



FINAL REPORT

NAPA Technical Workshop for Asia LDCs Yogyakarta, Indonesia

31st October - 2nd November 2007



Field visit at Karangduwet Forest



Field visit at Wanagama Forest









NAPA TECHNICAL ASSISTANCE WORKSHOP FOR ASIAN LDCs **FINAL REPORT**

Yogyakarta, Indonesia 31st October-2nd November 2007

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I. EXECUTIVE SUMMARY

This workshop provided a venue for general presentation on NAPA process and GEF funding options as well as hands on work exercises on Step 2 of the process by participating Asian countries with the support of a team of facilitators and agency representatives. In collaboration with the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Institute for Training and Research (UNITAR) is providing technical assistance to least developing countries (LDCs) to finalize national adaptation programmes of action (NAPAs) over the next few months.

This activity aimed towards the successful incorporation of climate change into the NAPAs that will eventually influence policy and find support for funded projects based on the quality of NAPA climate change risks assessment and development of project profiles. The objective of the technical assistance was to support specific Asian LDC country teams in producing and finalising their NAPA documents, in particular, relating to the preparation of Steps 2 and 8 of the NAPA guidelines, and to provide a forum for discussion between national teams finalizing their NAPAs and GEF implementing agencies able to fund resulting projects.

Twelve participants representing national NAPA teams of Afghanistan, Bhutan, Cambodia, Lao PDR, Myanmar, Nepal and Timor-Leste, the UNFCCC secretariat and other relevant agencies attended and provided positive feedback on the opportunities conferred by the workshop in terms of learning about NAPA processes and exchanging information with other NAPA teams and regional experts. Specific outputs of this workshop included an update on the NAPA progress for each participating country team, immediate steps that would be undertaken by the team upon their return to their countries, and a compilation of the specific needs of each country for the successful completion of the NAPA process.

The workshop formed one of other parallel sessions to the Training Workshop on Developing Adaptation Strategies for the Asia and Africa Regions that was organised by the Government of Indonesia and the World Conservation Union (IUCN).

Pedagogical material provided to participants:

- CD ROM "*NAPA Training Workshop for Asian LDCs*, Yogyakarta Indonesia" with all resources available on the <u>www.napa-pana.org</u> (UNFCCC, LEG, GEF etc..) as well as the newest IPCC publications on Asia and a selection of documents related to participatory methods on risk communication.
- *The Atlas of Climate Change* Mapping the world's greatest challenge, by K. Dow and T. Downing (Earthcan)

Finally, UNITAR and all participants would like to acknowledge the generous support of the UK Department for International Development (DFID) that made this workshop possible.

Geneva, November 20, 2007

II. BACKGROUND

In line with the existing NAPA guidelines, in co-operation with the UNFCCC Secretariat LEG and GEF agencies, and with the aim to facilitate the successful formulation of project profiles, it is proposed that UNITAR provide additional support to NAPA teams with a small team of experts in order to provide scientific elements and technical support for the preparation of the above listed countries' development of NAPA documents. The GEF Secretariat has now outlined the principal elements required for fundable project profiles in its Programming paper for Funding the Implementation of NAPAs under the LDC Trust Fund (GEF/C.28/18), the details of which must be disseminated to teams currently completing their NAPAs.

This workshop was organized by UNITAR and developed for four Asian countries at various stages of the development of their NAPAs. It builds upon the results of the NAPA workshops for Anglophone Africa, held in Nairobi, Kenya (August 2006), Small Island Developing States (SIDS) held in Honiara, Solomon Islands (April 2007), and Francophone Africa, in Dakar (August 2007). It also aimed to provide clear information on the current status and needs for each participating country to carry forward to the completion of their NAPA documents and the development of proposals for funding to the LDC Fund.

Country teams varied with respect to their current evolution of their NAPA proposal, the workshop provided a general technical assistance approach. As most of the countries were at the early stages of the NAPA process, the bulk of the guidance was provided for Step 2 of the NAPA process, which focused on

- establishing a solid link to between climate change and vulnerable groups, and the subsequent synthesis and
- prioritization of key sectors and vulnerable groups in order to define urgent and immediate needs.

The NAPA team from Afghanistan, who are in the later stages of the process, were offered assistance in using the Step 2 process to examine in-depth the threat of drought, which is most prevalent in their country. In addition, they were provided with valuable guidance with which to evaluate the draft NAPA documents currently under development by various groups.

Step 2 covers risk Assessments including; (a) support for and verification of climate change risk analysis; and (b) support for the formulation of adaptation profiles, which incorporate the elements outlined by the GEF and correspond to a good development strategy.

Scope of Report

This report is structured in 4 parts:

- Section III deals with issues of proceedings, including workshop structure, logistics, agenda and participants.
- Section IV offers a Narrative of the activities and offers a series of recommended action items and ongoing work that resulted from the workshop
- The Annex includes the workshop exercises and a narrative version of the background documentation and presentations that were used over the course of the workshop.

III. PROCEEDINGS

OVERVIEW

- The workshop was organized by UNITAR with technical support provided by SEI Bangkok and Oxford Offices, SPREP (Samoa) and the Bangladesh Center for Advanced Studies (Dhaka).
 Funding for the workshop provided through the generous contribution of the UK Department for International Development (DFID).
- All workshop documents, presentations, worksheets, new country documents and materials to review and photos provided by the resources team will be posted on the common NAPA platform database: www.napa-pana.org.

AGENDA

The workshop structure was, by agreement with the collaborating support team, a very open one- subject to change based on the needs outlined by the participants and the circumstances of the workshop being part a parallel session of a larger event.

The overview provided by the country teams on their status and needs was held on the first day, a presentation by a UNFCCC representatives of the Outcomes of the NAPA Stocktaking Meeting, held in Bangkok, Thailand (September 2007), one-on-one guidance on the NAPA Step 2 Process, a reiteration of the points relating to Climate Risk Assessments Tools and Methods, with specific examples for Asia, the conduct of one-to-one sessions on how to access data and an assessment of data gaps and needs, and a discussion session on the development of adaptation strategies in relation to drought, a hazard common to all the Asian NAPA teams. The Final Agenda in full is available in the Annex section as well as the contact details of resource persons who were present at this workshop.

LIST OF PARTICIPANTS FROM LDCS

National NAPA team representatives						
Country	Name	E-mail	Organisation			
Afghanistan	Abdul Wali Modaqiq	wali.modaqiq@unep.ch	National Environmental Protection Agency			
Afghanistan	Tofan Jebran	zahid@ozone_afghan.gov.af	National Environmental Protection Agency			
Bangladesh	Mohamed Solaiman Haider	haider@doe-bd.org	Department of Environment and Forestry			
Bangladesh	Muhammad Mahfuzur Rahman	mahfuz1961@gmail.com	Ministry of Foreign Affairs			
Bhutan	Karma Tshering	ktshering@nec.gov.bt	National Environment Commission			
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Cambodia	Khong Kim Sreng	kksreng@iucncambodia.org	IUCN Cambodia			
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Lao PDR	Thetheva Saphangthong	thatheva@yahoo.com	Ministry of Agriculture and Forestry			
Lao PDR	Khamphinh Philakone	Phinh217@hotmail.com	Ministry of Foreign Affairs			
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Myanmar	Khin Myo Yee	dg.dmh@mptmail.net.mm	Department of Meteorology and Hydrology			
Nepal	Archana Shrestha	shresthamet@gmail.com	Department of Hydrology and Meteorology			
Timor Leste	Adao Soares Barbosa	adsan_woll@yahoo.com	National Directorate for Environmental Service			

Participants from Bhutan, Lao PDR and Cambodia, who had completed their NAPAs, were welcomed to participate in the parallel session and their inputs enriched the discussions.

