Report on Seminar on Forests and Natural Disasters

Held as a Pre-session Seminar to the 25th session of the Asia-Pacific Forestry Commission

Monday 4 November, Rotorua Energy Events Centre, Rotorua, New Zealand

Introduction

Increasing frequency and intensity of natural disasters all over the world have drawn attention to the need for a more holistic approach in dealing with such natural disasters including floods, landslides, storm surges, tsunamis, earthquakes, cyclonic winds and wildfires. In the period 2002-2011, an average of 268 million people have been affected, annually, by disasters. Floods and storms account for most of the fatalities and damage to property.

Most recent assessments indicate that anthropic factors have significantly enhanced the severity of these disasters and many so-called natural disasters are triggered by human actions, often driven by population expansion and economic development. In the wake of increasing losses of life and damage to property, many countries are making efforts to take preventive measures to minimize damage and to improve their abilities in disaster management, i.e. preparedness, response and recovery.

While disasters have always occurred, there are indications that their frequency and intensity are increasing. In particular, climate change is expected to increase the frequency and intensity of disaster events in the future. The most vulnerable in this regard are the small island developing states (SIDS). Their very existence is being called into question in the context of rising sea levels and the potential for recurring disasters such as typhoons and storm surges. There are also clear indications that the impacts of natural disasters are particularly severe on the poorer segments of society. They often live in the most hazard-prone areas and their ability to take appropriate measures – even when early warnings are available – remains limited.

Background

This seminar was planned to build on the collaborative *International seminar on the role of forests in natural disasters and revival of forests and forestry* held in Sendai, Japan in February 2012. It provided opportunity to showcase extensive work carried out in relation to the role of forests in protecting against and mitigating floods, cyclones, landslides, tsunami impacts and wildfire risks as well as highlighting the use of wood in earthquake rebuilds. The seminar was held as a pre-session event to the 25th session of the Asia-Pacific Forestry Commission.

Objectives

The main objectives of the seminar were to:

- Discuss the current state of knowledge on the role of forests in reducing and mitigating the impacts of natural disasters;
- Examine the human dimensions of natural disasters and the potential role of forests in mitigating disaster-related problems.
- Indicate how forests and forestry could be integrated in the disaster management strategies and plans at the local, national and regional levels.
- Discuss the potential value and a framework for a regional action plan on forests for natural disasters.

Organizers

The seminar was organized by the Food and Agriculture Organization of the United Nations (FAO), Secretariat of the Pacific Community (SPC), and Asia-Pacific Association of Forestry Research Institutions (APAFRI).

Proceedings

Sairusi Bulai, Forestry & Agriculture Diversification Team Leader/ Coordinator, Secretariat of the Pacific Community welcomed participants to the seminar on behalf of SPC. He highlighted the importance of the topic, noting an increasing incidence of natural disaster events in the Asia-Pacific region. He thanked the various collaborative partners, presenters and resource people and looked forward to a highly productive and informative seminar.

Patrick Durst, Senior Forestry Officer, FAO Regional Office for Asia and the Pacific noted that one of FAO's five new Strategic Objectives is to "Increase the resilience of livelihoods to threats and crises", which very clearly links FAO's work in forestry to assisting countries develop capacities in preparedness, response and recovery from natural disasters. He noted that forests, trees and wood can play significant roles in preventing or mitigating the effects of natural disasters, or in the rehabilitation and reconstruction efforts that follow. He emphasized that while the forestry sector can make significant contributions in natural disaster mitigation it is also important to raise awareness of forestry's limitations including to be wary of some common misperceptions about the disaster mitigation capacities of forests, which are not backed up by science. The full text of Mr Durst's remarks is appended in Annex II.

John Moore, Science Leader, Forest Management, Scion Crown Research Institute presented on "Managing wind risk in forests". He initially presented some background to wind damage in Asia and the Pacific, noting that cyclones are a regular occurrence. He outlined a system for risk management in forestry emphasizing that focus should not be on the hazard (i.e. cannot stop the wind blowing), but on managing risk and mitigating impacts. He briefly described some of the modeling of extreme wind events carried out at Scion Research and described a risk assessment framework for wind damage developed in New Zealand, which incorporates parameters such as inventory data, terrain, wind/climate information, with specific wind damage models, software and databases. He explained some specific risks including risks associated with thinning and risks

associated with climate change. Risk management alternatives include acceptance of loss (do nothing), spreading risk through insurance, and reducing loss through improved management – especially in regard to more frequent, less severe events. Measures include species selection, soil cultivation, thinning intensity, etc. For large magnitude, low frequency events that cause massive loss it is often difficult to do much to reduce risk and focus should mainly be on response and recovery.

