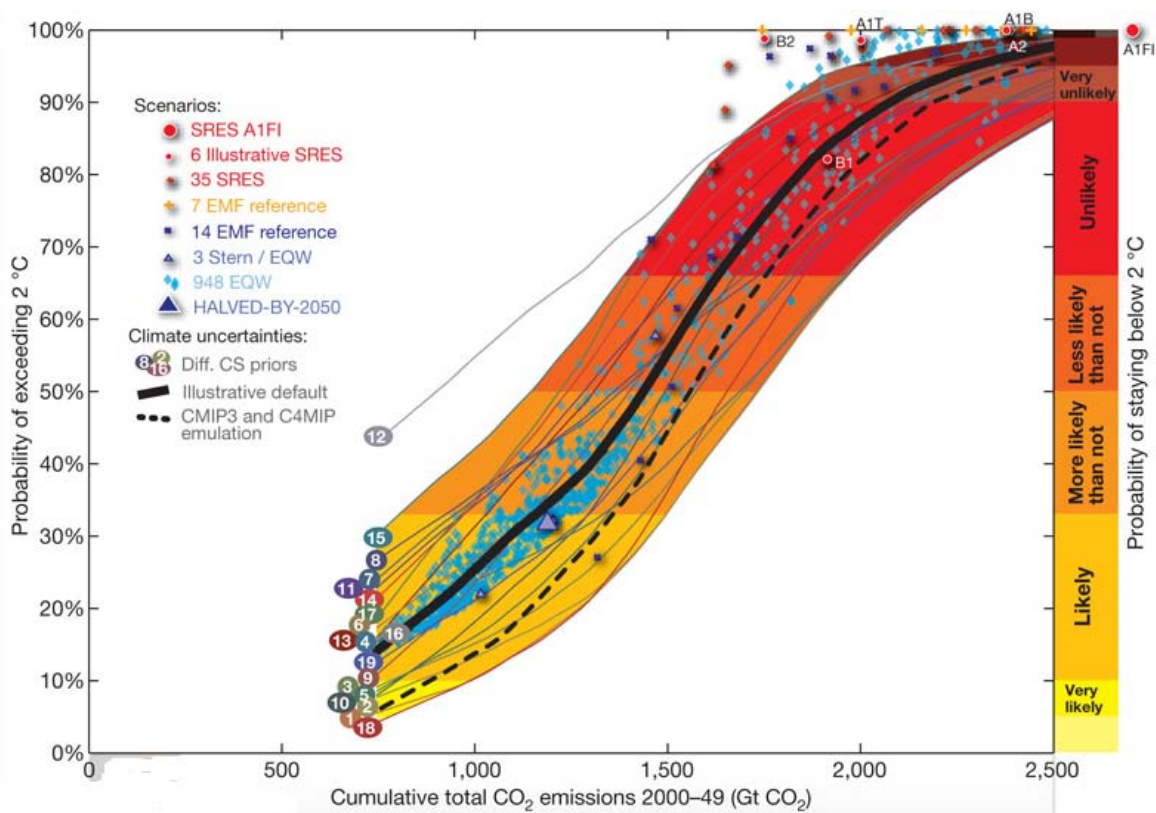


Figure 1. The probability of exceeding 2°C warming versus CO₂ emitted in the first half of the twenty-first century. Source: M Meinshausen *et al.* *Nature* 458, 1158-1162 (2009)

The Copenhagen Accord and outcomes from the Cancun climate summit (UNFCCC COP16/MOP6) envisions the world below 2°C temperature rise by the end of this century. In order to do that our carbon space, the amount of anthropogenic CO₂ that we can emit from now to 2050, is limited. In 2009, world emitted 9.5 Giga Tons of Carbon (34.8 Giga Tons of CO₂) while our annual allowable carbon per year for 2010-2050 for staying below 2°C (by the end of century) with 50% probability is 7.6 Giga Tons of CO₂ (Figure 1 and 2). IPCC has shows that world CO₂ emissions should peak and start declining very soon in order to achieve global 2°C policy target. Asia is a key region with a large and growing share of carbon emissions and thus the opportunities as well as challenges for carbon management are expected to be immense. The regional knowledge base on approaches for sound

carbon governance is very timely and important for Asia and this capacity building activities aims to share knowledge and expose early career researchers of the Asia Pacific region to the analyzes and improved understanding of carbon governance principles, ways and prevailing experiences.

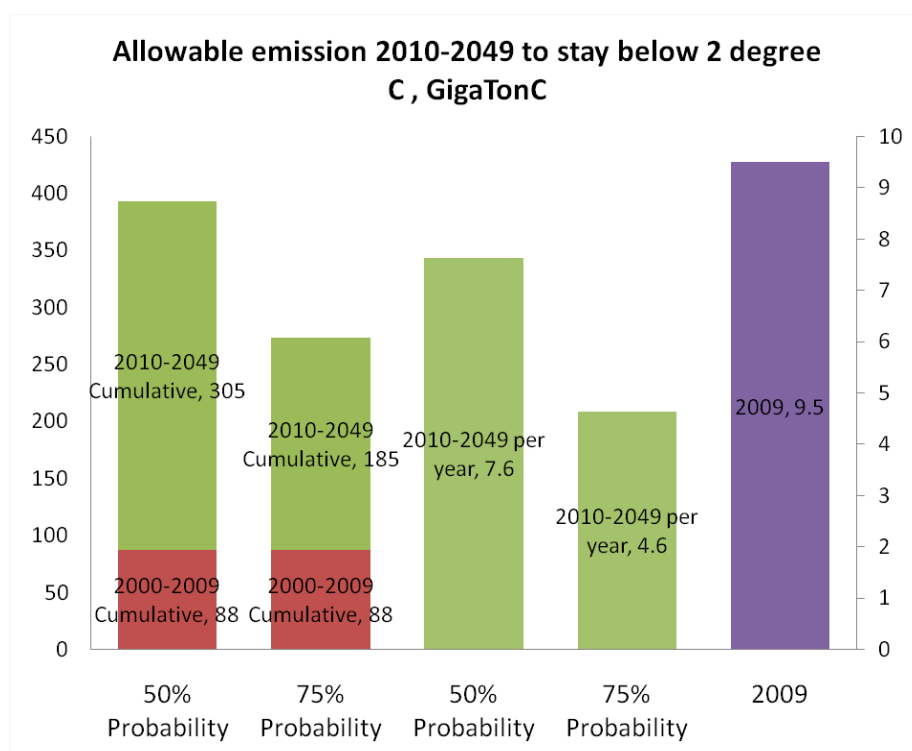


Figure 2. Allowable cumulative emission quota for 2010-2049 to stay below 2 degree C by end of the century (first two bars from left), per-year quotas left (third and fourth bar from the left) and our actual emissions in 2009 (purple bar). Source: Estimation by S. Dhakal based on M Meinshausen *et al. Nature* 458, 1158-1162.

2.0 Methodology

Organisation of the capacity building workshop on Carbon Governance in Asia started with the acceptance of the proposal by APN and could build upon thoughts and ideas already incorporated in the proposal as well as on discussions between the proponents and other relevant actors. Amongst others, these discussions and consultations lead to the inclusion of the United Nations Institute for Advanced Studies (UNU-IAS) as third partner organization. The flow of the activities and process that started with consultations within the project proponents and few selected lead scientists and resulted in the successful completion of the workshop is shown in Figure 3 below. The timeline of the project is depicted in Figure 4.

2.1. Selection and roles of Participants and Lead Scientists

Joint social and natural science research on carbon governance must bring together a variety of disciplines because only integrated solutions can ensure a sustainable co-evolution of natural and socio-economic systems that are a precondition to mitigation of and adaptation to climate change. Research must be international but also draw on regional, national and local experiences and insights and offer solutions to local and regional governance problems. Consequently, the workshop

brought together researchers from the multiple disciplines, and multiple countries in the Asia Pacific region, to address the low-carbon development pathway for Asia. See Figure 5 for an illustration of the diversity of the participants.

The selection of participants as well as their roles during the workshop varied for the four categories of attendees.

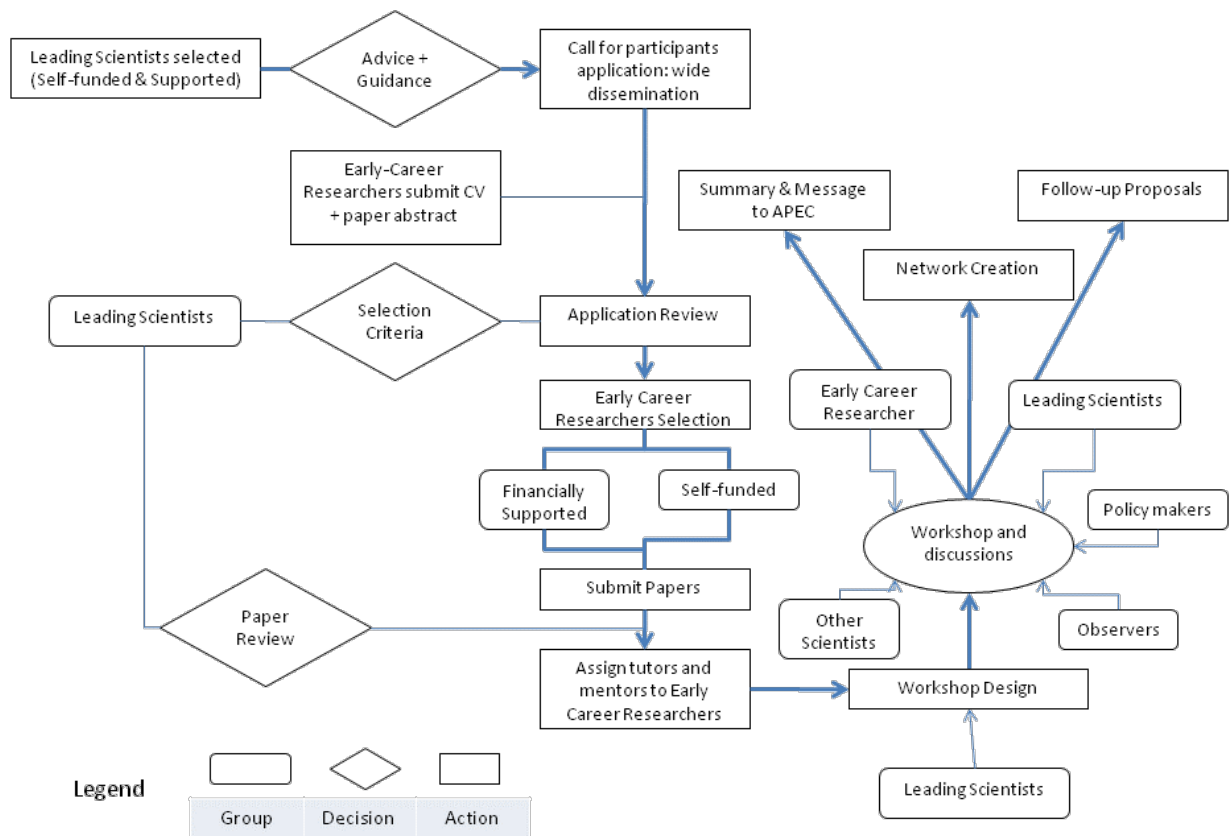


Figure 3. Flow chart of capacity building organization process

Project Activities	2010/2011							
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec - Feb
Organisation (logistics, administration, content preparation, communication etc.)								
Invitation of and arrangements with leading researchers.								
Distribution of the Call for Applications for the early-career researchers & application period								
Review process of the application of early-career researchers.								