The Lao PDR NAPA team joined in the discussions on the first day of the parallel session, whilst the Bangladesh team participated mainly in the other parallel session which focussed on Tools/Methodologies in Developing Adaptation Strategies and Developing Adaptation Strategies and Projects.

Facilitators/Resource Persons for the LDCs (see contact details page 60)							
Institution	Name	Email	Designation				
BCAS	Mozaharul Alam	mozaharul.alam@bcas.net	Research Fellow				
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SEI Asia	Chayanis Krittachewa	<u>chayanis.k@sei.se</u>	Research Fellow				
SEI-AWhere	Fernanda Zermoglio	fernandazermoglio@gamil.com	GIS Application Specialist				
SPREP	Taito Nakalevu	taiton@spreo.org	Climate Change Programme Officer				
UNFCCC Secretariat	Festus Luboyera	fluboyera@unfccc.int	Programme Officer				
UNITAR	Annie Roncerel	annie.roncerel@unitar.org	Senior Programme Coordinator, Climate Change Programme				

IV. NARRATIVE OF PROCEEDINGS, COUNTY STATUS, NEEDS AND ON-GOING WORK

PRE-WORKSHOP PREPARATIONS

- 1. The workshop agenda was collaboratively developed with the Government of Indonesia, UNFCCC Secretariat, UNITAR and IUCN and discussed with and amongst SEI-AWhere representative/s prior to the workshop. A final draft was circulated to some members of the team and all other participants prior to the workshop.
- 2. The technical support team held a series of preparatory discussions on the agenda and workshop structure, and identified roles and responsibilities for the workshop. The team also reviewed all available documents submitted by the four participating NAPA teams to the online platform at <u>www.napa-pana.org</u>. This enabled the support team to have a clear idea of the work conducted to date and to conduct a preliminary assessment of country needs.
- 3. As part of the workshop preparations, a resource package was prepared. It included copies of the technical assistance guidance documents for Steps 2 and 8 of the NAPA process prepared by UNITAR. Another technical note entitled Practical Overview on Data Analysis for the Formulation of National Adaptation Programmes of Action, prepared by Fernanda Zermoglio for SEI, was distributed in electronic format during the meeting (see the Accompanying Annex for complete versions of these documents).

NARRATIVE OF PROCEEDINGS

4. Opening ceremonies were held on October 30, 2007 at the Hyatt Regency, Yogyakarta, and was presided by all workshop participants. Ms. Novaliana Tambunan, of the Department of Foreign Affairs, presided, along with Mr. Yolando Velasco, of the UNFCCC Secretariat, Ms. Annie Roncerel

of UNITAR, and Dr. Channa Bambaradeniya, of the World Conservation Union. The remainder of the day was dedicated to a field visit to two forestry demonstration projects currently run by Professor

Mohamad Na'iem, of Gajah Mada University: Karangduwet and Wanagama.

5. On the afternoon of day 1, several presentations were briefed on the impacts of climate change on several sectors, including: Water and Agriculture, by Dr. Ainun Nishat of **IUCN** in Bangladesh; Coastal Resources by Dr. Srivanie Miththapala, Biodiversity by Dr. Chana Bambaradeniya and Livelihood Analysis by Dr. Kai Kim Chiang, of the



Stockholm Environment Institute in Bangkok.

- 6. On October 31, the meeting was opened with a carousel exercise, where participants were asked to reflect on lessons learned in vulnerability and adaptation assessments, including: discussions on the status of vulnerability and adaptation assessments, identifying adaptation priorities, challenges and gaps, identifying emerging needs, and how information can assist in targeting climate change priorities, identifying gaps in our current knowledge, and highlighting needs with respect to data, analytical tools, and interpretive skills. LDCs participating in the exercise cited the need to develop national and regional data repositories to facilitate the exchange of information across countries sharing similar environments, and highlighted the funding difficulties which make institutional memory difficult to maintain across government agencies. Recommendations were made to improve the funding base for data storage and retrieval at regional, cross-cutting centres of excellence, among others.
- 7. An overview of National Communications was presented by Mr. Yolando Velasco of the UNFCCC Secretariat. The National Communication (NC) needs to clearly communicate vulnerability and adaptation findings, including who and what is vulnerable, who will be adapting to climate change and what is needed to be done to adapt. The challenges facing NC teams include issues related to how to integrate the outcomes of their National Communications into national development programmes, how to enhance bottom-up approaches in vulnerability and adaptation assessments and how to develop adaptation projects and measures based on the outcomes of national communications.
- 8. Ms. Annie Roncerel provided an overview of the National Adaptation Programmes of Action, with specific focus on examples and exercises drawn from regional NAPA workshops. The discussion highlighted 1) the NAPA process, with a focus on the establishment of a national NAPA team and on participatory methods and tools, 2) vulnerability assessments and their linkages to adaptation, and 3) the prioritization of immediate actions on the basis of carefully selected criteria of the NAPA process to formulate an adaptation plan.

- 9. A presentation on key issues to consider when establishing a link between climate variability and change followed by Ms. Fernanda Zermoglio. When describing climate change with respect to a specific hazard, one should use various techniques to outline the history of occurrence, frequency of occurrence, the duration and trends in the hazards, and their impacts. Concluding remarks offered suggestions on how to represent issues of uncertainty in climate science to decision-makers.
- 10. Subsequent parallel sessions focused on 1) tools/methodologies in developing adaptation strategies, and 2) formulation of National Adaptation Programmes of Action. Due to the nature of this report, only parallel session 2 will be presented here. The opening of parallel session 2 provided participants with an opportunity to present on the current status of their NAPA work, an overview of which is presented in Section V
- 11. The objective of the NAPA session was to provide participants with a series of targeted exercises that would facilitate the process of NAPA formulation, especially with regards to Steps 2-8. Step 2 covers risks Assessments including; (a) support for and verification of climate change risk analysis; and (b) support for the formulation of adaptation profiles, which incorporate the elements outlined by the GEF and correspond to a good development strategy. Step 8 covers project profiles including; (a) technically sound analysis of risk baselines; (b) improvement in the quality of information included in the profiles; (c) development of 'built-in vulnerability indicators'; and (c) improvement in monitoring/ evaluation plans for the implementation of project profiles.
- 12. A presentation was made by Fernanda Zermoglio on data gaps and ways to address these. The presentation is contained in the accompanying Annex, and highlighted some of the international data sources that can be used to fill in country needs. In the ensuing discussions of this and the next day a number of specific NAPA project needs, as well as implementation issues/concerns were raised by countries. These are discussed below.
- 13. Several questions for clarification emerged from these discussions: including issues related to the ownership and management of NAPA funds- whether by agencies or country teams. The participants were advised that only under extremely unstable political situations would implementing agencies be in charge of the NAPA process. Regarding project profiles, participants were reminded that stand-alone projects that do not consider regional dynamics or current development activities were least likely to receive funding.