Hirotaka Ochiai, Director, Research Planning and Coordination Department, Forestry and Forest Products Research Institute, Japan presented on the tsunami mitigating effects of forests in the Great East Japan earthquake. He noted that Japan's coastal forests were primarily established to protect against wind blown sand, salt damage and to protect against storm. He discussed the damage caused to coastal forests in the Tohoku region by the March 2011 tsunami and the extent to which various different forest types mitigated the force of the tsunami. Deep rooted black pine forests offered significant protection. An examination of the relationship between the form of damage and the diameter of trees, as well as the branch height and depth of inundation in Arahama, Sendai, showed a relationship between the extent of flooding of the canopy or foliage and the diameter. At a certain thickness, tree trunks were no longer broken. But uprooting happened regardless of diameter. It is believed that over a certain diameter, the branches are also higher, resulting in less flooding of the canopy, making the trees less prone to damage. He noted that coastal forests also played an important role by trapping flotsam. Various simulation modeling and testing was reported on. Dr. Ochiai also reported on the findings of surveys conducted for the regeneration of damaged coastal forest, carried out by regional research institutions such as the Japanese Forest Society, universities, and other research institutions, as well as government related organizations.

Thomas Enters, Regional Programme Officer, UNEP Regional Office for Asia and the Pacific presented on the topic "*Forests and floods: drowning in fiction or thriving on facts*?" He began by noting that economic losses due to natural disasters in 2011 in Asia-Pacific were estimated at US$294 billion (UNESCAP and UNISDR. 2012). Economic losses due to natural disasters have trended upwards since 1970. Dr Enters outlined the sponge effect theory of the relationship between forests and water including reports in popular media that emphasize the strong relationship between upstream deforestation and downstream flooding. He noted that the theory does not correlate with the evidence. Rather, during major rainfall events (like those that result in massive flooding), especially after prolonged periods of preceding rainfall, the forest soil becomes saturated and water no longer filters into the soil but instead runs off along the soil surface. Despite flooding triggering a logging ban in the upper reaches of the Yangtze River in China research showed deforestation had no influence on the floods. A natural forest can absorb about 30 mm of precipitation. During the monsoon season of 1998, daily precipitation of 40-140 mm was recorded and the monthly rainfall reached 800 mm. In summary, the main factors influencing major flooding given a large rainfall event, are (i) the geomorphology of the area; and (ii) amount of preceding rainfall. During the past decades, it has become clear that enormous changes in the man-made environment have become the primary cause of floods. There is no problem at all until man decides to use some of the natural flood plain for his own use, and chooses to protect against inundation. The best available solutions presently lie in integrated floodplain management including land-use planning measures, structural measures, flood preparedness measures, flood emergency measures.

Peter Moore, MWH Global presented on the topic of "Wildfire science and management: protection and mitigation". Dr. Moore cited Siri Akaakara (Royal Forest Department, Thailand), who said, "There is no honour in fighting a fire that could have been prevented". Our emphasis and focus should be on prevention for the management, investment and the science we apply. He

noted that fires, “Ignite, Spread and Impact”. Fire management aims to prevent or minimize each of these elements. He proposed five “R’s” of fire management:

(i) Research - Data Collection and Analysis
(ii) Risk Reduction - Preventing Fires and Lessening their impact
(iii) Readiness - Preparing to Fight Unwanted Fires
(iv) Response - Fighting Damaging Fires
(v) Recovery - Community Welfare, Infrastructure Repair, Restoring Damaged Landscapes

For each of these points he provided more detailed information on key tools, activities and capacities that should be set in place.