Online content preparation, discussion, and information sharing								
Workshop organization								
Reporting (content), workshop follow up, publicity								
APN project & financial reporting								

Figure 4. Timeline of the Project

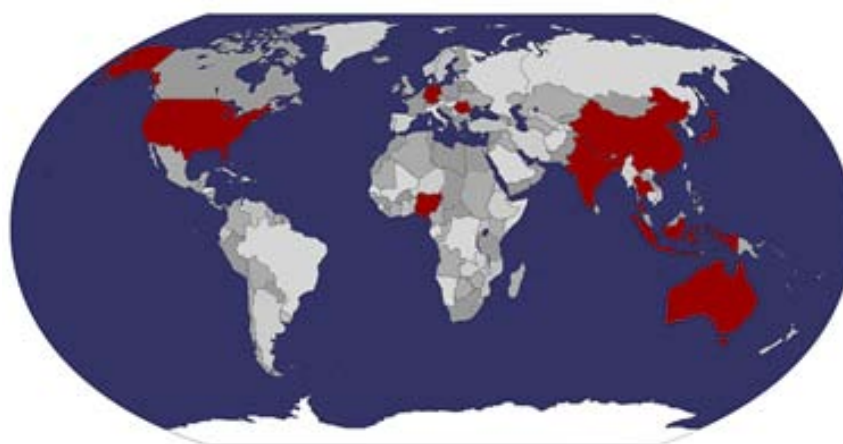
2.1.1. Lead Scientists

The Lead Scientists provided needed and valuable assistance to and guidance in the drafting of the Call for Application and in its disseminating to a wide audience in the Asia Pacific region. They also assisted in the evaluation of the early career researchers to be selected based on their abstracts and the set criteria. Lead Scientists mentored the early career researchers assigned to them by reading their papers before-hand, tutoring them during the workshop, taking lead in the thematic discussions during the workshop, and providing suggestions and feedbacks to improve the research being carried out by the early career researcher.

The six leading international experts from the Asian Pacific region have been selected and invited by the organizers of the workshop in close consultations with the Scientific Steering Committees of the Global Carbon Project and the Earth System Governance Project. Important in this selection has been first and foremost internationally recognized expertise in the area of carbon governance. In addition, the organizers have taken into account that these scientists should cover a wide range of academic backgrounds, come from a large number of countries in the Asia Pacific region, and have done relevant research, are well rooted in their own disciplines but open to an interdisciplinary approach as well as that they are affiliated to or familiar the Global Carbon Project or the Earth System Governance Project. While of course compromises had to be made as not all invited lead scientists could fit participation in their schedule, a well balanced and highly qualified group of lead scientists attended and contributed to the capacity building workshop:

- Michele Betsill, Colorado State University, USA (and member, Scientific Steering Committee Earth System Governance Project)
- Ma Zhong, Renmin University, China (and Associate Faculty of the Earth System Governance Project)
- Yasuko Kameyama, Center for Global Environmental Research, NIES, Japan
- Elizabeth L. Malone, Joint Global Change Research Institute, Pacific Northwest National Laboratory, USA (and Associate Faculty of the Earth System Governance Project)
- Lorraine Elliott, the Australian National University, Australia
- Jeffrey Broadbent, Institute for Global Studies, University of Minnesota, USA

For profiles of the lead scientists see <http://www.gcp-urcm.org/CG/Participants>.



Map Legend:  Participants' Country



Map created with: [© worldmapmaker.com](http://worldmapmaker.com)

Figure 5. Graphic overview of the diversity of participants

2.1.2. Early Career Scientists

Early career researchers were the key targets of the capacity building workshop. In total 12 early-career researchers from the Asia Pacific region attended the workshop. These have been selected through a competitive selection process.

Applicants were requested to submit a resume and a summary of the research to be presented at the workshop in response to the Call for Papers (Appendix 3). The initial deadline of 15 June has been extended to 15 July. By that extended deadline, 88 complete applications had been received (see Appendix 4 for an overview). All complete applications have then been reviewed by at least 3 of the lead scientists or organizers.

Given the nature of the workshop as capacity building event and that in addition to scientific quality, also gender and country of origin had to be taken into account in the selection process – with an emphasis on participation of developing country participants – a double blind comprehensive review system has not been applied. Instead, the organizers opted for a simple (also less time intensive) binary assessment. That is, based on the criteria below, reviewers have been asked to indicate those abstracts that they would like to see presented at the workshop with YES, and those that they considered unsuitable with NO. Reviewers could leave abstracts without assessment.

The selection criteria have been:

- Scientific quality
- Fit to the thematic background of the workshop
- Potential to contribute to the objectives of the workshop

The average grade resulting from the review process, and in case of equal average grades gender and country of origin have been used to determine the final selection of participants by the three organizers of the workshop.

The selected early career researchers have been:

- Jue Yang, China, Ph.D. student in the field of Environmental Studies at University of Tsukuba, Japan.
- Xin Tian, China, research assistant for GCOE program, Graduate School of Environmental Studies, Nagoya University, Japan.
- Aumnad Phdungsilp, Thailand, lecturer at Department of Energy Management of Dhurakij Pundit University, Bangkok, Thailand.
- Tek Jung Mahat, Nepal, management of APMN, the Asia Pacific Node of Global Mountain Forum in Nepal.
- Liguang Liu, China, PhD candidate in the Department of Public Administration at Florida International University (FIU) in Miami, USA.
- Wanxin Li, China, Tsinghua University.
- Anar Koli, Bangladeshi, PhD candidate at University of Tsukuba, Japan
- Joni Jupesta, Indonesia, PhD Fellow at the United Nations University Institute of Advanced Studies, Japan.
- Yogesh Jadhav, India, PhD candidate at Devi Ahilya University, Indore.
- Tim Cadman, Australia, Sustainable Business Fellow in the Faculty of Business at University of Southern Queensland.
- Amir Bashir Bazaz, India, PhD with the Public Systems Group at Indian Institute of Management Ahmedabad.
- Julius Ibukun Agboola, Nigeria, UNU IAS Postdoctoral Fellow with the Marine Governance and Coastal Management team at UNU Operating Unit Ishikawa/Kanazawa

2.1.3. Observers

In addition to the leading researchers and early-career researchers, the workshop has been open for all researchers, students, and policy makers interested in carbon governance in Asia. This opportunity has been widely advertised in particular within the Japanese scientific community on global environmental change research and the related institutions. These participants were merely observers. Observer status has also been offered to those applicants with a very good average grade who however could not be selected because of financial constraints and the need for a balanced group of researchers (in terms of origin, gender, and discipline).

Observers could fully participate in the discussions but did not have an opportunity to present their own research and were not eligible for financial support. Observers at the workshop have been:

- Kenshi Baba, Central Research Institute of Electric Power Industry
- Lee Soo Cheol, Meijo University
- Lauren E. Eastwood, Department of Sociology State University of New York
- Kikuko Shoyama, NIES
- Dong-Ae Shin, Kitakyushu University
- Kun Zhang, Forestry and Forest Products Research Institute
- Mikiko Uchiyama, City of Yokohama

- Christopher Hobson, UNU-IAS
- Hidenori Nakamura, IGES

2.1.4. Policy makers

The workshop also aimed to expose participants with the practical realm of the policy and decision making at multiple level of the governments. Three seasoned and important persons with firsthand experience in policy making and implementation of policies from the Ministry of Environment Japan and the Tokyo Metropolitan Government have been invited and contributed to the workshop:

- Kazuhiko Takemoto, senior fellow UNU-IAS and former Vice-Minister for Global Environmental Affairs at the Japanese Ministry of the Environment (MOE)
- Toshiko Chiba, Tokyo Metropolitan Government
- Yuko Nishida, Tokyo Metropolitan Government

2.1.4. Other Contributors

In addition, the workshop invited few key experts in Japan for presentation and interactions with the participants. Their presentations filled some existing gaps in the expertise of the Lead Scientists as well as provided important information on the various institutions that are working on improved carbon governance or related topics from research and policy viewpoints. These contributors were:

- Tetsuro Fujitsuka, director, Asia-Pacific Network for Global Change Research
- Kristine Garcia, coordinator, Asia-Pacific Network for Global Change Research
- Dr Yoshiki Yamagata, special senior researcher, National Institute for Environmental Studies (NIES)
- Dr. Hwan Ok Ma, project manager, International Tropical Timber Organization (ITTO)
- Prof. Govindan Parayil, Director UNU-IAS and vice-rector UNU.

2.2 Web-space for discussions prior to the Workshop

Once early-career researchers were selected and ready to send their papers, participants were invited to also use a web-based workshop forum (<http://www.earthsystemgovernance.org/forum/>) hosted on the ESG website for further discussions.

2.3. Design and rationale of Workshop Programme



The workshop has been built on a combination of Plenary Sessions and the Working Sessions. The Plenary Sessions were designed to provide introductory talks, overarching but thematic talks by Lead Scientists and other contributors, and to conduct the collective discussions.

The Parallel Working Sessions were designed for focused discussions that provided venue for presentations by early career researchers and in-depth discussions on the topic. Each Working Session was tutored by a senior scientist. Participants were asked to stay in their designated groups (group A or group B, see Appendix 1) for all the Parallel Working Sessions during the entire workshop to enable focused and continued discussions on multiple aspects of carbon governance.

The overall structure of the workshop is shown below. A detailed program of the Workshop is available in Appendix 1 and also at <http://www.gcp-urcm.org/CG/Presentations>:

- Opening session
- Plenary Session 1: Introduction on Governance and Carbon Management
- Plenary Session 2: Governance and Carbon Management
- Parallel Working Sessions 1
 - Frameworks to Manage Carbon
 - Carbon Governance
- Plenary Session 3: National Regimes on Carbon Management
- Plenary Session 4: REDD Regime in Carbon Governance
- Plenary Session 5: Climate Change Sociology and Network Analysis
- Plenary Session 6: International and Sub-national Regimes on Carbon Governance
- Plenary Session 7: Policy Maker Perspectives
- Working Sessions 2
 - REDD in Carbon Governance
 - Social Networks
- Working Sessions 3
 - REDD In Community Forest Management
 - Transition to Low Carbon Economies
- Plenary Session 8: Reports from Working Sessions
 - Main Lessons: Opportunities, Obstacles and Recommendations to Improve Carbon Governance in Asia
- Closing Session

3.0 Results & Discussion

Plenary Session 1, Introduction on Governance and Carbon Management: This session was dedicated to familiarize the participants with the key issues of governance and carbon management. It presented the state of global CO₂ emissions and underscored the urgency and need for carbon management and why carbon management is challenging. Various element of carbon governance discourse were introduced such as architecture, agency, adaptiveness, accountability, allocation and access and how power, knowledge, norms and scale shapes carbon governance. This session also

presented the ongoing research and activities of the Earth System Governance Project and the Global Carbon Project.