- 14. A common concern of most of the teams arising from the exercise is the lack of data and understanding on the way to quantify the impact of the hazards (e.g. how many people affected of that hazards). This was addressed by conducting one-to-one demonstrations of available tools and available types of data that can be use in the NAPA formulation. It was noted during the discussions that the need to quantify the impacts of past events can be resolved by using anecdotal information through participatory processes and international data banks.
- 15. The ability to differentiate between climate variability and climate change was a priority for NAPA teams. Climate change indicators were noted as being possible parameters for determining between

the two. It was also noted that the country teams also need to have a good understanding on what are going on in their countries in terms of development planning. Challenges were also noted regarding the shift in current areas of flood and drought occurrence. This highlights critical issues in climate change, i.e. spatial changes in hazard occurrences, its effects on current coping strategies and how to translate these into adaptation strategies. V. SUMMARY OF REPORTING AND RESULTS OF ONE-TO-ONE DISCUSSIONS ON STATUS OF NAPA DOCUMENTS, NEXT STEPS, NEEDS AND WORKSHOP EVALUATION

PARTICIPANTS FROM ASIAN LDCs



NEPAL

The Nepal NAPA process is being developed by the Ministry of Environment, Science and Technology. The project document was recently submitted to UNDP but has not yet received final approval; therefore the NAPA team has not yet been convened. The expected approval date was October of 2007. Difficulties were noted when deciding which implementing agency to use for the NAPA formulation

The major hazards noted by the Nepalese participant for the country with respect to climate change include: floods, glacial retreat, changes in glacial lake area and long-term dry spells as evidenced by expanding breaks in the monsoons. Key sectors which were proposed to be analyzed include 1) water resources and hydropower, 2) agriculture, 3) food security and a potential 4) health and biodiversity. The Nepalese participant noted the need to access impact data, particularly with respect to floods from cloud bursts which cause significant damage in the central regions of the country. The NAPA team also highlighted the need to develop sound vulnerability assessments at the district level, and noted the difficulties related to efforts to attribute individual hazard events such as floods to climate change, rather than natural variability. With respect to barriers to NAPA formulation, political instability, delays in replies from the implementing agency in charge were duly noted.

AFGHANISTAN

The country team is currently running the NAPA and NCSA exercises in parallel, with a shared steering committee and four working groups: 1) biodiversity and wetlands, desertification, 2) water resources and rangelands, 3) disaster preparedness and a 4) fourth cross-cutting group. An international consultant was contracted to run each of these groups, with an additional overall coordinating consultant. The two most important concerns with respect to NAPA formulation center around water shortages and agriculture (both irrigated and rain fed).

A draft document has been sent to the task manager and the team is awaiting comments, with expectations of completing the NAPA document by the end of 2007. The challenges noted by the country team include: 1) the need to obtaining more accurate historical data to ensure that local observations can be verified, particularly in light of the infrastructure and data losses due to civil war, 2) language barriers have required the need to translate relevant NAPA guidance documents for participating team members; 3) the lack of technical skills and tools to carry out assessment by national team members, 4) difficulties related to hiring consultants due to the security situation, and 5) the absence of local knowledge in their assessment for the reasons stated above.

TIMOR LESTE

The country recently ratified the UNFCCC framework and completed their National Capability Self Assessment. The NAPA proposal has been submitted to the local UNDP Office and is awaiting final approval. Several questions (as noted above) were raised by the country representative regarding NAPA funding and formulation.

Thematic working groups were formed under NCSA includes members from: i) Ministry of Agriculture (and land-use information system. Formerly Forestry also part of this Ministry), ii) Ministry of Economic Development (industry unit), iii) Ministry of Health (Environment Health

unit), iv) newly formed Directorate of Forestry, v) National NGOs involved in environment issues, vi) University, vi) Met department, vii) National Disaster Management Office. Team currently being restructure but same members to be involved in NAPA preparation. List of stakeholders derived from NSCA process. In Sept 2007, Inter Ministerial working group was formed on Multilateral Agreement on Environment issues and national focal points were designated for bio-diversity, land degradation and climate change.

The key vulnerabilities noted for Timor-Leste include 1) declining agricultural production due to decreasing rainfall, 2) tidal problems and sea level rises' impacts on key infrastructure, 3) increased incidences of malaria due to changing climatic conditions, and 4) uncertain water supplies, particularly related to the drying of major springs due to decreased rainfall and increasing temperatures.

The exercises were found to be useful for the NAPA formulation, particularly the design of the NAPA process, which has not yet begun. The country representative noted the challenges related to mobilizing collaboration amongst colleagues from the other ministries. It was noted that during the development of the NAPA, the project budget proposed can be revised to ensure that funds are available to conduct meetings/workshops by limiting funds available for the engagement of a consultant.

Issues of data needs and gaps related to the past political situation were highlighted by the country representative. Among these, there was the lack of desperately needed data to quantify the impacts of climate change on specific regions, as well as the lack of any climate information. Arrangements are currently under way to share meteorological information with neighbouring countries such as Indonesia and Australia (from which they were currently receiving meteorological reports every 6 hrs).

In terms of next steps: the team was advised to undertake stakeholder consultations, identify key national development projects/plans, for working group to make preliminary assessment of information available to working groups and identify information gaps and needs,

MYANMAR

A NAPA proposal has been submitted to the GEF and is awaiting approval for the NAPA team to begin its work. The participants reported that Myanmar has completed the proposal for the NAPA with an assistance of Dr. Pak Sum Low, the Regional Advisor, Environment & Sustainable Development Division, UN Economic and Social Commission for Asia and the Pacific (UNESCAP) in Bangkok, Thaialnd.

They highlighted that Dr. Tun Lwin (Mr.), the Director General of Department of Meteorology and Hydrology (DMH) is the lead focal point for the development of the NAPA for Myanmar and that he is very knowledgeable in climate change issue and the NAPA process as he has been involved in COP since the beginning and that he will be attending the 13th COP in Bali this December.

Due to the current constraints of the various UN agencies in working in Myanmar, they are currently unable to identify a suitable implementing agency. Thus, their proposal document for the development of the NAPA has yet to be sent to the Global Environment Fund (GEF). Mr. Ne Winn stated that Dr. Tun is in a better position to provide a feedback on the real needs required from the resource group. However, he observed a need to building up a capacity of the country in terms of the use and application of modelling future climatic and hydrological scenarios.