Rex Cruz, Chancellor, University of the Philippines, Los Banos presented on forests and landslides with particular emphasis on findings from 2004 landslides in the Southern Sierra Madres, Philippines. He explained that a landslide is a rapid downslope movement of rock, regolith (unconsolidated material) and soil under force of gravity, usually triggered by precursor weather events, seismic activity, land use. Controlling factors include tectonic, geologic, and geomorphic (slope, slope overburden, forest cover). His presentation demonstrated that the coincidence of topography, geology, soil composition were significant features of landslide prone areas during the typhoon that triggered widespread landslides in the Southern Sierra Madres in 2004. He noted that landslides were triggered by abnormally high rainfall, High rainfall happened toward the end of rainy season when the soil was highly saturated, and most landslides occurred in areas with forests. He concluded that forests cannot prevent landslides due to excessive rain In rain-induced landslides, trees may even contribute by adding weight to the sliding mass. Forests help minimize shallow landslides but not deep seated landslides. Forests can also help in minimizing surface erosion and shallow landslides, in reducing sediment yield, in restoration of eroded lands including landslide areas, in minimizing wind-induced erosion e.g., sand dune expansion. Indirectly sustainable forestry minimizes erosive and destabilizing practices.

Andy Buchanan, Professor of Timber Design, Civil and Natural Resources Engineering, University of Canterbury presented on the topic, “Disaster resistant timber construction”, which particularly focused on technologies developed for rebuilding after the 2010 and 2011 earthquakes in Christchurch. New Zealand. He outlined the basic geomorphology of the earthquakes and discussed the extent of their impacts especially focusing on types of building failures.He noted that wood should be a significant part of the Christchurch rebuild emphasizing that new technologies are enabling multistory wood buildings to be constructed around the world. New materials include Glulam, LVL and CLT. New fasteners include new designs for rivets and screws. He particularly focused on post-tensioned timber frames and walls as an important new technology in constructing disaster resistant wooden buildings. This technology – using flexible cables inside fabricated wooden beams - is being used in various large-scale wood and composite buildings being constructed in New Zealand including in the Christchurch rebuild. He noted that key reasons to use wood include constructability, sustainability, renewability, availability, weight, cost, fire safety, durability, acoustics, and energy.

Rowena Soriaga, Advisor, Asia Forest Network presented on the topic, “Impacts of natural disasters on local communities”. She noted that East Asia and the Pacific accounts for 40 percent of the total floods worldwide over the past 30 years (WB 2013). More than 1.6 billion people affected by disaster in East Asia and the Pacific since 2000 (EM-DAT 2012). Global losses due to disasters in 2011 were estimated at US$380 billion of which East Asia suffered 80 percent. 410 million urban Asians are projected to be at risk of coastal flooding by 2025 (ADB 2012). Events may be small recurrent or rare high-impact. She provided a formula for disaster: Risk = Hazard x Exposure x Vulnerability (R = H x E x V). She discussed the impacts of the 2004 typhoon in the

Philippines on local communities in Quezon Province. Various activities to assist coping, adaptation and recovery were presented. Negative impacts on local communities of the imposition of a logging ban were identified. Health impacts were emphasized. Key questions include: "how can forest departments help local communities and local governments to build resilience"? And "how can the forest sector help affected people recover from natural disasters and rebuild natural capital"?

Tint Lwin Thaung, Executive Director, RECOFTC – The Center for People and Forests presented on the role of forests and forestry in enhancing resilience of local communities. He noted that well-managed forests through participatory management or Community Forestry build social capital that is essential for the resilience of people adapting consequences of natural disasters. Causes and consequences of climate change, especially various natural disasters, were discussed. Including sea-level rise, flood events, droughts, typhoons and landslides. He noted that developing Countries and local people suffer the most from climate change: they cannot afford expensive adaption (like sea walls and irrigation systems); their economies rely more on agriculture and other climate-sensitive sectors; and their public health and other institutions are weaker. He noted that crop yields and water availability are projected to drop most rapidly in tropical and subtropical regions. Dr. Tint suggested that we are witnessing a collision between our civilization and the earth caused by three factors: (i) population explosion; (ii) scientific and technological revolution; and (iii) our way of thinking. He suggested we need to amend our way of thinking in regard to natural resource use and management. He concluded by emphasizing the benefits of community forestry noting that it is a powerful solution for many challenges facing local people and society including improving rural livelihoods, enhancing community governance & empowerment, transforming forest-related conflict, protecting and enhancing the environment and helping to fight climate change. He concluded by identifying several resources and recommendations for supporting and enhancing community resilience.