Plenary Session 2, Governance and Carbon Management: This session focused on three aspects of governance and carbon management. The first was on the intricate inter-linkages between society, carbon and climate and the dynamics leading to multiple outcomes. The second was on the issue of multilevel governance of carbon with the recognition that there exist differences in the ability to influence and operate for agencies and stakeholders at different levels for carbon management. The third was on democratizing carbon governance by addressing issues such as transparency, representativeness, participatory, accessibility, accountability, responsiveness and others.

Parallel Working Sessions 1: This session, consisting of presentations from early career researchers on their ongoing research, had two parallel sessions. The first focused various mechanisms such as Strategic Institutional Framework (SIF) and Financial Mechanisms that are related to carbon management and are being used, with examples from China and other parts of Asia. The second was focused on the possible opportunities for regionally integrated carbon governance structure and the issue of governance capacity with examples from environmental governance capacities in China.

Plenary Session 3, National Regimes on Carbon Management: This session covered two very important and ongoing debates in the carbon governance context that applied to national regimes. The first was the relevance, opportunities and barriers for application of Border Adjustment Measures (BAMs) in involving Japan, EU and USA, meaning the imposition of extra carbon charges at the national border, to level playing field of goods that are produced in-country or imported taking into account implementation of emission reduction policies. The second was the scenario and opportunities for China for low carbon development pathways with three pillars - energy efficiency improvements, optimized industrial structure and, optimized energy structure with more renewable and reduced coal consumption.

Plenary Session 4, REDD Regime in Carbon Governance: Given significant interests of early careers researches on forest and carbon governance topic, a special session on REDD was organized by inviting presentation from an expert from International Tropical Timber Organization in this session. It highlighted the ongoing international developments, issues, challenges and opportunities for governance and planning of REDD+.

Plenary Session 5, Climate Change Sociology and Network Analysis: This session was focused on Social Networking Analyses as a methodological tool to understand the process and dynamics that governs the key aspects of international environmental regimes, especially carbon management regime. Questions such as, why social network matter, what kind of social network leads to different outcomes, were presented and discussed.

Plenary Session 6, International and Sub-national Regimes on Carbon Governance: Sub-national governments have played important roles in climate change policies, even though the focus of media and literature concerned with climate change is mostly on debates at the global or country level. This session presented the case of Japan, Brazil and Germany and discussed opportunities and challenges.

Plenary Session 7, Policy Maker Perspectives: This session provided opportunities for participants to interact with the actual decision makers who were involved in the policy making and implementation at national and local governments in Japan. A former vice minister of Ministry of Environment and in-charge of climate policy in Japan presented the experience of Japan in climate policy highlighting challenges and opportunities. Two key persons involved in formulating and implementing carbon policy of Tokyo, specifically in implementing the famous carbon cap-and-trade system of Tokyo- the first such system implemented in cities, presented and interacted in this session.

Parallel working Sessions 2: This session, consisting of presentations from early career researchers on their ongoing research, had two parallel sessions with ample time for presentations and discussions. The first working session was on REDD in the carbon governance context, that covered two topics- participatory governance issue in Indian tropical forests and the evaluation of governance quality of UN REDD+ program. The second working session was devoted to social network analyses where presentation and discussion were made on network analyses of treaty ratification and network development in China's climate change governance.

Parallel working Sessions 3: This session, consisting of presentations from early career researchers on their ongoing research, had two parallel sessions. The first was on REDD and community forestry. In this, presenters discussed the case of Nepal and Bangladesh and raised the issues of governance and payment system in Nepal and the land tenure in Bangladesh. The second working session was focused on energy issues for low carbon economy where how to govern low carbon transition in Thailand and intricate linkages of energy, carbon and economic development in Indonesia were discussed and deliberated.

Plenary Session 8, Reports from Working Sessions: This session invited working session chairs to reflect upon the discussion and conclusion of each of the working sessions and raise lessons learned from discussions on opportunities, obstacles and recommendations to improve carbon governance in Asia.

The workshop also provided message on carbon governance to the APEC Summit which was going to happen the following week at the same premise (attached in Appendix 8).

4.0 Conclusions

In total, 25 presentations were made in this three-day-workshop, out of which 12 was made by the early career researchers. The workshop brought together a balanced, interesting and well collaborating group of senior scientist and early career researchers from across the region and various natural- and social sciences to enhance their interdisciplinary capacity, stimulate dialogue, and initiate disciplinary synergies toward sustainable development. The human network developed in this program has potentials to harness further with focused and thematic work on carbon governance.

The process of engagement and interaction before the workshop and during the workshop, including over lunches and dinners, built the capacity of young researchers. It enabled them to present their

research at an international workshop and to receive feedback and support from established colleagues, and bringing these young researchers in contact with the regional and global research communities and projects. The testimony expressed by early career researchers, after the workshop, on the value of this workshop and knowledge they gained are mentioned in Appendix 6.

The workshop also provided substance and helped in operationalizing the Science Plans of the Earth System Governance Project and the Global Carbon Project (two Key programs of Global Environmental Change Science Community) through initializing the flagship joint activities in carbon management and governance. This is an exemplary joint collaboration within the programs and a format that could inspire future inter-project and inter-programme collaborations.

The workshop concluded that the pathways of regional development are sequences of interrelated changes in social, economic and governance systems. They vary from place to place and over time, are based on different drivers and problem perceptions in ways that are likely to have different consequences on how carbon governance is being shaped. It is very clear from the workshop that one size does not fit all and an in-depth understanding of the various approaches and process is key to design better carbon governance systems at multiple scales.

Carbon governance takes place at local, national and regional level and between these levels. Thus it is a multilevel governance challenge that should include actors and agents at all levels. These actors are increasingly non-state actors like broader market, environmental advocacy groups, community groups, businesses, and scientific networks. The presentations made in the workshop on the nature of carbon governance in forests and energy clearly stressed this fact. Thus the workshop emphasized that this multilevel characteristic requires a better scientific understanding and political awareness of norms and standards in carbon governance. Norms that are compatible between levels and policy domains while in parallel reflect that carbon governance is embedded in different cultural, social, economical, and political contexts.

One of the key lessons of this capacity building activity underscores the need for such activities further and training young researchers on how to focus on research issues given a broader set of issues. The young researchers were selected in this activity through rigorous process of evaluation. Still there was a realization to the PIs and the senior scholars that they need substantial support to focus their research and to fine-tune the research approach and papers. The conceptual framing part was relatively weak and early career researchers generally lacked necessary methodological and theoretical foundations and reflexive capacities. A significant amount of the submitted applications also showed a serious lack of skills in scientific writing of abstracts but even in writing application letters and professional communication. As a result, despite that only the best candidates have been selected, and that they submitted full papers, molding those papers into publishable form with good quality will require substantial additional efforts. Interactions like those prior to and at the capacity building workshop do however substantially help them in their capacity building as a scholars.

5.0 Future Directions

There is a good opportunity to use human network developed in this workshop to follow up to develop thematic focused groups related to carbon governance issues and opportunities in relation

to three topics:

- REDD+
- Energy systems, and
- The multi-level governance

The Global Carbon Project and Earth System Governance Project will follow up the outcomes of this workshop and try to engage this group for their follow-up activities as much as possible. Lead Scientists and the PIs had a feeling that a substantial amount of time will be needed to help young researchers to modify and revise their presented paper in order to make them suitable for publications, either in an edited volume or as journal articles. However, PIs with explore such possibilities within their capacity.

References

Appendices

Appendix 1 – Workshop agenda/programme

Appendix 2 - Participants list

Appendix 3 - Call for Papers

Appendix 4- Overview of all submitted complete applications

Appendix 5 - Funding sources outside the APN

Appendix 6- List of Young Scientists and their messages

Appendix 7- Profile of participants

Appendix 8 – APEC message and summary

Glossary of Terms

APEC	Asia Pacific Economic Forum
APN	Asia Pacific Network for Global Change Research
ESG	Earth System Governance Project
ESSP	Earth System Science Partnership
GCP	Global Carbon Project
IHDP	International Human Dimensions Programme on Global Environmental Change
ITTO	International Tropical Timber Organisation
UNU-IAS	United Nations University Institute for Advanced Studies

In the Appendix section, the report does not included PowerPoint slides of presentations but all are available electronically at <http://www.gcp-urcm.org/CG/Presentations>.

Appendix 1: Workshop Agenda/Programme

Monday, 1 November 2011

08.30 – 9.00	Registration	
9.00 – 10:30	Opening session	
	Chair: <i>Ruben Zondervan</i> (ESG)	
9.00-9.10	Welcome – IAS, <i>Govindan Parayil</i> (Director UNU-IAS, and vice-rector UNU)	
9.10-9.35	Welcome – <i>Tetsuro Fujitsuka</i> (APN Director) and <i>Kristine Garcia</i> (APN)	
9.35-10.00	Welcome and workshop Introduction, <i>Shobhakar Dhakal</i> (GCP)	
10.00- 10.30	Tour de Table – introduction participants	
10.30 – 11.00	<i>Coffee Break</i>	
11.00 – 12.30	Plenary Session 1: Introduction on Governance and Carbon Management	
	Chair: <i>Jose Puppim de Oliveira</i> (UNU-IAS)	
11.00- 11.45	Presentation <i>Ruben Zondervan</i> (ESG) “Earth System Governance – A Research Framework”	
11.45– 12.30	Presentation <i>Shobhakar Dhakal</i> (GCP) “Overview of Global Carbon Emissions and the Nature of Carbon Management Challenges”	
12.30 – 14.00	<i>Lunch</i>	
14.00 – 16.00	Plenary Session 2: Governance and Carbon Management [theoretical / methodological session]	
	Chair: <i>Shobhakar Dhakal</i> (GCP)	
	Presentation <i>Lorraine Elliott</i> (Australian National University) “Democratising Carbon Governance”	
	Presentation <i>Elizabeth Malone</i> (Joint Global Change Research Institute) “Society, Carbon and Climate: Linkages and Implications”	
	Presentation <i>Michele Betsill</i> (Colorado State University) “Cities and the Multilevel Governance of Climate Change”	
	Q&A and Discussion	
16.00 – 16.30	<i>Coffee Break</i>	
16.30 – 18.00	Working Sessions	
	Frameworks to Manage Carbon (WS 1A)	Carbon Governance (WS 1B)
	Tutor: <i>Michele</i>	Tutor: <i>Ma Zhong</i>

	<i>Betsill</i>	
	Presentation <i>Xin Tian</i>	Presentation <i>Amir Bashir Bazaz</i>
	Presentation <i>Julius Ibukun Agboola</i>	Presentation <i>Wanxin Li</i>
	Discussion	Discussion
18.30 -	<i>Joint Dinner</i>	