Key vulnerabilities noted include disasters within the monsoon belt, including floods and droughts, particularly in two regions: the center of the country's agricultural belt, and the flood plains in the southern regions. With respect to data gaps and needs, the representatives highlighted the need for more accurate data to be collated and digitized from various departments within the government. For example, the met office in Myanmar currently holds paper records for over 50 meteorological stations, cataloguing both temperature and precipitation records over the last 30 years. These will need to be digitized in order to facilitate their use. The lack of technical expertise in climate change analysis was noted as a key impediment to the NAPA process.

The delegates found the workshop very useful especially the NAPA hand-on exercise. The delegates noted that they had learnt a lot and they have a better understanding on the process in listing and describing climate hazards and how to describe the relationship between the climate hazards and the vulnerable groups. Without this exercise, they would not have been familiar with the process and thus less able to understand the gaps that need to be addressed, they would have been unaware of their lack of knowledge especially with regards to the availability of data and information that currently exists for their country, and the way to quantify climate change impacts.

The delegates expressed that it would have been useful if more information on the exercise and activities to be undertaken during workshop could have been made available to the participating countries. From the NAPA exercise step 2, they believe that if the organisers had informed them that some data and information needed for the exercise, they could have prepared the relevant materials and undertaken the exercises better, and thus enabling them to provide more input into the process. In any case, the delegates agreed to convey to the relevant counterpart, Dr. Tun, on usefulness of the technical guidelines for the STEP 2 Napa process and seek to undertake STEP 2 with better data and inputs from a multidisciplinary team.

BHUTAN

The participant from Bhutan was a taskforce member involved in the Bhutan NAPA team. His role was to facilitate and coordinate discussions with UNDP and the Ministry of Finance. The team found the inception phase the most challenging, particularly with regards to finding the right person from the right Ministry and departments and securing their commitment was challenging due to NAPA being a low individual priority. The team noted that they were forced to provide incentives to engage project persons e.g. through official letter of appointment to the NAPA team and the holding of a NAPA-specific retreat. He finally noted the difficulties related to obtaining the right consultants and experts. He reported the very successful use of LEG members (only airfare and accommodation were needed) to obtain support from LEG members for the Bhutan NAPA process.

LAO

This country started their NAPA in 2004 with agriculture a high priority. NAPA developed under Prime Minister's Office, thus facilitating the issues of political will to complete the document. A Total of thirty nine project profiles were included in the NAPA document. The team noted difficulties related to institutional memory and the lack of established mechanisms to share information have hindered the development of full project proposals, particularly in light of the fact that the focal point was promoted and very little information and knowledge was transferred to the new staff regarding the NAPA process. The team plans to hold a second national coordination meeting in 2008, which will serve as a catalyst for the development of funding proposals as well as work session for the second national communications.

The participant noted that he found the workshop very useful as he had previously had little knowledge about the NAPA Process and its various Steps. He observed that the workshop was well prepared, the content good and provided useful knowledge on how to obtain data for the development of the NAPA document. He expounded that an area for improvement could be a more focussed presentation on methodologies for climate risk assessment and guidance on the formulation of the country statement for COP 13, to be held I Bali December 2007.

CAMBODIA

The participant noted that they had completed their NAPA document in 2006. Their exercise work focused on irrigation practices in rice cultivation in the central regions of the country, which are subject to increased mid-season droughts. They noted that climate data for the country is lacking, as most of the meteorological stations are in the city, and thus they are not spatially well distributed. Much of the data and stations were either lost or damaged during the civil war. The team expressed the need for assistance in building capacity within their NAPA team, and assistance in the review and revision of project profiles based on the comments provided by the GEF. The team also noted that the central government is less concerned over the impacts of climate change and have focussed their efforts instead on poverty alleviation measures. A partnership with the Red Cross efforts in the country could improve this situation.

ANNEXES

NAPA HANDS-ON EXERCISE

EXERCISE 1: STEP 2

The following is a list of activities to be conducted during the workshop sessions. Please refer to the guidance document entitled Technical Support to Facilitate Step 2 of the NAPA Process for further clarification.

1. Make a list of and describe the climate hazards in your country- using the guidance provided in pages 5-6 and the example on page 17. This list should include both a general categorization of the hazard (e.g droughts, floods, salt-water intrusion, sea level rise, erratic or changing rainfall) as well as detailed description of the hazard in your specific setting. Data on current climate hazards, risk and variability will provide answers to this question.

Example Table:

Hazard	Description

2. Continue with the table you began, but this time, make the table on MAP form – identifying the location where the hazards have been known to occur using the guidance provided in page 7 and the examples on page 18-21. Ideas: use symbols, descriptions, historical occurrences.

Example Table Continued:

Hazard	Description	Location

- 3. Make a table and describe the trends in these hazards using the guidance provided in page 8 and the example available from pages 22-27. Guiding Questions:
 - What are the documented historical trends in these hazards?
 - Is the nature and location of these hazards changing, and if so, how?
 - What kinds of predictions have been made on these hazards for your country?

Example Table:

		OBSERVED TRENDS				
HAZARD	LOCATION	Likelihood	Trend in likelihood	Trend in magnitude	Trend in location	Other trends / descriptors

4. Describe the potential impacts of these hazards using the guidance provided in page 10 and the example available from pages 28-29. The purpose of addressing this question is to assess and summarize the impacts of climate-related hazards on your country/ community/sector.

Example Table:

			fects			
Climate related Hazard	DESCRIPTION	Loss of life and livelihood	Human Health	Food Security and Agriculture	Water availability, quality and accessibility	Environmental effects (Biological diversity, forestry)

5. Identify the vulnerable populations (exposure units) in your country and develop an exposure matrix using the guidance provided on pages 11-12 and the examples provided on page 30.

Example Table:

	Threats					
Exposure units (vulnerable groups and their location)	Drought	Heat waves	Cold spells & heavy snowfall	Floods	Strong winds & dust storms	Sum
Sum						

- 6. Locate the vulnerable groups identified above on the same hazard map you developed for step 2 above. For example, where are the major economic activities that are vulnerable to climate change located in your country: the subsistence farmers located in your country? Where are the fishermen? Etc.
- 7. Develop narratives (storylines) that describe the relationship between vulnerable groups and the climate hazards by synthesizing the above.

You will report back on the progress of this exercise to the group at the end of the day. During this report, please:

- provide an overview of your approach
- try to highlight areas where there are clear challenges, gaps and needs that you would like to address

EXERCISE 2: QUESTIONS FOR THE DEVELOPMENT OF ADAPTATION PROJECTS

- 1. Identify one current climate-related threat experienced in your country
- 2. Describe the current coping strategies or responses to this threat
- 3. Identify additional problems or impacts that climate change may pose to this existing threat
- 4. Identify adaptation options that can be taken to reduce adverse impacts of climate change to this threat
- 5. Rank these adaptation options
- 6. Select one adaptation option and develop a project by outlining the objectives of the project, its outcomes, specific activities and outputs, and implementation arrangements for this project.