J.C. Gaillard, Associate Professor, School of Environment, University of Auckland presented on the topic "Ready to fall… or not! The multiple roles of forests in disasters and disaster risk reduction". He identified a triangle of vulnerability based on social, political and economic structures and particularly lack of access to natural and social resources, human and political resources and economic and physical resources. These contribute to vulnerability, especially by driving people to unsafe locations with fragile livelihoods. He noted the importance of enhancing peoples' capacities to cope with disasters. He emphasized that disaster risk reduction entails preventing hazards, reducing exposure, mitigating vulnerability, and enhancing capacities. He elaborated this into a roadmap for disaster risk reduction based on risk assessment, dialogue and action and noting the importance of both top down and bottom up initiatives and utilizing both scientific and local/traditional knowledge.

Adrian Macey, Institute for Governance and Policy Studies, Victoria University of Wellington (Formerly New Zealand Climate Change Ambassador) presented on the topic of Forests, natural disasters and climate change: post 2020 international scenarios. He noted that climate change contributes to natural disasters in forest areas and based on 'business as usual' global emissions growth these will get worse overall. But forests (through deforestation) also contribute to climate change and forests are a regulator of climate. We need to be cognizant of the roles of forests in climate change mitigation, adaptation and disaster risk. Forests have among the most complex roles of any climate factor. He summarized the state of play for forests in various climate change negotiations and outlined an ideal scenario for forestry, which included one system of land use and forestry accounting, payments for ecosystem services through forestry, pre-market REDD available, inclusion in an offset mechanism/international carbon markets, finance available, domestic governance in order, REDD ready and with local/indigenous people engaged. He also

provided several suggestions for how dialogue should advance including reducing some of the baggage attaching to UNFCCC, looking beyond the North/South = rich/poor model, keeping forestry closer to land sector and general climate change policy, pushing hard for evidence-based solutions, not waiting for the UN to deliver - instead countries leading the way. A key for forestry is that without a positive outcome on REDD there will be no broader 2015/2020 outcome agreed.

Powerpoint presentations for all of the technical presentations summarized above are available online at:
http://www.fao.org/asiapacific/rap/home/meetings/list/detail/en/?meetings_id=888&year=2013

To conclude the seminar, Mette Loyche-Wilke, Deputy Director, Forest Assessment, Conservation and Management Division, FAO and Simmathiri Appanah, Climate Change Officer a.i, FAO Regional Office for Asia and the Pacific led a brainstorming session aimed at identifying key elements of a regional action plan on forests and natural disasters.

Participants divided into five groups and were asked to identify elements of a regional action plan based on five key areas: (i) Research; (ii) Risk Reduction; (iii) Readiness; (iv) Response; and (v) Recovery. The raw inputs identified during the brainstorming are listed in Annex 3.

Simmathiri Appanah, Climate Change Officer a.i, FAO Regional Office for Asia and the Pacific concluded the seminar by summarizing the key points in the discussions. He noted that while there are a broad range of natural disasters afflicting the Asia-Pacific region, there are many commonalities in the ways in which forests can be utilized to mitigate the impacts of disasters. He thanked all of the organizers, presenters and participants for their contributions to what was generally agreed to be an excellent event.

ANNEX 1: PROGRAMME

Session	Time	Topic/ Activity	Speaker
Opening session	09.00 – 0905	Welcome	**Sairusi Bulai** Forestry & Agriculture Diversification Team Leader/ Coordinator, Secretariat of the Pacific Community
	09.05 – 09.15	Introduction	**Patrick Durst** Senior Forestry Officer, FAO Regional Office for Asia and the Pacific
Session 1: Forests and natural disasters: The underlying science	**Moderator: Sim Heok-Choh** Executive Director, Asia-Pacific Association of Forestry Research Institutions		
	09.15 – 09.35	Managing wind risk in forests	**John Moore** Science Leader, Forest Management Scion Crown Research Institute
	09.35 – 10.00	The tsunami mitigating effects of forests in the Great East Japan Earthquake	**Hirotaka Ochiai** Director, Research Planning and Coordination Department Forestry and Forest Products Research Institute, Japan.
	10.00 – 10.20	Forests and floods: drowning in fiction or thriving on facts?	**Thomas Enters** Regional Programme Officer UNEP Regional Office for Asia and the Pacific
	10.20 – 10.40	**Coffee break**	
	10.40 – 11.00	Science of wildfire: experiences in protection and mitigation	**Peter Moore** MWH Global
	11.00 – 11.20	Forests and landslides	**Rex Cruz** Chancellor, University of the Philippines, Los Banos
	11.20 – 11.40	Building with wood for earthquake damage-resistant solutions	**Andy Buchanan** Professor of Timber Design, Civil and Natural Resources Engineering, University of Canterbury
	11.40 – 12.30	Discussion	**Moderator**