Monday, 2 November 2011

09.00 – 10.30	Plenary Session 3: National Regimes on Carbon Management
	Chair <i>Tetsuro Fujitsuka</i> (APN Director)
	Presentation <i>Yasuko Kameyama</i> “Border Adjustment in Japanese Climate Policy: why they do not care for it”
	Presentation <i>Ma Zhong</i> (Renmin University) “Energy Efficiency, Emission Reduction and Low Carbon Development in the Context of China’s Rapid Economic Growth”
	Q&A and Discussion
10.30 – 11.00	<i>Coffee Break</i>
11.00 – 12.00	Plenary Session 4: REDD Regime in Carbon Governance Context
	Chair <i>Shobhakar Dhakal</i> (GCP)
	Presentation <i>Hwan Ok Ma</i> (ITTO) “REDD in Asia”
12.00 – 13.30	<i>Lunch</i>
13.30 – 15.00	Plenary Session 5: Climate Change Sociology and Network Analysis
	Chair: <i>Ruben Zondervan</i> (ESG)
	Presentation <i>Jeffrey Broadbent</i> (University of Minnesota) “COMPON”
	Presentation <i>Yoshiki Yamagata</i> (National Institute for Environmental Studies) “Dynamic Social Network Analysis of the formation of International Environmental Regimes”
	Q&A and Discussion
15.00 – 16.15	Plenary Session 6: International and Sub-national Regimes on Carbon Governance
	Chair <i>Lorraine Elliott</i> (Australian National University)
	Presentation <i>Norichika Kanie</i> (Tokyo Institute of Technology) [title tbc]
	Presentation <i>Jose A Puppim de Oliveira</i> (UNU-IAS) “The Role of Subnational Governments in Carbon Governance”
	Q&A and Discussion
16.15 – 16.30	<i>Coffee Break</i>
16.30 – 18.00	Plenary Session 7: Policy Maker Perspectives
	Chair: <i>Shobhakar Dhakal</i> (GCP)
	Presentation <i>Kazuhiko Takemoto</i> (UNU-IAS) + Q&A “Japan’s Carbon Governance Policies”
	Presentation <i>Toshiko Chiba</i> (and <i>Yuko Nishida</i>) + Q&A “Carbon Governance in

	Tokyo”
18.30 -	Joint Dinner

Tuesday, 3 November 2011

9.00 – 10.30	Working Sessions 2	
	REDD in Carbon Governance (2A)	NETWORKS (WS 2B)
	Tutor: <i>Jose A Puppim de Oliveira</i>	Tutor: <i>Jeffrey Broadbent</i>
	Presentation <i>Yogesh Jadhav</i>	Presentation <i>Jue Yang</i>
	Presentation <i>Tim Cadman</i>	Presentation <i>Liguang Liu</i>
	Discussion	Discussion
10.30 – 11.00	<i>Coffee Break</i>	
11.00 – 12.30	Working Sessions 3	
	REDD ii: COMMUNITY FOREST MANAGEMENT (WS 3A)	TRANSITION TO LOW CARBON ECONOMIES (WS 3B)
	Tutor: <i>Elizabeth Malone</i>	Tutor: <i>Norichika Kanie</i>
	Presentation <i>Anar Koli</i>	Presentation <i>Aumnad Phdungsilp</i>
	Presentation <i>Tek Jung Mahat</i>	Presentation <i>Joni Jupesta</i>
	Discussion	Discussion
12.30– 14.00	<i>Lunch</i>	
14.00 – 15.30	Working Sessions 4 (WRAP UP. MAIN LESSONS: OPPORTUNITIES, OBSTACLES AND RECOMMENDATIONS TO IMPROVE CARBON GOVERNANCE IN ASIA)	
	Group A (WS 4A)	Group B (WS 4B)
	Tutor <i>Shobhakar Dhakal</i>	Tutor <i>Ruben Zondervan</i>
	Rapporteur (TBD)	Rapporteur (TBD)
	Discussion	Discussion
15.30 – 16.00	Plenary Session 8: Reports from Working Sessions	
	Chair: <i>Jose Puppim de Oliveira</i> (UNU-IAS)	
	<i>Rapporteurs WS 4</i>	
16.00 – 16.30	<i>Coffee Break</i>	
16.30 – 17.30	Closing Session	
	Chair: <i>Ruben Zondervan</i> (ESG)	
	Summary	
	Feedback, Next Steps – Follow Up	

Groups

GROUP A: MECHANISMS AND FRAMEWORKS FOR CARBON MANAGEMENT

REDD 1: CARBON GOVERNANCE

Yogesh Jadhav	Linking participatory carbon governance and rural energy systems: lessons from indigenous carbon management practices in Indian tropical forests
Tim Cadman	REDD+ quality of governance in the Asia Pacific Region

REDD 2: COMMUNITY FOREST MANAGEMENT

Anar Koli	The emerging role of community forest management in reducing carbon emission- opportunities and risks of REDD in Bangladesh
Tek Jung Mahat	Developing governance and payment system for Nepal's community forest management under the REDD framework

FRAMEWORKS TO MANAGE CARBON IN ASIA

Xin Tian	Public-private partnership in carbon emissions reduction: an institutional arrangement to facilitate financial capability of public and private sectors
Julius Ibukun Agboola	Strategic Institutional Framework for Carbon Governance in Asia

GROUP B: INSTITUTION BUILDING AND ANALYSES

CARBON GOVERNANCE

Amir Bashir Bazaz	Towards an integrated carbon governance structure in Asia: Context, issues and role of India
Wanxin Li	Unequal distribution of pollution and environmental governance capacity in China and the implications for carbon reduction

NETWORKS

Jue Yang	The Role of Social Networks in Environmental Governance: Applying Social Network Analysis on the Treaty Ratification
Liguang Liu	Network Development in China's Climate Change Governance

TRANSITION TO LOW CARBON ECONOMIES

Aumnad Phdungsilp	Transition Governance for a Low-Carbon Energy System in Thailand
Joni Jupesta	Energy, Climate Change and Economic Development: Indonesia case

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Appendix 3 - Call for Application



Supported by: Asia-Pacific Network
for Global Change Research

CARBON GOVERNANCE IN ASIA: BRIDGING SCALES AND DISCIPLINES

CALL FOR APPLICATIONS

We invite early career-researchers from the member countries of the Asia-Pacific Network for Global Change Research (www.apn-gcr.org) to apply for a capacity building workshop on 'Carbon Governance in Asia: Bridging Scales and Disciplines'.

The workshop will be jointly organized by the Global Carbon Project (www.globalcarbonproject.org), the Earth System Governance Project (www.earthsystemgovernance.org) and the United Nations University Institute of Advanced Studies (UNU-IAS) (<http://www.ias.unu.edu/>) on 1-3 November 2010. The workshop is supported by the Asia-Pacific Network on Global Change Research (www.apn-gcr.org).

KEY DATES

- Deadline for application: **15 July 2010** (extended)
- Notification of acceptance: 15 August 2010
- Full papers due: 1 October 2010

CONCEPT NOTE

Pathways of regional development are sequences of interrelated changes in social, economic and governance systems. They vary from place to place and over time, in ways that are likely to have different net consequences for carbon stocks and fluxes, which in turn may constrain or in other ways feed back upon development processes. Thus, the climate problem is not just a cumulative and systemic problem at the global level but has different features causes, and impacts at different levels of governance. These mutual interdependencies and feedbacks place demands on the science community to establish a common, mutually agreed knowledge base to support policy debate and action, and to develop integrated systems of governance, from the local to the global level, that ensure the sustainable development of the coupled socio-ecological system.

Asia is a key region which is rapidly growing economically. Asian contribution is already dominating the global carbon emissions. It will play a greater role for global carbon management in the foreseeable future. However, within Asia, huge differences in welfare, governance systems, and carbon emission trajectories exist and thus pose a carbon governance challenge. A better understanding of the carbon management challenges across multiple scales is necessary for Asia, which is less understood, as of now. Such understanding will provide important insights to design an optimized carbon governance structure. In order to address this, the workshop aims at bringing together leading and early-career Asian-Pacific researchers from natural- and social sciences, to enhance their interdisciplinary capacity, stimulate dialogue, and initiate disciplinary synergies toward sustainable development.

The workshop will include lectures by leading scientists in the field, and presentations of the papers of early-career participants, as well as extensive opportunities for discussion. The leading researchers for the workshop include:

- **Michele Betsill**, Colorado State University, USA
- **Norichika Kanie**, Tokyo Institute of Technology, Japan
- **Ma Zhong**, Renmin University, China
- **Yasuko Kameyama**, Center for Global Environmental Research, NIES, Japan
- **Ye Qi**, Tsinghua University, China
- **Kevin Gurney**, Purdue University, USA (TBD)

In addition, a number of Japan-based senior scholars and policy-makers will attend and contribute to the workshop.

APPLICATION

Invited to apply are **early-career researchers** (including Ph.D. students) from all scientific disciplines who are working on issues related to carbon governance in Asia and whose country of residence is member of the Asia-Pacific Network on Global Change Research (APN) (www.apn-gcr.org). Preference will be given to scientists from developing countries within the APN region, particularly those not currently receiving funds from APN. Timely submission of the full paper is a requirement and we expect participants to actively prepare for and contribute to the discussions and presentations of the workshop.

To apply, please send a **paper abstract** and **curriculum vitae** to abstracts@earthsystemgovernance.org by **15 July 2010** (extended). The abstract should not exceed 500 words and should be text-only in word-format. All applications will be reviewed by an international review committee. Based on the evaluation of the scientific quality by the review committee and taking into account the need for a balanced group in regard to scientific discipline, geographical background and gender, about a dozen applications will be accepted for participation in the workshop.

The financial support by APN enables us to provide for accommodation and travel costs of accepted participants.