Summary of the NAPA Background Presentations given at the Training Workshop Developing Adaptation Strategies for the Asia and Africa Regions

Yogyakarta, Indonesia 31st October-2nd November 2007

1. The National Adaptation Programmes of Action (NAPAs) Process

By Annie Roncerel UNITAR et all⁴

INTRODUCTION

Decision 28/CP.7 sets guidelines for the National Adaptation Programmes of Action (NAPAs). NAPAs will allow LDCs to set priority activities to be undertaken to meet their immediate needs and respond to their most urgent concerns with regards to adaptation to the adverse effects of climate change. The rationale of this effort resides in the limited ability of LDCs to adapt, and in the urgent need for specific support that will allow them to deal with the adverse effects of climate changes that are taking place now and that will take place in the future. NAPAs are not an end in themselves, but a way for LDCs to present and negotiate a country-driven action programme. The most urgent activities identified during the NAPA process are to submitted to the Global Environment Facility (GEF) and other funding sources, with the aim of obtaining financial resources to implement them. To help enable countries to implement NAPAs methodically and effectively, the Least Developed Country Expert Group (LEG) has defined the various stages to be followed in implementing a NAPA in a document called "Annotated Guidelines". This approach was followed during four NAPA workshops held in 2003 as requested by the Parties, were used during several other regional workshops, in Nairobi, in the Solomon Islands and more recently in Dakar (August 2007). The training in Yogyakarta was specifically addressed to LDCs from Asia that are still at the beginning of the process, Nepal, Myanmar, Timor Leste, and Afghanistan that is in the midway.

The NAPA process was presented on the basis the document published in 2004 which was regularly updated according to the needs of the teams: "*National Adaptation Programmes of Action, Selection of examples and exercise drawn from regional NAPA workshops*". The document includes the following three sections that were presented by Annie Roncerel:

- 1. An overview of the overall NAPA Process, with a focus on the establishment of the National NAPA team and on participatory methods and tools. Step 2 to 4 were presented in greater details and used as a basis for group exercises. Three documents provide the background information of the detailed presentations done later during the day:
 - *An overview of the Vulnerability Assessment and the linkages with adaptation*, by Fernanda Zermoglio;
 - *A review of some spatial and temporal analytical tools available to NAPA teams*, by Fernanda Zermoglio; and
 - *Climate Change Impact on Livelihoods* by Kai Kim Chiang

The last two sections of the NAPA process were only briefly presented on this occasion because they were less relevant at such an early stage of the status of NAPA documents for the participating countries:

- 2. Prioritization of Immediate Actions
- 3. Development of Project Profiles section as updated in 2006.

Finally, a representative of the UNFCCC Secretariat made a presentation on Adaptation Issues for the up coming COP-MOP in Bali that is summarized in the last document

• Key negotiation issues relating to adaptation at COP 13 and CMP3 by Festus Luboyera.

⁴ National Adaptation Programmes of Action, Selection of examples and exercise drawn from regional NAPA workshops, July 2004, UNFCCC/LEG and UNITAR.

Overview of the NAPA Process with Focus on the Participatory approach - Step 1

1.1 NATIONAL COORDINATION OF THE NAPA PROCESS

Quite often countries have already established institutional bodies at the national and sub-national levels to coordinate roles and inputs from various government agencies. These bodies may be sector specific or cross-sectoral in nature, such as the bodies overseeing the preparation of medium-term development plans and longer-term visions. Many countries even have created national coordination committees to oversee the implementation of multilateral environmental agreements (MEAs). National committees on climate change, for example, have been instrumental in sharing and disseminating information across government ministries, as well as to stakeholder groups participating in such mechanisms.

In the case of NAPAs, existing climate change committees or other structures may well serve as the basis for the NAPA process. It will be necessary to broaden these committees to include the local community and wider stakeholder participation and/or to examine ways to make use of various participatory tools. Identifying possible synergies among multiple environmental conventions, for example, may likely be done effectively through active and consistent stakeholder involvement, since local communities and other major group actors frequently work on environmental issues that transcend specific sectors. This also applies to ensuring that NAPAs are consistent with development plans and longer-term visions, as well as other national policy statements and international obligations, such as various other entities who have already participated in the preparation of MEA commitments, such as national biodiversity strategies, and other documents.

The box below shows the example of Ethiopia as described in their UNDP/GEF NAPA project document. It illustrates an institutional structure built to carry out a thorough participatory process and crosscutting analysis as required by the guidelines. The multidisciplinary team approach (including four different specialized Task Forces) will provide the relevant framework to perform the participatory and integrated assessments, needed to complete the NAPA.



Figure 1: Organizational Chart for the Ethiopian NAPA Process

1.2 STAKEHOLDER PARTICIPATION IN THE NAPA PROCESS

Once a national set up is established, the first task of the managerial team is to review, and modify if needed, the schedule of planned activities and the budget allocations according to the actual situation. As recommended by the Guidelines, the NAPA process will benefit from early and broad-based involvement of the concerned stakeholders, particularly the local communities who are most directly affected by climate variability, who can identify their immediate and urgent needs for coping with these changes, and with whom they can discuss possible project ideas. Each country will choose and implement the methods the most adapted to their situation.

A successful participatory process must ensure that:

- The participatory process is legitimate;
- Effective coordination, preferably through existing mechanisms of the consultation process, is established;
- A clear statement of purpose and intent are provided for stakeholder involvement;
- A reasonable deadline is set for completing the NAPA process and its various stages, allowing time for adequate stakeholder dialogue and cooperation;
- A clear explanation of what is expected of stakeholders and what they, themselves, can expect is given;
- Knowledge of stakeholders' issues and concerns should include a comprehensive understanding of who is affected by the thematic area, such as vulnerability to climate change, and the sectors, interests and/or regions that different stakeholders represent.

LEVEL OF INTERVENTION	METHODS	TOOLS	ADVANTAGES / STRENGTHS	DISADVANTAGES / WEAKNESSES
Stakeholder analysis	Project team's assessment of the major stakeholders, their relevance to climate adaptation, skills, and mission, any critical decisions scheduled that should take account of climate or climate risks.	Interviews and expert knowledge to construct a checklist or profile of major stakeholders.	Awareness among project team of the decision environment. Will help target realistic stakeholder participation and support.	Stakeholders do change and this assessment should be updated, at least informally, as the NAPA process develops.
Information gathering and dissemination	Keeping the public and stakeholders informed; gathering information for informed decision- making.	Surveys, questionnaires, participatory rural appraisal, electronic discussion groups, websites, workshops and conferences discussion and working papers, etc.	Opportunity to interact with stakeholders and to adapt the assessment to address specific concerns more directly.	Occasionally used as the first and only option for engaging stakeholders, rather than being the first in a series of interventions, such as public consultation etc.
Stakeholder consultation	Information exchanges based on the principle of two-way communication to solicit input from interested stakeholders.	Examples range from very informal contacts, to more structured events, such as constituency meetings, policy dialogues, public hearings, "road- shows", etc.	Heightens awareness of issues under consideration without the time or financial burden associated with institutional structures; seeks to legitimize and democratize the process.	Criticized as sometimes being only <i>post facto</i> in nature by informing the public and stakeholders after decisions have been drafted with little insurance that modifications will be made; or one-way communication instead of a real dialogue between decision-makers and stakeholders/local communities.