	12.30 – 14.00 Lunch		
Session 2: Forests and natural disasters: The human dimension	**Moderator: Sairusi Bulai** Forestry & Agriculture Diversification Team Leader/ Coordinator, Secretariat of the Pacific Community		
	14.00 – 14.20	Impacts of natural disasters on local communities	**Rowena Soriaga** Advisor, Asia Forest Network
	14.20 – 14.40	Forests and forestry in enhancing resilience of local communities	**Tint Lwin Thaung** Executive Director, RECOFTC – The Center for People and Forests
	14.40 – 15.00	Ready to fall… or not! The multiple roles of forests in disasters and disaster risk reduction	**J.C. Gaillard** Associate Professor, School of Environment, University of Auckland
	15.00 – 15.30	Discussion	**Moderator**
	15.30 – 16.00	Coffee break	
Session 3: The future: Addressing the uncertainties	**Moderator: Mette Loyche Wilke** Deputy Director, Forest Assessment, Conservation and Management Division, FAO HQs		
	16.00 – 16.20	Future scenarios for people, forests and natural disasters in the context of climate change	**Adrian Macey** Institute for Governance and Policy Studies, VUW. (Formerly New Zealand Climate Change Ambassador)
	16.20 – 16.30	Discussion	**Moderator**
	16.30 – 17.10	Discussion: Coping with disasters – elements of a regional action plan on forests and natural disasters	**Mette Loyche-Wilke** Deputy Director, Forest Assessment, Conservation and Management Division, FAO HQs **Simmathiri Appanah** Climate Change Officer a.i, FAO Regional Office for Asia and the Pacific
Concluding session	17.10 – 17.20	Summing up the deliberations and the way forward	**Simmathiri Appanah** Climate Change Officer a.i, FAO Regional Office for Asia and the Pacific

ANNEX 2: INTRODUCTORY REMARKS BY PATRICK DURST, SENIOR FORESTRY OFFICER, FAO REGIONAL OFFICE OF ASIA AND THE PACIFIC

Ladies and gentlemen,

It's a great pleasure for me to be here this morning to offer a few opening remarks for this very important seminar on behalf of the Food and Agriculture Organization of the United Nations. FAO is giving increasing attention to natural disasters and how we can work to minimize the impacts of such disasters on local people, increase resiliency, and support more effective recovery and rehabilitation. In fact, one of FAO's five new Strategic Objectives is to "Increase the resilience of livelihoods to threats and crises", which very clearly links our work in forestry to assisting countries develop capacities in preparedness, response and recovery from natural disasters. We have also been specifically requested by the 33 member countries of the Asia-Pacific Forestry Commission to give more attention to this important topic, so we are very pleased to have the opportunity to collaborate in organizing this seminar.

Natural disasters have, unfortunately, become commonplace in the Asia-Pacific region in recent times. The Great East Japan earthquake and tsunami of 2011, the 2004 Indian Ocean tsunami, the 2009 Pacific tsunami, the recent Christchurch earthquakes in New Zealand; floods in Thailand and Pakistan; landslides in Philippines and Indonesia – just last week, the devastating bushfires in New South Wales – droughts, cyclones, hurricanes, storms – these and more have all resulted in a tragic death toll and massive destruction in the Asia-Pacific region. Almost every country has been affected by one or more natural disaster during the past decade.

In many cases of natural disasters, forests, trees and wood can play significant roles in preventing or mitigating the effects of natural disasters, or in the rehabilitation and reconstruction efforts that follow. Given the profusion of recent disasters and the likelihood of increasing frequency and severity of climate-related events – including cyclones, floods, landslides, droughts and wildfires – this seminar to discuss the roles that forests can play in natural disasters is extremely timely.

Without doubt, the forestry sector can make significant contributions in natural disaster mitigation and it's very important that we raise awareness of forestry's roles and potential. But, it's also important that we raise awareness of forestry's limitations – including among practitioners within the sector. Forestry should usually be part of a wider set of management measures that will mitigate the impacts of natural disasters. We need to be careful not to over-sell forestry's capacities and benefits, and we particularly need to be wary of some common misperceptions about the disaster mitigation capacities of forests, which are not backed up by science.