More information is available at: <http://www.gcp-urcm.org/CG>

We are looking forward to your applications,

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Appendix 4- Overview of all submitted complete applications

1	Ajay Singh Nagpure		Emissions of CO2 from road transport in Megacity Delhi: Present and Future Trends (1991-2030)
2	Amir Bashir Bazaz		Towards an integrated carbon governance structure in Asia: Context, issues and role of India
3	Anand Narain Singh	Japan	BIODIVERSITY RECONSTRUCTION ACT AS A TOOL FOR SOIL CARBON SEQUESTRATION IN REHABILITATED COAL MINE SPOIL IN A DRY TROPICAL ENVIRONMENT, INDIA: A CASE STUDY
4	Anar Koli	India	The emerging role of community forest management in reducing carbon emission- opportunities and risks of REDD in Bangladesh
5	Arturo Barrit		Roadmap and Strategy for a Green, Responsible and Appropriate Tourism in Asia
6	Ashwini K Swain Aumnad	India	Governing India's Transition to Clean Energy
7	Phdungsilp	Japan	Transition Governance for a Low-Carbon Energy System in Thailand
8	AZHAN HASAN		TOWARDS LOW-CARBON ECONOMY: IS POLICIES MATTER FOR ENERGY SECTOR?
9	B. W. Pandey Bulganmurun		Spatio-Temporal analysis of Land Use Changes and Carbon Influx in Western Himalaya
10	Tsevegjav Chalaka		Clean Development Mechanism (CDM) as a new opportunity in improving livelihood in developing countries in Asia
11	Fernando		A Life Cycle Assessment (LCA) based application on better Carbon focused taxation support scheme in Asian food production
12	Danesh Miah Dhruba Bijaya		Role of CDM and REDD for forest transition in Bangladesh: learning from the observation of EKC hypothesis
13	G.C.		Carbon Sequestration potential, Spatial Distribution and Uses of Dendrocalamus strictus
14	Dipankar Dey		Expanding markets of the green technology: opportunities initiatives and challenges before China and India
15	Duan Biggs		Maximising local benefits from REDD – lessons from community-based conservation and development
16	Frank Hiroshi Ling		Improving Capacity for Carbon Management: Design of an Asia-Pacific Regional Carbon Calculator
17	He Xu Herminia C.	Japan	How to promote low carbon economy (LCE) through strategic environmental assessment (SEA) in China
18	Tanguilig Hossein Mirshojaeian	Thailand	Institutional Aspects of Local Participatory Strategies in Natural Resource Management
19	Hosseini	India	Asian Good Governance as a Pathway to Carbon Governance: A Spatial Econometric Study
20	Huang Baohua	Japan	Participatory Environmental Education
21	Jati Kusumowati	Philippines	Pro-poor Carbon Governance in Waste Sector. A Case Study of PoA CDM KIPRAH Community-based Solid Waste Management in Indonesia
22	Joni JUPESTA		Energy, Climate Change and Economic Development: Indonesia case
23	Joon Han Josephine	France	Analysis on Korean Newspaper Coverage on Climate Change: Focusing on Conservative, Liberal, and Economic Newspapers
24	Migalbin		THE PINOY CARBON GOVERNANCE: THE CASE OF NORTH COTABATO PROVINCE
25	Jue Yang	Japan	The Role of Social Networks in Environmental Governance: Applying

26	Julius Ibukun AGBOOLA	Japan	Social Network Analysis on the Treaty Ratification Strategic Institutional Framework (SIF) for Carbon Governance in Asia
27	Jun Li		Catalyzing carbon finance for changing urban development pathways in Asian cities
28	Jyoti Bhandari		Spatial Distribution and Carbon Sequestration of Coniferous Forest (Pinus wallichiana) in Lete and Kunjo V.D.C of Mustang District, ACA, Nepal
29	K. Lenin Babu	USA	CDM: Who are the real beneficiaries in non-annex economies: A South Asian Perspective
30	Kevin Roy Serrona		Carbon Governance through the Clean Development Mechanism in the Philippines: Waste Management Sector in Focus
31	Liangchun		
32	DENG Liguang Liu		Carbon Governance in China: Challenges and Opportunities Network Development in China's Climate Change Governance
33	Linda Sukmarini		ROAD TO SUSTAINABLE DEVELOPMENT: STRAIN ENGINEERING FOR EFFECTIVE BIOMASS UTILIZATION
34	LU Heli		Integrating REDD into a Land Option Framework
35	Luciano C. Freitas		Biodiesel policies and their implication on land requirement in Brazil and Indonesia: a comparative assessment
36	M. CHANDRA SEKHAR		IMPACT OF COAL MINING ON WATER QUALITY OF RIVER GODAVARI
37	Manoharan Saravanan		STATUS AND RESEARCH NEEDS: CORBON EMISSION IN INDIA Socio-Ecological Resilience and Adaptive Governance towards Sustainable Resource Management
38	Mari Shioya Masahiko		Carbon Governance for Low-Carbon Asia: the future institutional frameworks for the road transport sector
39	IGUCHI Mohammad		
40	Herman Sulistiyo	Japan	Study on Assessing Electricity Subsidy in Rural Area in Indonesia: Is rural electrification a better solution?
41	Muhammad Adeel		Study of the spatiotemporal patterns in carbon emission in Asia
42	Muhammad Zeeshaan		
43	Shahid Mukesh K.	Australia	Winter Fog in Pakistan and South East Asia Carbon Payment Levels For Forestry Land Use on Reclaimed Mine Lands
44	Gupta Narendra		
45	Mangal Joshi	Nepal	Carbon Governance from Community Development Prospective INTEGRATED FARMING FOR REDUCING LAND DEGRADATION AND CARBON EMISSION IN INDONESIA
46	Ngadi, SP		Urbanization Patterns and the Transport Sector Emissions in the Asia-Pacific: GHG mitigation through land use and transportation planning
47	Noriko Kono Pashupati	Australia	Dichotomy of carbon payment and governance: A critical assessment
48	Chaudhary		A Pilot Scale Study on the SOx and NOx emission in oxyfuel Combustion with limestone injection under lean coal
49	Peng Guo	China	Contentious development? Choices of biofuel production and deforestation in the case of Indonesia
	Per Stromberg		

50	Prateep Chouykerd		Carbon Governance Model in Asia (Developing countries)
51	R Rajesh Babu	India	“To Tax or Not to Tax”: The WTO sustainability of carbon tax Sustainable development and climate change policy in Indian context
52	R. Mohanraj		
53	Rajni Sharma	India	Quantification of CO2 Emission in Indian Pulp and Paper Industry
54	Ram Pandit Sanathanie	China	Forestry sector carbon governance in Nepal: opportunities and challenges
55	Ranasinghe Sandee G.		Carbon sequestration potential in coconut plantations under different growth conditions
56	Recabar Seyed Kamal	China	Factors for an Effective Carbon Management System
57	Vaezi	USA	Moving from Green Government to Green Growth, a Review of Carbon Management in Asia , Human Resource Perspective
58	Shan Huang	South Korea	Advancing Climate Change and Air Quality Strategies by Co-Benefits Approach
59	shen ying		Mutual-win situation between carbon governance, enterprise profit and citizen welfare by optimized cooperation: A case study for more developed and relatively remote cities in China
60	Shijo Joseph		Satellite-based modelling of carbon assimilation in tropical forest types in India
61	Shiying Cao		Experiments and numerical simulation of NOx emissions characteristics under oxy-fuel coal combustion
62	Shuwei ZHANG	Sri Lanka	Sectoral approach as an instrument of carbon governance: potential application and challenge in China’s power sector
63	Simon Højberg		
64	OLSEN Snehashis		Paper on Multilateral Environmental Cooperation in Asia
65	Sarkar		Co-benefits approach in the context of REDD plus governance
66	Sony Pellissery	India	On Climate Discourses and Budgets: State-in-society approach to understand inter-state variations on climate responses in India
67	Sujan Saha	Bangladesh	Bridging CDM and CSR: A way to sustainable way for developing countries and lesson from “a hard country”
68	Suman Ranjan		Sustainability as a ‘state of equilibrium’ -Modeling Asian countries
69	Sensarma	USA	strategy for carbon management negotiation
70	Sundar Layalu		Carbon Footprints of Monks and Neutralization of their Carbon
71	Tapas Ranjan		Scope of Local Government of Bangladesh in Mitigation and Low
72	Chakraborty		Carbon Development
73	Tek Jung Mahat	Nepal	Developing governance and payment system for Nepal’s community forest management under the REDD framework
74	Tim Cadman		REDD+ quality of governance in the Asia Pacific Region
75	Tri Wahyudi		Carbon governance in renewable energy sector within CDM
76	Purnomo		framework: In search of the methodologies simplification
77	Tsolmon		Assessment of Greenhouse Gas Emission of Mongolia: Input-Output
78	Namkhainyam	Australia	Analysis
79	Upendra		
80	Choudhury	India	CARBON GOVERNANCE IN RISING INDIA: ISSUES AND CONCERNS
81	Vi Sa Tu	Vietnam	carbon MANAGEMENT - Is the vietnamese government ready for THAT?
82	Wang Yu		Carbon emission and mitigation potentials for city: the case of Dalian

77	Wanida Wanichpongpan	Japan	Strengthening Policy Institutions as a Key to Sustainable Development and Green Economy in Asia and the Pacific
78	Wanxin LI		Unequal distribution of pollution and environmental governance capacity in China and the implications for carbon reduction
79	Wawan Sujarwo	India	The Potencies of Native Plants As Environment Services Provider in Beratan, Buyan and Tamblingan Lakes Region, Bali, Indonesia
80	Xin Tian	Japan	Public-private partnership in carbon emissions reduction: an institutional arrangement to facilitate financial capability of public and private sectors
81	Yajnamurti Khanal		Soil and vegetation carbon pools in community managed forests in Palpa district, Nepal
82	Yang Shuqian	China	Analysis to the Ways of Co-controlling Carbon Emission and Local Air Pollution in Chinese Transportation Sector
83	Yasuko Kameyama	Japan	Border adjustment in Japanese climate policy: why they do not care for it
84	Yenneti Komalirani Sande G.		GHG EMISSION REDUCTION POTENTIAL FOR INDIAN INDUSTRIAL SECTOR FROM ENERGY EFFICIENCY STRATEGIES—A CASE OF AHMEDABAD CITY
85	Recabar		Factors for an Effective Carbon Management System
86	Yogesh Jadhav	Japan	Linking participatory carbon governance and rural energy systems: lessons from indigenous carbon management practices in Indian tropical forests
87	Yuanling Liu	China	Carbon cycles VS political cycles: An Analysis on the latent obstacle of China's Climate Change Management
88	Zhao Xingshu	China	China's Enhancing Adaptation Capability

Appendix 5- Funding sources outside the APN

A list of agencies, institutions, organisations (governmental, inter-governmental and/or non-governmental), that provided any in-kind support and co-funding for the project and the amount(s) awarded. If possible, please provide an estimate amount.

Support Leveraged:

Budget Secured from Other Sources (Cash and In-kind Contribution)

Activity	Organisation	In-Kind (US\$)	Cash (US\$)
Organisational support	GCP International Project Office	3,000	1,500 ¹
Organisational support	ESG International Project Office	3,000	
Costs of 4 policy/observers	GCP International Project Office		1,800 ²
Support staff	National Institute for Environmental Studies	700 ³	
On site admin support	UNU-IAS	1,000	
Communication	ESG International Project Office	500	
Venue for 3 days	UNU-IAS	2,000	
	Total	10,200	3,300

1. GCP Executive Director and two support staffs (Accommodation: $3 \times 130 \times 3 = 1,170\$$; Daily allowances: $3 \times 25 \times 3 = 225\$$; local transportation: $35 \times 3 = 105 \$$).
2. Accommodation for 3 nights for 4 observers/policy makers ($3 \times 130 \times 4 = 1,560 \$$); local transport costs ($10 \times 4 = 40 \$$), workshop catering costs ($50 \times 4 = 200 \$$)
3. Cost of support staffs (Eriko), 5 days at the rate of 10,000 Yen/day

This does not include support of National Institute for Environmental Studies for agreeing to pay all costs of participation of one of the early career research (Jue). Other un-quantified support includes the time and costs of participation of senior experts of UNU-IAS, Tokyo Government, International Tropical Timber Organization, and National Institute for Environmental Studies.