 Table 1: Stakeholder / Public Involvement Tools: A Summary

Multi-stakeholder body	Multi-stakeholder bodies are mechanisms for coordinating and integrating stakeholder groups in the decision- making processes. Their specific form and function vary.	Forums, such as National Councils for Sustainable Development, round tables, commissions, collaborative policy forums, etc.	Semi-institutionalized structures; although the form and function generally vary, such bodies are broad-based with participants on "equal-footing"; heterogeneous views are taken into consideration leading to integrated and more holistic decision-making.	Although sometimes high profile, advisory bodies are usually <i>ad</i> <i>hoc</i> and lack consistent participation; bodies might also lack authority to implement decisions and thus seen as talk shops; power struggles are not absent; wealthy vs. directly affected publics tend to participate disproportionately; some views are marginalized – particularly the poor and vulnerable groups.
Institutionalized mechanisms with stake-holder participation	Mechanisms created at national level within the regular administrative system but also including representatives of various stakeholders.	National committees for MEA implementation (climate change, biodiversity, etc.), development planning, etc.	A more formalized and permanent degree of involvement; stakeholder participants usually selected on the basis of personal prestige or eminent persons.	Possible lack of wide-spread public involvement on permanent basis, usually <i>ad hoc</i> , gaps and duplication in roles, institutional competition, inadequate skills and personnel needed for some of the technical complex issues; other constraints related to advisory bodies as described above.

The following table provides a quick overview on the various participatory requirements as stated in the Guidelines and some of the possible participatory methods and tools that can be used during this process.

PARTICIPATORY REQUIREMENTS FOUND IN THE NAPA GUIDELINES	POSSIBLE PARTICIPATORY METHODS / TOOLS
To establish a NAPA team with a public participatory dimension.	Stakeholder analysis.
To carry out participatory Vulnerability Assessments.	Stakeholder identification and consultation: surveys, interviews, questionnaires, participatory rural appraisal (a field–based research technique utilizing maximum involvement from local communities), <i>chapatti</i> exercise (see Exercise 3 in Section 2).
To solicit inputs and proposal ideas in a national and/or consultative process. To promote dialogue to reach public support/consensus.	Consultation of stakeholders identified: surveys, interviews, questionnaires, participatory rural appraisal, electronic discussion groups, websites, workshops and conferences discussion and working papers.
To organize a public review of the NAPA document.	Soliciting the views of stakeholders and the public through a two- way exchange of communication and dialogue. Consultation may involve techniques, such as the organization of constituency meetings, 'road shows' (presenting project designs and draft policies to local communities), and public hearings. Stakeholders are consulted during Log frame formulation.
To review the final NAPA document in a participatory manner.	Soliciting the views of stakeholders and the public through a two- way exchange of communication and dialogue (final document <u>must be</u> influenced by comments received).
To describe the participatory process in the NAPA document.	Narrative exercise reflecting the participatory process – Requires advanced planning to ensure that proper records are kept.

Table 2: Participatory Requirements for the NAPAs and Possible Methods or Tools

To disseminate to the public the endorsed NAPA.

Stakeholder analysis should be used on several occasions during the NAPA process, either for the institutional setup of the management process of the NAPA itself (Step 1) or later, during the vulnerability assessment (Steps 3 and 4), the compilation of potential NAPA activities (Step 5) or the final project formulation. Decision 28/CP.7 describes the rationale for developing NAPAs based on 'the low adaptive capacity of LDCs, which renders them in need of immediate and urgent support''. Consulting stakeholders in every step will improve the effectiveness of future responses.

Vulnerability in the NAPA Process – Step 2

This part of the NAPA process was presented later in details by Fernanda Zermoglio (see page 41).

BACKGROUND ON SUSTAINABLE LIVELIHOODS.

This is the part that was written by T. E. Downing, Stockholm Environment Institute in the 2004 publication; it was presented by Kai Kim Chiang during the NAPA workshop (see page 46). A widely used approach to sustainable livelihoods shows livelihoods as exposed to shocks and threats, with livelihood strategies linking institutions and outcomes. The characteristics of livelihoods are often called the five capitals-human resources, natural resources, finance, physical infrastructure and assets, and social networks and relationships. Based on this approach, it is possible to chart vulnerability for different livelihoods. Here a spider diagram is used. Vulnerability increases as one proceeds further into the web (i.e. towards the centre). If scores were to be assigned to the various rings, with high scores equating to low vulnerability, the outer rings would have higher scores than the inner ones. The hypothetical example below consists of four groups and is broadly consistent with the food security situation in southern Africa. Smallholder farmers are more vulnerable than emerging farmers, with lower scores on natural resources (land and livestock), finance (cash crops and off-farm employment), access to physical infrastructure (roads), human capital (skilled labour) and social networks (participation in community voluntary organisations). Agro-pastoralists are even more vulnerable on most of the indicators, but with significant livestock holdings that may compensate to some degree. Market traders have high scores on many indicators, although they do not produce food themselves. The spider diagram below illustrates several aspects of vulnerability.



- Everyone is vulnerable to some degree, but the attributes of vulnerability differ between groups. It is not always easy to say which group is more vulnerable overall.
- Livelihoods are vulnerable to different stresses and threats. For example, traders would suffer in an economic recession while traditional farmers bear the first impacts of a drought.
- A complete picture of vulnerability requires consideration of the range of relevant assets, as in the five capitals approach shown in figure 4 and not just impacts of climate change.

The multiple aspects of vulnerability lead directly to multiple criteria assessment of adaptation.

2.4 HOW ARE THE HIGH PRIORITY VULNERABILITIES CARRIED FORWARD IN SCREENING ADAPTATION OPTIONS?

The rapid participatory vulnerability assessment, Step 3 of the NAPA process, links to the evaluation of adaptive options in several ways. The most important link is the identification of the priority socioeconomic groups, sectors and regions for targeting adaptation. This should not be taken as a ranking of 1, 2, 3 etc., but a recognition from the matrix that the combination, for example, of smallholder farmers/drought and the peri-urban poor/floods are high priorities for urgent climate adaptation.

The process of identifying vulnerable livelihoods and stakeholders that is listing climatic hazards and building the matrix *is a good way to structure a constructive dialogue within the NAPA team and among stakeholders* (Step 4 in the NAPA process). Further notes on stakeholder engagement can be found in Section 1.2 and in the selected bibliography. The vulnerability assessment also provides insight into good ideas for adaptation activities.