On behalf of FAO, I'd like to thank our institutional partners in organizing this event. Particularly the Secretariat for the Pacific Community, which has taken on many of the logistical arrangements for the workshop, and the Asia-Pacific Association of Forestry

Research Institutions (APAFRI), for their support and advice in developing the programme. I'd also like to acknowledge Forestry Agency of the Ministry of Agriculture, Forestry and Fisheries of Japan and the Japan International Cooperation Agency (JICA) with whom we organized a similar earlier seminar in Sendai, Japan in February 2012.

I'd particularly like to thank all our speakers, moderators and panelists for the generous contributions in sharing their time and expertise with us. A brief glance at the programme, shows a world-class line-up of presenters and we can all look forward to an outstanding session.

To just briefly provide some overview to the session, you'll note we've divided the programme into three broad segments.

In the first segment, we'll hear presentations on the physical dimension of forest and natural disasters, some of the underlying science, and ways in which we can manage some of the attenuating risks ¬– with specific topics relating forests to tsunami, floods, wind, wildfires, landslides and earthquakes.

The second segment will deal with the human dimension: impacts on local communities, building resilience, and the multiple roles of forests in disaster risk reduction within a livelihood framework.

The final segment will deal with addressing the uncertainties. We'll hear how the future may unfold in relation to climate change and, to conclude, we'd like to benefit from the expertise assembled here, with a brainstorming exercise to come up with some elements of a regional forestry action plan aimed at helping to enhance capacities for preparedness, response and recovery from natural disasters within the forest sector.

Ladies and gentlemen, we're anticipating an outstanding session, which we in FAO have been looking forward to with great anticipation. I'm sure we will all learn a great deal today at this very timely event, and I'm hopeful that it will catalyze future activities and collaboration, and – most importantly – additional on-the-ground action that effectively maximizes the value of trees and forests in relation to natural disasters.

Thank you.

ANNEX 3: BRAINSTORMING KEY ELEMENTS OF A REGIONAL ACTION PLAN ON FORESTS AND NATURAL DISASTERS

1. Research

National governments:

- Understand how individuals/communities perceive/understand risk in local social-ecological contexts; importance of LEK (local ??? knowledge?), narratives, experience local vs " expert" /technical risk assessment
- Identify how socioeconomic and cultural factors influence response to and preparedness for hazards at local level
- Development of data reporting standards and common frameworks for collecting and sharing information on natural disasters
- Compile disaster history for analysis
- Identify shade tolerant "survival food" crops (e.g. Yams) that can be incorporated in forest restoration programme to help mitigate food scarcity in the wake of disasters
- Show hazard prone areas based on scientific results
- Map hazard-prone areas
- Communicate hazard-prone areas to public options? for reducing risks
- Roles of forests in disaster prevention
- Economic assessment on different scenarios of risk reduction strategy and recovery strategy + at which socioeconomic, biophysical conditions these strategies would work best
- Study trips to successful models relevant to disaster risk reduction in their countries
- Methods for downscaling disaster assessment using participatory approaches
- Identify and mapping risk prone areas
- Identify data gaps
- Develop communication plan
- Documentation

International organizations:

- Support with data sets and access
- More funds for local research on forests and natural disasters
- Pull together info and make it readily available for policymakers and implementers
- Support the study trips
- Impacts of rainfall intensity, duration and other factors on land use and land cover and implications for land use planning
- Knowledge/expertise – sharing best communications methods

2. Risk reduction

National governments:

- Good database to come up with the right decisions (i.e. policies and programmes)
- Communication/use of media
- Forest land use planning
- Build social capital (trust, participation, collaboration of community into research/land use)

- Develop a platform where vulnerable groups (women, children, indigenous people, PWD?) are listed for faster and more targeted response
- Watershed management and integration
- Geohazard mapping

International organizations:
- International standards –building - measurement

3. Readiness

National governments:
- Assistance with infrastructure needed to support recovery
- Better coordination between government and local agencies and research organisations
- Capacity building
- Baseline data/information compiling
- Prepare knowledge products and conduct intensive IEC
- Awareness raising
- Training
- National training to prepare forestry professionals and communities for dealing with key disasters
- Information sharing
- Gather needed basic data
- Develop necessary enabling policies
- Enabling mechanism
- Enabling formal conditions for local adaptiveness