Appendix 6- List of Young Scientists and their messages

Jue Yang, Ph.D. student in the field of Environmental Studies at University of Tsukuba (yang.jue<at>nies.go.jp)

- Involved in Group B: Institution Building and Analyses
- Presented Research the Project: “The Role of Social Networks in Environmental Governance: Applying Social Network Analysis on the Treaty Ratification”
- **Message:** *“The presentation I did in the ESG-UNU/IAS workshop is about the role of social networks in environmental governance. Social network analysis was applied in this study for investigating the influence on countries' behaviour networks have. The participants in the workshop read my papers and provided valuable comments about my work. Some of them send me their paper and some references to me. I really appreciated them. Also during meals, senior researchers and professors gave me lots of suggestion on my career building. This work shop offered an opportunity to gather researchers from different universities and institutions, and gave our junior researchers very good chance to think about our study and career in different ways.”*

Xin Tian, research assistant for GCOE program, Graduate School of Environmental Studies, Nagoya University, Japan (tianx05<at>gmail.com)

- Involved in Group A: Mechanisms and Frameworks For Carbon Management
- Presented Research the Project: “Public-private partnership in carbon emissions reduction: an institutional arrangement to facilitate financial capability of public and private sectors”

Aumnad Phdungsilp, lecturer at Department of Energy Management of Dhurakij Pundit University, Bangkok, Thailand (Aumnad<at>dpu.ac.th)

- Involved in Group B: Institution Building and Analyses
- Presented Research the Project: “Transition Governance for a Low-Carbon Energy System in Thailand”

Tek Jung Mahat, management of APMN, the Asia Pacific Node of Global Mountain Forum in Nepal (Tmahat<at>icimod.org)

- Involved in Group A: Mechanisms and Frameworks For Carbon Management
- Presented Research the Project:” Public-private partnership in carbon emissions reduction: an institutional arrangement to facilitate”

Liguang Liu, PhD candidate in the Department of Public Administration at Florida International University (FIU) in Miami, USA (lliu003<at>fiu.edu)

- Involved in Group B: Institution Building and Analyses
- Presented Research the Project: “Network Development in China’s Climate Change Governance”
- **Messages:** *“The capacity building workshop examines progress, opportunities, and mechanisms of carbon governance on the local, regional, and global scale. It provides an open forum for diverse intellectual communication among scientists from academia and other research entities. The workshop enriches my knowledge, and encourages further collaboration. It was an exciting and rewarding experience for me”.*

Wanxin Li, City University of Hong Kong; Tsinghua University (wanxin.li<at>cityu.edu.hk; wanxin90<at>tsinghua.edu.cn)

- Involved in Group B: Institution Building and Analyses

- Presented Research the Project: “Unequal distribution of pollution and environmental governance capacity in China and the implications for carbon reduction”
- **Message:** *“The presentations given by the lead scientists were very interesting and eye-opening. They brought with them useful analytical frameworks and interesting international experiences which have broadened my horizon. Besides the lead scientists, I also learned from other workshop participants. They gave me comments and feedback on my paper and raised very good questions. Based on the comments I have revised the paper and submitted to the journal Governance for publication considerations. Beyond the sessions in the meeting rooms, conversations over lunches and dinners were also quite interesting. That has also helped build friendships. In all, the workshop has enhanced my research capacity and broadened my professional network. I am grateful for the organizers for the initiative and hard work behind”.*

Anar Koli, PhD candidate at University of Tsukuba, Japan (anarkoli2002<at>yahoo.com)

- Involved in Group A: Mechanisms and Frameworks For Carbon Management
- Presented Research the Project: “The emerging role of community forest management in reducing carbon emission- opportunities and risks of REDD in Bangladesh”

Joni Jupesta, Indonesia, PhD Fellow at the United Nations University Institute of Advanced Studies (Jjupesta<at>yahoo.com)

- Involved in Group B: Institution Building and Analyses
- Presented Research the Project: “Energy, Climate Change and Economic Development: Indonesia case”

Yogesh Jadhav, India, PhD candidate at Devi Ahilya University (Indore, India) (Ydjadhav<at>gmail.com)

- Involved in Group A: Mechanisms and Frameworks For Carbon Management
- Presented Research the Project: “Linking participatory carbon governance and rural energy systems: lessons from indigenous carbon management practices in Indian tropical forests”

Tim Cadman, Australia, Sustainable Business Fellow in the Faculty of Business at University of Southern Queensland (tim.cadman<at>usq.edu.au)

- Involved in Group A: Mechanisms and Frameworks For Carbon Management
- Presented Research the Project: “REDD+ quality of governance in the Asia Pacific Region”
- **Message:** *“I cannot stress enough what an important networking exercise this proved to be. Not only was the event itself extremely informative, providing a wide range of papers on climate-change related issues in the Asia-Pacific, but also the social opportunities, and the new colleagues met. As a consequence of the workshop I have found new colleagues, with whom I will be writing a paper, but also further contacts, with whom I hope to be collaborating on some funded research. Well done to all. The linkages between UNU-IAS, ESG and GCP worked in great synergy for the benefit of all concerned. The hospitality of our Japanese colleagues was overwhelming! Many many thanks.”*

Amir Bashir Bazaz, India, PhD with the Public Systems Group at Indian Institute of Management Ahmedabad (Amirb<at>iimahd.ernet.in)

- Involved in Group B: Institution Building and Analyses
- Presented Research the Project: “Towards an integrated carbon governance structure in Asia: Context, issues and role of India”
- **Message:** *“Episodic interventions can be life-changing at times. Such was the experience attending the Global Carbon Project workshop at Yokohama. Interacting with the best-known minds from various disciplines, interactive presentation sessions (with ideas and*

concepts flowing freely across) and an aftermath, leading to the realization that issues (global and local) need a multi-disciplinary approach for their resolution; interspersed with a dialogue that is inclusive, pro-active and integrative. The team and the colleagues at the workshop need special accolades for making this event truly memorable for me. Looking forward to many such events in the future!”.

Julius Ibukun Agboola, Nigeria, UNU IAS Postdoctoral Fellow with the Marine Governance and Coastal Management team at Operating Unit Ishikawa/Kanazawa (jb_agboola<at>yahoo.com)

- Involved in Group A: Mechanisms and Frameworks For Carbon Management
- Presented Research the Project: “Strategic Institutional Framework (SIF) for Carbon Governance in Asia”

Appendix 7- Profile of participants

Senior Scientists



Michele Betsill is an Associate Professor of Political Science as well as founder and co-leader of the Environmental Governance Working Group at Colorado State University in the United States. She is also an affiliate of the Center for Multi-scale Modelling of Atmospheric Processes, a US National Science Foundation Science and Technology Center based at Colorado State University.

Michele's research investigates the multiple ways in which climate change is governed from the global to the local level across the public and private spheres, with particular emphasis on how different governance arrangements interact with one another. Her current projects focus on the evolution of carbon markets, the legitimacy of transnational climate governance, and the role of local authorities in transitioning to a clean energy economy. She is co-author (with Harriet Bulkeley, University of Durham) of *Cities and Climate Change: Urban Sustainability and Global Environmental Governance* (Routledge, 2003) as well as numerous articles and book chapters on climate change governance. Michele is a member of the editorial boards of *Global Environmental Politics* and *Environment and Planning C: Policy and Government*. She is also on the Scientific Steering Committee for the Earth System Governance Project of the International Human Dimensions Programme on Global Environmental Change.



Jeffrey Broadbent took a B.A. in Religious Studies—Buddhism (University of California Berkeley 1974), M.A. in Regional Studies-Japan (Harvard University, 1975), and a Ph.D. in Sociology (Harvard University, 1982). For his Ph.D. he analyzed local conflicts over industrial growth and environmental protection in Japan.

Career appointments include Junior Fellow of Society of Fellows (University of Michigan, 1983-1986), Assistant to Associate Professor Department of Sociology, University of Minnesota (1986~current). Books include "Environmental Politics in Japan: Networks of Power and Protest" (Cambridge University Press, 1998) - received two academic awards (American Sociological Association section and Ohira Foundation, Japan); "Comparing Policy Networks: Labor Politics in the United States, Germany and Japan" (co-author, Cambridge University Press 1996); "East Asian Social Movements: Power, Protest

and Change" (co-editor, Springer, 2010). Journal articles include American Sociological Review, Social Problems, Policy Sciences. In his current research he acts as the principal investigator of 20 country study "Comparing Climate Change Policy Networks" (Compon) (National Science Foundation and other funding).

Picture not available

Professor **Lorraine Elliott** is Professor of International Relations in the College of Asia and the Pacific at the Australian National University and formerly Reader in International Relations at the University of Warwick. She has held visiting appointments at the University of Oxford, the London School of Economics and Political Science, the University of Keele, the Free University of Amsterdam and Nanyang Technological University (NTU). Prof. Elliott researches, publishes and teaches in the areas of global and regional (Asia-Pacific) environmental governance; non-traditional security including climate security, human security and environmental security; Australian foreign policy; and transnational environmental crime. She is the author of more than 80 book chapters and journal articles on these topics. Her publications also include books on Antarctic environmental politics, cosmopolitan militaries, and two editions of The Global Politics of the Environment (Palgrave Macmillan 1998 and 2004).

She is currently completing a book on regional environmental governance under the Association of Southeast Asian Nations (ASEAN) and an edited book on comparative environmental regionalism. She has held grants from the Australian Research Council, the Canadian government, the Royal Dutch Academy of Arts and Sciences and the United States Institute of Peace. Prof. Elliott is a member of the Australian Committee of the Council for Security Cooperation Asia Pacific (CSCAP), the Board of Directors for the Academic Council on the United Nations System (ACUNS), the International Advisory Group of the International Human Dimensions Programme (IHDP) Initiative on Global Environmental Change and Human Health, and the Executive of the Environmental Studies Section of the International Studies Association.



Yasuko Kameyama, Ph.D., is a Senior Researcher at the National Institute for Environmental Studies (NIES), Japan. She has been working at NIES since 1992. Her main field of study has been international negotiation and institution on climate change. She has participated in early years of Conference of the Parties (COP) of UN Framework Convention on Climate Change (UNFCCC) as a member of Japanese delegation.

She is a member of several governmental advisory bodies, both at national as well as prefectural and municipal levels. She is associate member of Science Council of Japan, and member of several academic associations on environment and international relations.

She has published many articles and book chapters both in Japanese and English. Some of her recent publications include: “Climate Change in Asia: Perspectives on the Future Climate Regime” (co-authored with Agus P. Sari, Moekti H. Soejachmoen and Norichika Kanie, in 2008, published at United Nations University Press), or “Process Matters: Building a Future Climate Regime with Multi-Processes”, article published in *Climate Policy* journal, in 2007.