Vulnerability indicators such as the scores in the sensitivity matrix are similar to the indicators that will be used in evaluating adaptation options in Step 6. Vulnerability assessment is an example of multi-attribute evaluation. There are several dimensions of vulnerability that concern, for example, the five capitals of sustainable livelihoods (as described in the spider diagramme above): Aggregating across these dimensions is problematic but some insight can be gained from charting the values (like in the spider diagram above) or by looking at the pattern in the sensitivity matrix. Some of the vulnerability indicators should be integrated into the multi-criteria analysis.

Let's suppose an exercise on livelihood exposure and sensitivity to climatic hazards identified the following clusters as the principal concerns:

- Traditional coastal fishing communities exposed to coastal storms, sea level rise and coastal erosion;
- Small-scale farmers exposed to drought; and
- Urban poor exposed to drought, intense rainfall and flooding.

Also of concern, but somewhat lower in priority might be:

- Critical sectoral infrastructure, such as bridges between ports and agricultural areas; and
- Sensitive ecosystems, such as coastal wetlands, those provide services for priority economic activities.

These concerns for vulnerable livelihoods, economic infrastructure and ecosystems might be collected in one single criterion called here '*Targeting of Vulnerable Groups and Resources*'. They constitute the potential core target for NAPA projects that respond to these groups *immediate and urgent needs*. The criterion can only be scored in a relative way. A project that directly targets vulnerable livelihoods might receive the top rating of 5, whereas projects oriented toward economic infrastructure or sensitive ecosystems, but without specifically targeting a priority livelihood, might be rated as 3. Projects that address development infrastructure, hospitals for example, that are *less urgent* in terms of coping with climatic hazards or targeting a priority livelihood, might be rated as 1. Two other criteria related to vulnerability are recommended. Poverty reduction is an explicit focus of the NAPA guidelines. For instance, rating the contribution of a project to economic growth in addition to targeting specific vulnerable socio-economic groups should achieve a robust scoring for poverty reduction. Similarly, the

economic losses avoided (the benefits of the project) is a general criterion that could be specifically applied to the losses avoided by poor people (avoiding losses to large landowners is not necessarily going to reduce poverty). Taken together, these criteria identify urgent needs. The final NAPA output is a set of project profiles for the priority adaptation options. The profiles should be supported by the narrative of who is vulnerable and to what (see last section). Adaptation options that have synergies for several livelihoods and hazards may be especially urgent.

THE PROCESS OF FORMULATING NAPA ACTIVITIES – STEPS 5 TO 8

3.1 ARTICULATE POTENTIAL NAPA ACTIVITIES BASED ON IDEAS FROM CONSULTATION

The NAPA team should consult relevant stakeholders regarding the suggestions made for adaptation options in Step 3; refer to Exercise 6 in Section 2. The local communities, among other stakeholders, should be given priority in order to ensure that the options selected respond appropriately to their most urgent and immediate needs (as *generated in the vulnerability matrix exercise*). This consultation, a frequent topic of discussion during the NAPA workshops, can take various forms according to national practices and circumstances. In countries with a small population (such as a Small Island Developing States like Samoa, with a population of 176,000 and a surface area of 2,840 km²), the NAPA team will be able to work directly with the population; while in larger countries, the NAPA team should develop means of representation for the population so that the consultations can be held within a reasonable timeframe, given the urgency of their needs. In the case of Ethiopia (with a population of 67.2 million and a surface area of 1.1 million km²), the institutional structure established will allow for both regional and national stakeholder consultation processes. In any case, however, the team should reflect upon the following questions:

Are the proposed options the appropriate response for the target vulnerable groups?

- \Rightarrow Has the target group been properly described, in qualitative terms through the vulnerability profile, and/or in quantitative terms?
- \Rightarrow Has the urgency of the climate hazard(s) been properly demonstrated? Are floods, droughts, cyclones, sea level rise, etc. threats to the target groups?
- \Rightarrow What is the nature and extent of the anticipated losses due to the climate hazards? These losses could come in a number of forms: human, natural, financial, social, and physical.

Is there a lack of data or knowledge, making it difficult or impossible to address the above questions? This question should have already emerged from the earlier consultations. At this stage, it may lead to the downgrading in priority of some ideas.

What are the basic characteristics of the proposed options and ideas? Are they:

- ⇒ Stand-alone 'project' type interventions, e.g. a replicable pilot action addressing a climate hazard for a specific vulnerable group, with a clear 'lead' sector or stakeholder to act, and a limited budget size?
- ⇒ Supplementary to ongoing or formulated programmes, addressing hitherto ignored aspects of a climate hazard, with the possibility of 'piggy-backing' the actions onto an ongoing or committed programme by means of negotiating an additional budget allocation?
- \Rightarrow To be grouped together into a (new) package, e.g. that would target a wider group?
- ⇒ Dependent upon specific prior actions? For instance, drought or flood preparedness planning might require actions to improve the accuracy and distribution of drought or flood forecasts. This could, for example, be specific meteorological or socio-economic research, specific hardware for meteorological or run-off measurements, data communication, specific capacity building, or a combination of the three.

The team must establish whether or not there is widespread support among the stakeholders for the proposed actions. The NAPA team should also consider the potential adaptation options within a

framework that includes elements beyond the vulnerability perspective, as suggested in the 'Annotated Guidelines for the preparation of NAPA.

Article 7	ARTICLE 15	ARTICLE 16
NAPA Guiding elements	SELECTION CRITERIA	➔ TO BE APPLIED TO:
		Inter alia:
Participative process	Degree of adverse effects to climatic	\Rightarrow Loss of life and livelihood
Multi-disciplinary approach	changes	\Rightarrow Human health
Complementary approach	Degree of poverty reduction	\Rightarrow Food security and agriculture
Sustainable development	Degree of poverty reduction	\Rightarrow Water resources (availability
Gender equality	Synergies with MEAs	and accessibility)
Country-driven approach	~) 2	\Rightarrow Basic infrastructures
Sound environmental management	Cost effectiveness	\Rightarrow Cultural heritage
Cost-effectiveness		\Rightarrow Biological diversity
Simplicity		\Rightarrow Land use management and
Flexibility of procedures based on individual		forestry
country circumstances		\Rightarrow Coastal zones and loss of land
		\Rightarrow Other environmental amenities

Summary of the UNFCCC Decision 28/CP.7 - Source: ENDA

The annotations of the LEG to Article 15 of the Guidelines suggest however that the NAPA team agrees on a limited number of criteria, to keep the process manageable as well as understandable. Clearly, national development priorities must be taken into consideration: they include policies to combat poverty such as PRSPs; nationally and sectoraly oriented development plans on such issues as water, energy or transportation; other environmental action plans such as desertification and biodiversity strategies, as well as appropriate national communications. In other words, potential adaptation options should respond to a broader framework that is carefully established by the NAPA team. The team is faced with the challenge of cross-analyzing adaptive options in the context the required criteria (centre column of Table 9), while including the guiding elements of the NAPA approach (left column) and deciding on the decision making process or method to be applied to the set of priorities listed in Article 16 (right column). In this context, technical work and discussions among the NAPA team are essential: the Ministry of Finance may recommend that the costs of the options be taken into account as a priority (cost-effectiveness criterion), while the Directorate of the Environment may insist on the selection options that will be consistent with other environmental concerns, such as desertification or the management of shared waters (Synergies with MEAs). As with any assessment method, the context of the decision and the identification of the options available constitute the first two stages that the team should perform for NAPA Step 5.