International organizations:
- Capacity building (skills development; planning tools, software/hardware)

4. Response

National governments:
- Capacity in place
- Listen
- Trust the locals
- Rescue
- Support
- Anticipate
- Decentralise

International organizations:
- Capacity building

5. Recovery

National governments:
Close the loop

Evaluating place in system at local scale. Do we rebuild or adapt?
National remote sensing coverage to get information on extent of disaster an to support recovery
Support mechanism
Direct seeding of cover crop species on slides
Build back better, paying attention to resilience
Scale up, build up on experience

<u>International organizations</u>:
Ways of regenerating natural capital of local communities

ANNEX 4: PRESENTER PROFILES

John Moore
Science Leader, Forest Management
Scion Crown Research Institute

John specializes in quantitative silviculture and is a recognized expert on the risk of wind damage to forests and how this is affected by management activities. John's current research is focused on quantifying the effects of forest management on wood quality and the resulting impacts on solid timber performance, tree biomechanics and allometry, including the development of tree biomass functions. John is currently science leader in Forest Management and associate editor of the New Zealand Journal of Forestry Science.

Hirotaka Ochiai
Director, Research Planning and Coordination Department
Forestry and Forest Products Research Institute, Japan.

Dr. Ochiai was employed in 1978 by the Forestry Agency of Japan in the disaster prevention section. He led the study of initiation mechanisms of earthquake-induced landslides, which contributed to forest conservation measures and clarification of mountain disaster mechanism of the 1995 Great Hanshin Earthquake , and 2006 the Niigata Chuetsu Earthquake . He worked in Brazil in 1996 as a long-term expert of JICA, "Sao Paulo State Forestry and Environmental Protection Research Project", and contributed to the enhancement of the research system for erosion protection by forests. He is currently, leading the disaster prevention research, as a Vice President of Japan Landslide Society. He is a member of the "Investigative Commission for reconstruction of coastal forests on the Great East Japan Earthquake".

Thomas Enters
Regional Programme Officer
UNEP Regional Office for Asia and the Pacific

Thomas Enters is currently working as the UNEP UN-REDD Regional Coordinator for Asia and the Pacific at the United Nations Environment Programme in Bangkok, Thailand. Thomas has lived in Asia for the last twenty years working on forestry issues for CIFOR, FAO and RECOFTC and as a freelance consultant. His expertise is being a generalist.

For his PhD he looked into forest and environmental services (including hydrological services) links. He was also one of the lead authors of the FAO/CIFOR publication on "Forest and floods: Drowning in fiction or thriving on facts?", which his presentation is based on.

In his daily life, Thomas battles conventional wisdom and myth, which has earned him praise and criticism, split right in the middle.

Peter Moore
MWH Global

Peter is currently Service Line Leader-Sustainability & Environment Food Security, Carbon and Multi-Lateral Aid at MWH Global. He is also a Director of NRFC Natural Resources Fire & Carbon Ltd.

Peter has more than 30 years of fire management and forestry experience. He completed a PhD on the implementation of prescribed burning policy. He coordinated management of fires during the 1994 NSW bushfire emergency before directing Strategic Planning for State Forests. He has worked as the Coordinator of Project Fire-Fight South East Asia and a Fire Management and Policy Specialist working for WWF, IUCN, TNC, GTZ, South African Department of Water and Forests, DFID, ASEAN and CARE International.

Rex Cruz
Chancellor, University of the Philippines, Los Banos

Dr. Rex Cruz is currently Chancellor of the University of the Philippines, Los Banos. Dr Cruz holds a PhD in Watershed Management from the University of Arizona. Dr. Cruz is an internationally recognized scientist in watershed management, forests and landslides. More recently, he has actively participated in world forums on climate change adaptation and mitigation. Notable among these was in the Inter-governmental Panel on Climate Change (IPCC), Technical Working Group II, which assessed the impacts of climate change and presented mitigation and adaptation measures. The panel won the Nobel Peace Prize in 2007 for its efforts "to build up and disseminate greater knowledge about man-made climate change.