Norichika Kanie is an Associate Professor at the Graduate School of Decision Science and Technology, Tokyo Institute of Technology, Japan, and visiting Associate Professor of the United Nations University’s Institute of Advanced Studies. Among others he serves as a scientific steering committee member of the Earth Systems Governance programme of IHDP, and editorial board member of the journal *Global Environmental Governance*. Currently he is a bureau member of the Working Party on Global and Structural Policies (WPGSP) at OECD. From August 2009 to July 2010 he is a Marie Curie Incoming International Fellow of the European Commission and based in Sciences Po. and IDDRI, Paris, France.

His recent publications include “Post-2012 Institutional Architecture to Address Climate Change: A Proposal for Effective Governance. Global Warming and Climate Change”, in Grover, V.I. ed. *Global Warming and Climate Change: Ten Years After Kyoto and Still Counting*, Vol. 2., NH, Science Publishers (2008), and “The long-team challenge of climate change – Possible allocations for Japan and Asian countries in 2050”, in Yasuko Kameyama, Agus P.Sari, Moekti H.Soejachmoen and Norichika Kanie eds. *Climate Change in Asia* United Nations University Press(2008). He received his Ph.D. in Media and Governance from the Keio University.



Professor **Ma Zhong**, Dean and Professor at the School of Environment and Natural Resources, Renmin University of China, specializes in the economic aspects of environmental issues and teaches Environment Economics and Policies at Renmin University. He is the leading scholar in China in researching and implementing environmental economics and market based instruments of environmental management. Ma Zhong has been working extensively with the governments and international funding agencies on a variety of projects in China. He also serves as the director to Beijing Environment and Development Institute (BEDI) and a senior advisor to the China Ministry of Environmental Protection (MEP).



Elizabeth Malone's interests focus on policy-relevant sociological research in global change issues, developing studies that integrate disparate worldviews, data sources, and scientific approaches. Malone was an author and review editor for the most recent assessment of the Intergovernmental Panel on Climate Change, both in impacts, adaptation and vulnerability; and mitigation. In recent years she has, with colleagues, developed structured methods for analyzing country, sector, and local vulnerabilities to climate change. She coordinated and developed the science portion of the U.S. National Intelligence Assessment on Climate Change and coordinated the development of regional reports on scientific knowledge about climate change. She edited, with Steve Rayner, *Human Choice and Climate Change*, a four-volume assessment of social science research relevant to global climate change; they jointly authored the summary volume and an invited paper for *Nature* on the conclusions.

Malone holds a Ph.D. in sociology from the University of Maryland-College Park. Her book *Debating Climate Change* (Earthscan, 2009) uses both discourse analysis and social network analysis to explore bases for agreement in the arguments used in the global climate change debate.

Contributors

Beyond the contributors profiled below, distinguished policy makers and members of the research community will provide an input in the workshop sessions. They include:



Mr. **Tetsuro Fujitsuka** has 25 years of experience in policy making and development in Japanese government. He joined the Ministry of Construction in 1987 as a technical official and worked in various departments in the areas of national development planning, river basin management, water resources development management, natural disaster prevention, water quality management and environment conservation. He also served as a diplomat in Ministry of Foreign Affairs and has an experience of economical and technical cooperation for developing countries in Africa.

During the last 10 years, Mr. Fujitsuka has been in the Environment Agency/Ministry of the Environment and he has been working on basic environment plan, pollution abatement program, life cycle assessment, green purchasing, eco-labelling, CSR, low pollution/energy efficiency vehicle, water management, CDM and co-benefit approaches, etc. He joined a lot of international conferences and workshops for environment management as well as technical assistant activities in developing countries. Recently he served in Indonesia as an environment policy adviser of Japan International Cooperation Agency (JICA) and he joined the Asia Pacific Network for Global Change Research (APN) as the Director of its Secretariat. Mr. Fujitsuka holds graduate and post graduate degrees in Civil Engineering from Gifu University. He is a Professional Engineer in Japan and an APEC Engineer. He is an acting member of Japanese Society of Civil Engineering and Japanese Geotechnical Society.



Ms. **Kristine Garcia** currently works in Asia-Pacific Network for Global Change Research (APN) Secretariat based in Kobe, Japan as Coordinator. She is mainly responsible for and assists in the implementation, administration and management of APN's scientific activities particularly the Annual Calls for Proposals.

Prior to APN, Ms. Garcia worked in Environmental Forestry Programme of the College of Forestry and Natural Resources in University of the Philippines Los Baños as a researcher where she provided technical and administrative support to the foreign and local counterparts of projects related to climate change and watershed management. She was also involved in several projects supported GEF, UNEP and UNITAR. Ms. Garcia completed her degree in Mathematics in University of the Philippines, Los Baños



Dr **Yoshiki Yamagata** was born in Tokyo and graduated from the University of Tokyo (new school on Macro-System Science) in 1985. His Ph.D. thesis was about “Monitoring and modeling of terrestrial ecosystems”. He is currently working at the National Institute for Environmental Studies (NIES) as a Special Senior Researcher. His research topics include: Terrestrial ecosystem monitoring, Land use modeling, Urban & Regional Carbon Management (URCM). He received 1st OZE PRIZE 1998 and has been involved in several international activities such as: Lead Author of IPCC “Special Report on Land Use, Land Use Change and Forestry (LULUCF)”, Scientific Steering Committee (SSC) member of IHDP/Institutional Dimension of Global Environmental Change (IDGEC), ESSP/Global Carbon Project (GCP), Editorial Board of Elsevier journals “Climate Policy”, “Environmental Science and Policy”, and “Applied Energy”.



Toshiko Chiba began her career on Environmental Administration at the Tokyo Metropolitan Government from 1998. After being responsible for the developing of the Environmental Assessment Plan, she became in charge of the Climate Strategy from 2001. During March 2005 to June 2008, she was in charge of the amendment of the Tokyo Metropolitan Government Environmental Security Ordinance. Recently, she has been in charge of planning and operation of the Tokyo Cap-and-Trade Program, a program newly introduced by the June 2008 amendment of the Tokyo Metropolitan Government Environmental Security Ordinance. Toshiko is in her present position from April, 2010.



Yuko Nishida is a Planner for the Policy planning Division, Bureau of Environment, Tokyo Metropolitan Government (TMG). She is specialized in urban sustainable development issues, currently in charge of policy making regarding climate change. Prior to her current position, she worked as an Urban Renewal Planner and Coordinator at the Bureau of Construction from 1983 to 1994. She was also a visiting research associate at the United Nations University from 1996 to 1997. She is in her current position at the Bureau of Environment from 1998. She received her Master in Public Administration from the Kennedy School of Government, Harvard University



Hwan Ok Ma is currently a Project Manager at the International Tropical Timber Organization (ITTO) located in Yokohama, Japan. He holds B.S. degree in forestry from the Korea University, Seoul, Korea and Ph.D. in forest resource economics from the University of Washington, Seattle, USA. He worked as a Deputy Director of the Korea Forest Services before joining ITTO in 1996. His current activities include capacity building to promote climate change mitigation and adaptation activities as well as the conservation of biodiversity in tropical forests in the Asia-Pacific region



Mr. **Kazuhiko Takemoto** started as Senior Fellow to oversee the Education, Sustainability and Ecosystem Assessment Programme, which comprises the following groups: Education for Sustainable Development (ESD), Ecosystem Services Assessment (ESA) and the International Satoyama Initiative (ISI). Mr. Takemoto has extensive experience in the environmental area. Prior to join UNU-IAS, he was Vice-Minister for Global Environmental Affairs at the Japanese Ministry of the Environment (MOE), and has developed policies on international environmental cooperation and global environment, in particular, climate change.

PIs and Organizers



Dr **Shobhakar Dhakal** is one of the two executive directors of the Global Carbon Project. His expertise is on direct and embodied urban energy use and urban carbon emissions quantifications (including key sectors), modeling, policy analyses, and cross-comparative studies and he has over 30 scholarly publications. He was appointed as an IPCC AR5 Coordinating Lead Author for WGIII Ch.12 "Human Settlements, Infrastructure and Spatial Planning". He also leads the Urban and Regional Carbon Management initiative.



Mr Ruben Zondervan is executive officer of the Earth System Governance Project. His current research interests include amongst others the governance of geo-engineering and the policy of sciences. Ruben Zondervan studied political science, modern history, law, and economics in Freiburg im Breisgau and Potsdam, and graduated cum laude in Environment & Resource Management from the VU University Amsterdam. Prior to his current position, he worked at the University Oldenburg, the VU University Amsterdam, the Royal Netherlands Embassy in Riga, and at the Potsdam Institute for Climate Impact Research.



Dr Jose Puppim de Oliveira, organizer and Assistant Director and Senior Research Fellow at the United Nations University Institute of Advanced Studies (UNU-IAS) since August 2009. He has academic interests in the political economy of sustainable development. He is particularly interested in researching patterns of environmental governance and policy implementation at different levels, looking at how global policies are translated into local policy implementation. In UNU-IAS, Jose coordinates the Sustainable Urban Futures programme.

Early Career Researchers



Julius Ibukun Agboola is currently a UNU IAS Postdoctoral Fellow with the Marine Governance and Coastal Management team at Operating Unit Ishikawa/Kanazawa, conducting research on climate change in marine and coastal areas, including its impact on coastal communities, coastal and ocean management, and conservation and sustainable use of marine and coastal biodiversity among other issues.

He had his first and second degrees, respectively, in Fisheries and Aquatic Biology, and Environmental Resources Management from the Lagos State University, Nigeria. With the support of the Japanese Government Scholarship (Monbukagakusho) award, he took his Ph.D. in Environmental Science specializing in Marine Biogeochemistry from the Graduate School of Environmental Science, Hokkaido University, Japan in March 2009.

His research interests span several aspects of global environmental change, including biogeochemical cycle of carbon and nitrogen in coastal ecosystem; land-ocean interaction; biodiversity, and examining the gradients and responses of physical, chemical and biological components of the aquatic ecosystems to environmental change, Also, he is interested in the application of GIS in coastal ecosystem studies and integrating social and biophysical issues for sustainability and climate change research.



Amir Bashir Bazaz is a Doctoral candidate with the Public Systems Group at Indian Institute of Management Ahmedabad. Working on the interface of energy-environment-economy, with other interests in the field of public management, public policy, low carbon societies, urban management, and water-energy nexus. His first degree was awarded in Electrical Engineering and he has over six years of post-degree industrial experience.



Tim Cadman is currently a Sustainable Business Fellow in the Faculty of Business at University of Southern Queensland, and a member of the Australian Centre for Sustainable Business and Development. He recently became a Research fellow of the Earth System Governance network, and is also a member of the editorial board of the new Earthscan Journal of Sustainable Finance & Investment.

Through his work as a practitioner, researcher and teacher, he has been closely engaged in environmental and sustainable trade-related research around the Pacific Rim countries and beyond since 1992 and has travelled widely within the region. His main areas of expertise are in global environmental governance, responsible investment, sustainable forestry, and climate change.

His Ph.D. research was focussed on private sector governance, most notably global non-state market driven systems for environmental management (ISO 14000 series), as well as forest management certification (Forest Stewardship Council - FSC, and the Programme for the Endorsement of Forest Certification schemes - PEFC). He has worked extensively with the forest industry in Australia over the past decade, particularly with those with interests in planted timber

resources, most notably managed investment schemes such as Timbercorp, Integrated Tree Cropping and Hancock Victoria Plantations.



Yogesh Jadhav is presently pursuing his doctoral degree in developmental studies from Devi Ahilya University (Indore, India). His bachelor's degree is in Environmental Sciences and MBA in Forestry Management. An Indian national, he has been working on issues related to environmental governance and natural resources management in India, and his work experience encompasses cross-cutting themes and the sectors of carbon governance, participatory management and integrative approaches of bridging local perspectives with global implications.

Previously he has worked on sustainable forestry governance projects, linking local socio-economic relationships with carbon governance through integration of people's (local) indicators with global scale standards for forestry governance and sustainable carbon management, using an approach based on criteria and indicators.



Joni Jupesta became a Ph.D. Fellow at the United Nations University Institute of Advanced Studies in September 2010 and will continue as Postdoctoral Fellow from October 2010. His research focuses on energy for sustainable development. He is particularly interested in exploring the possibilities to design an energy system for a low carbon society. This work uses an integrated assessment method to scale up science and technology innovation in the energy sector to the policy level.

A native of Indonesia, Joni Jupesta holds a Bachelor of Engineering from the University of Indonesia, a Master of Science degree in Quality, Safety and Environment from the University of Magdeburg, Germany, a Master of Business Administration degree from the Hochschule Esslingen, Germany and a Ph.D. degree obtained at the Department of Management Science and Technology, Tohoku University-Japan. Since October 2007 he conducted his Ph.D. research as a Japanese Government scholar on energy systems to analyze the introduction of biofuel in the transportation sector in Indonesia, from the energy, economics and environmental perspective. He published

his research work in several peer reviewed journals papers: Journal of China Sciences, Sustainability and Applied Energy and forthcoming in Research Policy and Sustainability Accounting, Policy and Management journal. In 2007 he worked as a Research Associate for Sustainable Energy Development at the Department of Energy Systems at the Technische Universität Berlin, Germany. Earlier, in 2001-2003, he worked as a quality engineer in a chemical company in Indonesia.



Anar Koli, a Bangladeshi national, is studying at the University of Tsukuba, Japan as a Ph.D. candidate and doing her research on forest governance and climate change issues. Her major is in International Political Economy and she received two master degrees from two different schools in both social and natural sciences. One Master degree was awarded by the University of Tsukuba with the major in International Political Economy and another Masters degree she earned from the University of Dhaka in Bangladesh in Botany. Her research interest is in sustainable development and climate change, human security, environmental governance, community forest governance.

Before coming to Japan, Anar worked more than 6 years as a NGO professional in Bangladesh on environmental related issues. After receiving her Ph.D. she is planning to work as a researcher in the environmental and sustainable development field.



Wanxin Li went to the City University of Hong Kong in December 2007. She received her Bachelor's in Precision Instruments and Masters in Economics from Tsinghua University. From Virginia Tech, she received her second Masters in Statistics and Ph.D. in Public Administration and Policy. In the past, she has worked with the World Bank, OECD and Tsinghua University. She is interested in studying the interplay between government, business, individuals, and nongovernmental organizations in the context of environmental and social governance.

Her recent publications include journals such as The China Quarterly ("Self-motivated vs. Forced Disclosure of Environmental Information in China—A Comparative Case Study of the Pilot Disclosure

Programs”), Nature (“Small but Effective Moves towards A Greener China”), Public Administration and Development (“Clean Air in Urban China: The Case of Inter-agency Coordination in Chongqing’s Blue Sky Program”) and a publication with the OECD (“Eco-Innovation Policies in the People’s Republic of China”).



Liguang Liu is Ph.D. candidate in the Department of Public Administration at Florida International University (FIU) in Miami, USA. Prior to studying abroad, he was a policy researcher working with Liaoning Development and Reforms Commission in Shenyang, China, and later Chinese Academy of Coal Sciences in Beijing, China. He holds MS in Environmental Policy from Roskilde University, Denmark, MBA from Northeastern University, China, and BS in Applied Mathematics from Liaoning University, China. His areas of research interest include climate change policy and politics, international climate change negotiation, contemporary Chinese politics, environmental program evaluation. His recent work has appeared in such journals as Journal of Environmental Planning and Management, Journal of Knowledge-based Innovation in China, and Public Administration and Development. He expects to graduate from FIU in July, 2011.



Tek Jung Mahat received PG Diploma training in ‘Mountain Environment and Global Change’ from the University of Torino, Italy (2008) and MSc in Environmental Science from the Tribhuvan University, Kathmandu, Nepal (2003). Besides he has undertaken special courses on climate change, sustainability, ICT and environmental communications and youth leadership from various universities and organisations in Hungary, UK, Japan, South Korea and Nepal.

Tek is actively advocating the ‘mountain agenda’ since 2003 and is now responsible for overall management of APMN, the Asia Pacific Node of global Mountain Forum. Author of over two dozen papers, available both online and in print (published in UK, Bolivia, India and Nepal), Tek spent over four years teaching Environmental Education, Environmental Economics, Climate Change, GIS and RS to BSc and higher secondary level students (in TU and HSEB affiliated institutes in

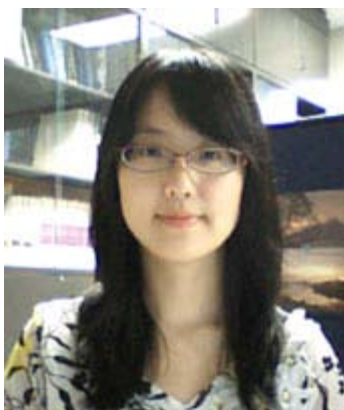
Kathmandu). He pioneered moderated e-dialogue and e-networking among the environment professionals working in Nepal through the establishment of the 'Environment Professionals Group: Water, Climate Change and Biodiversity Information Network', from 2005 and onwards, with membership of over 430 people, and was lead person behind establishment of the Climate Himalaya in Nepal in 2007. Between 1998 and 2007, Tek worked with over twelve national organisations in Nepal, including professional associations and media houses.



Aumnad Phdungsilp is a lecturer at Department of Energy Management of Dhurakij Pundit University, Bangkok, Thailand. He is also a research associate at Division of Building Services Engineering, School of Architecture and the Built Environment, Royal Institute of Technology, Stockholm, Sweden. His work includes research and teaching in the areas of energy and environmental modeling, urban energy use and carbon management, energy and climate policy, and buildings and the built environment. Recent project involvement includes: research policy in the context of sustainable development and low-carbon economy in Thailand; developing methodological framework for urban carbon footprint; and resource-efficient in building sector. Aumnad received his Tekn. Lic. in Energy Technology and his M.Sc. in Sustainable Energy Engineering from Royal Institute of Technology, Sweden.



Xin Tian is a research assistant for GCOE program, Graduate School of Environmental Studies, Nagoya University, Japan. Current research interests are environmental policy, especially environmental finance. Now working on economic policy for reducing regional disequilibrium of carbon emissions in China.



Jue Yang graduated from University of Tsukuba majoring in Policy and Planning Sciences in 2008, where she specialized in environmental assessment of water quality evaluation. In the same year she became a Ph.D. student in the field of Environmental Studies at the same university. She has started her professional career in the National Institute for Environmental Studies (NIES) of Japan in early 2008.

Now, Jue Yang is acting as Assistant Fellow at NIES, working in the area of global environmental research with a focus on environmental governance and environmental agreements using statistical analysis approach. Her particular interest is on the formation of environmental regimes, working together with the University of Arizona. Her personal research interests span a variety of topics in environmental assessment, environmental governance based on social network approach and quantitative analysis. She has also been working in the fields of forest products certification and public opinion in the forest sector and collaborated with the forest program at IIASA, Austria. She is currently finalizing her Ph.D. dissertation on the diffusion of the voluntary-regulation system, especially the diffusion of forest certification.

Capacity Building Workshop on Carbon Governance in Asia: Bridging Scales and Disciplines



Supported by: Asia-Pacific Network
for Global Change Research

*1-3 November 2010
Yokohama (Pacifco Building, APEC meeting site)*

Leading scientists and policy-makers from 10 countries in the Asia Pacific region met in Yokohama to discuss during three days the challenges and opportunities for carbon governance in Asia. The workshop previous to the APEC meeting alerted about the risks of the lack of climate governance in the continent, and urged the APEC leaders to use the APEC meeting this week as an opportunity to coordinate action to tackle climate change in the region urgently.

Even though the per capita emissions are still low in Asia, the continent is already the largest contributor for greenhouse gas emissions worldwide. Moreover, the emissions tend to increase rapidly in the next years, particularly in urban areas, which will contribute to the acceleration of climatic changes and potentially can lead to irreversible consequences. New forms of governance at national and regional level are needed urgently to complement the limited global efforts. The region has also been heavily affected by climatic change, and it is in the region own interest to manage carbon effectively and timely.

Asia is the key region in world to help manage climate change. Asian contribution is already dominating the global carbon emissions. But within Asia, huge differences in welfare, governance systems, and carbon emission trajectories exist, both within as well as between states. These differences influence agenda setting and resource allocations of decision makers who have to manage overlapping as well as conflicting environmental and non environmental policy domains. Future research in the region needs to be integrative, taking into account the inter-linkages between carbon governance and other fields of governance. Asia still has immense development challenges, but has advanced in poverty reduction in the last years.

A key message from the workshop is that pathways of regional development are sequences of interrelated changes in social, economic and governance systems. They vary from place to place and over time, are

based on different drivers and problem perceptions in ways that are likely to have different consequences on how carbon governance is being shaped. Carbon governance takes place at local, national and regional level and between these levels. Thus it is a multilevel governance challenge that includes actors and agents at all levels. These actors are increasingly non-state actors like environmental advocacy groups, businesses, and scientific networks. The workshop emphasized that this multilevel characteristic requires a better scientific understanding and political awareness of norms and standards in carbon governance. Norms that are compatible between levels and policy domains while in parallel reflect that carbon governance is embedded in different cultural, social, economical, and political contexts.

The meeting was organized by the Global Carbon Project, the Earth System Governance Project, and the United Nations University – Institute for Advanced Studies, with the support of the Asia Pacific Network on Global Change Research. A dozen early career researchers from 10 countries in the Asia Pacific region, selected on their potential to become the future academic leaders in the region, attended the workshop. Together with leading scientists from the United States, Australia, Japan, and China, as well as many observers and guest speakers from the academic community and local and national government agencies and international organizations, they addressed the daunting challenges for research and policy of carbon governance in Asia.

Contact and further information:

Capacity building workshop in Carbon Governance in Asia: www.gcp-urcm.org/CG

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