Andy Buchanan
Professor of Timber Design, Civil and Natural Resources Engineering, University of Canterbury

Professor Andy Buchanan is a University of Canterbury engineer who is set to transform the look and feel of the buildings of the future. Professor Buchanan researches new methods of constructing commercial multi-story buildings with timber. Recently Professor Buchanan has been awarded a Queens Service Medal for Public Services and shared best research paper at the 2008 New Zealand Earthquake Engineering Conference. Professor Buchanan is past-president of the New Zealand Timber Design Society, a Fellow of IPENZ and the New Zealand Society for Earthquake Engineering (NZSEE), a member of the Structural Engineering Society (SESOC), Society of Fire Protection Engineers (SFPE), Canterbury Structural Group committee, and is on the editorial board of Fire and Materials Journal and Journal of Wood Science.

Rowena Soriaga
Advisor, Asia Forest Network

Rowena Soriaga currently works as an Advisor to the Asia Forest Network. Her work history also includes as Program Manager to Environmental Science for Social Change with a particular focus on the ESSC Work Program on Risk Resilience. She has also worked as a PES/REDD+ consultant to the Asian Development Bank and has broad experience in community forest management and has been a regular collaborator with a number of key forestry organizations in the Asia-Pacific region including FAO and RECOFTC..

Tint Lwin Thaung
Executive Director, RECOFTC – The Center for People and Forests

Dr. Tint Lwin Thaung is Executive Director RECOFTC – The Center for People and Forests. Dr. Thaung is a Myanmar-born Australian national who has more 30 years of professional experience

in forest management, forest research, and community forestry. Dr. Thaung has worked extensively in the region with particular focus on Papua New Guinea, Thailand, Australia, and Myanmar, where he began his career as a national park warden, moving up to become Country Program Coordinator for the Wildlife Conservation Society and Deputy Country Coordinator for SWISSAID-Myanmar. Dr. Thaung has had a long association with RECOFTC, and community involvement in forest management has been a consistent focus in his professional practice.

J.C. Gaillard
Associate Professor, School of Environment, University of Auckland

Dr. J.C. Gaillard is Associate Professor, School of Environment, University of Auckland. He holds a doctorate from the Université de Savoie in France and has previously worked and taught in Asia, the Pacific and Latin America. His research interests include Disaster risk reduction (DRR), Participatory tools for DRR, Marginalisation and DRR, Small-scale and neglected disasters, Livelihood assessment and strengthening in DRR, and post-disaster resettlement. He has published widely on disaster related topics, most recently co-authoring the publication Disaster management: international lessons in risk reduction, response and recovery.

Adrian Macey
Senior Associate, Institute for Governance and Policy Studies, Victoria University of Wellington

Dr Adrian Macey was New Zealand's first climate change ambassador, from 2006-2010, responsible for international climate change negotiations, coordination of international policy and domestic outreach. In June 2010 he was elected Vice Chair of the UNFCCC Kyoto Protocol negotiations, and then served as Chair for 2011.

In his previous career with the Ministry of Foreign Affairs and Trade he served as Ambassador to France, OECD and Algeria, and Ambassador in Bangkok with responsibilities for Thailand, Cambodia, Laos and Myanmar. He also has experience of international trade negotiations, in both the GATT and the WTO. He was New Zealand's Chief Trade Negotiator from 2000 to 2002.

Mette Loyche-Wilkie
Deputy Director of the Forest Assessment, Management and Conservation Division, FAO

Mette Løyche Wilkie holds a BSc and an MSc in Forestry from the Royal Veterinary and Agricultural University of Copenhagen in Denmark as well as an MSc in Environmental Management from Wye College, University of London.

She has over 25 years of experience in forest assessment and management, focusing primarily on tropical forests. Prior to taking up a position with FAO HQ in Rome in 1998, she spent a total of ten years in Sierra Leone, Bangladesh and the Philippines with short-term missions to several other countries in Asia and Africa.

Her past assignments at FAO HQ includes a position as Forestry Officer, Forest Management and the coordination of FAO's Global Forest Resources Assessments 2005 and 2010. She currently holds the position of Deputy Director of the Forest Assessment, Management and Conservation Division, where she is responsible for the strategic guidance of four teams dealing with forest resources assessment and monitoring, including support to countries to implement REDD+.

Simmathiri Appanah

Climate Change Officer a.i, FAO Regional Office for Asia and the Pacific

Dr. Appanah is presently acting as Climate Change Officer at the FAO Regional Office for Asia and the Pacific. He previously worked as National Forest Programme Adviser at FAO. Among his many roles he had a long history as a Scientist studying dipterocarp regeneration systems and silviculture at the Forest Research Institute of Malaysia.