3.2 CRITERIA PRIORITIZATION PROCESS AND SCREEN NAPA ACTIVITIES

A list of adaptive options is now established. There are several possible methods with which to select and prioritise these options. The most commonly used are Cost Benefit Analysis (CBA), Cost Effectiveness Analysis (CEA) and Multi-Criteria Analysis (MCA). The first two are summarized in Annex D of the "Annotated Guidelines for the Preparation of the NAPA". The use of either of these methods requires that costs and benefits are expressed in absolute monetary terms. Furthermore, in CEA all options must have the same objectives. Yet, in the climate adaptation field, numerous criteria that may be included in the final decision making process are non-monetary and objectives between options can vary. Therefore, Multi-Criteria Analysis (MCA) is considered to be the quickest and most appropriate method for assessing NAPA adaptation options. Many commercial MCA packages are available, such as HiView or Definite. They take users through the MCA procedure systematically. The results are provided in a good graphical interface. A few of them were demonstrated to some extent at the fourth regional NAPA workshop in 2003. However, given various limitations on the level of detail and accuracy or reliability of most input data for the NAPA proposals' prioritisation and ranking, simple Excel spreadsheet exercises are perhaps preferable, at least initially. The NAPA team might decide to discard some of the options, because their total score is very low and/or because their scores on certain criteria like poverty reduction or MEAsynergy are also very low. In this example, it is assumed that Options 10 and 8 are discarded for just those reasons, while the other 8 options are retained for further, more detailed, consideration during Step 7.

3.3 RANK PROJECTS/ACTIVITIES AND DEMONSTRATE INTEGRATION INTO NATIONAL POLICY FRAMEWORKS AND PROGRAMMES

To further reduce the number of options, the standardized scoring exercise should be repeated, as the range of criteria values (from highest to lowest) may no longer be accurate. Any combination of weights is possible, provided that it reflects a choice that was discussed by the NAPA team. Two hypothetical examples presented in the NAPA publication will familiarize the team with this MCA approach and the impact of the various weightings before they begin work on their own NAPA.

3.4 DEVELOP PROJECT PROFILES AND SUBMIT NAPA

NAPA project profiles that were produced in the first batch of final NAPA documents sometimes do not offer enough substantive elements that link the project profile with its related national climate change impact. After reviewing some project profiles contained in several draft NAPAs, resources persons who participated in the most recent regional NAPA workshop in Nairobi in late August 2006 concurred with this observation. The main concern that emerged from this discussion is that the logical flow arguments in the NAPA priority profiles are insufficient given the GEF LDCF programming paper requirements. On the basis of the 2006 Nairobi workshop experience, the implementing agencies identified the need to provide additional support to NAPA teams - who are currently working with a tight schedule- in order to address these issues.

UNFCCC Guidance: The UNFCCC decision provides the following four headlines (with several sub headings) as formulated in the NAPA Guidelines - Decision 28/CP 7
Title
Rationale/justification in relation to climate change, including sectors concerned
Description
- Objectives and activities
- Inputs
- Short-term outputs
- Potential long-term outcomes
Implementation
- Institutional arrangement
- Risks and barriers
- Evaluation and monitoring
- Financial resources

As a result, the following annotations aim to clarify the expected content of NAPA profiles, bearing in mind the results of the workshop and information in the GEF LDCF programming paper. These annotations are not new requirements that go beyond the currently approved UNFCCC/LEG guidance. Rather, they offer concrete advice to better make use of information that countries have successfully collected according to the proposed method; and how this information can be woven into a coherent and consistent response strategy that focuses on the nationally identified priority and urgent needs identified in NAPA project profiles.

NEW ANNOTATIONS FOR THE FORMULATION OF NAPA PROJECT PROFILES

• **Title:** The title of the activity to adapt to climate change that addresses an urgent and immediate need(s) should mention the project's goal to **reduce vulnerability to climate change/variability** (in a sector or a location) that will be explained in the sections below.

• **Rationale/justification:** This section should provide information on the "**root causes**" of the challenge (urgent and immediate needs) being faced related to climate change/variability. A distinction should be made between climate-drivers as well as non-climate drivers of the problem. Without repeating all the information included in earlier sections of the NAPA document, this section of the profile should refer to the relevant sections of the NAPA that provide the necessary background rationale for the proposed project. This information should come from the NAPA process/document that identified the basic climate change/variability trends leading to the identification of vulnerable zones, vulnerable groups and project ideas.

• **Description:** This section should describe the **solution proposed** to address the identified climate change driven problem(s), selected to address the root causes described in the previous section (vulnerability to climate change/variability). This section will include the activity's goal, objective and 3-4 expected outcomes. Each outcome should be associated with specific activities that will address either a short-term or long-term need. The profile should highlight the urgent and immediate needs with respect to these activities. The extent of the involvement of national and/or international institutions, NGOs or community-based organizations, as described in the guidelines, should be reflected here.

Because most NAPA projects will deal with sectors which have existing programs, for instance in agriculture and land-management, and because NAPA documents are prepared in the context of national development goals, profiles should be formulated to add on to the existing body of work and the countries' capacities. This ensures project sustainability, impact, national support and, as a result, integration into national development goals. To know whether the profiles proposed a climate change adaptation project, one can ask the following question:

• Would the project be implemented in the absence of an increase in climatic risks?

- \Rightarrow If the answer is no, then this is an additional response beyond what is currently planned, i.e. the <u>project baseline</u> in the absence of climate change.
- \Rightarrow If the answer is yes, and the project is already part of the development strategy and is either in the current portfolio or planned for implementation later, then the justification needs to explain why the project should be brought forward in time. For example, it is more urgent now with the trends and expectations of climatic risks or it addresses barriers that are essential to overcome now in order to be able to adapt to climate change in the future (e.g. reducing flood plain development, improving early warning systems).

• Implementation

This section should describe the **institutional arrangements** proposed at the project level, including entities responsible for the overall execution of the project during the preparatory and if possible, implementation phase, technical bodies and project beneficiaries. This section should also relate to the consultation process with all stakeholders according to the process described in the Guidelines. It should also describe the activities designed to address specific **barriers specific to the project profiles and region** (institutional, technical, socio-economic or political) (including barrier removal) and ensure the project's success. A brief section on **evaluation and monitoring** should be included to ensure some elements about quality control for project implementation. (This part will be further elaborated during the full project formulation phase). Include a table providing a **general budget** for each output and outcome will consolidate the soundness of the project, in particular by providing early financial information on other existing related project/programmes and additional resources to come from GEF and/or other sources of financing. The budget should include a total project cost, the value of the other identified programs and the amount to be requested to the LDCF.

2. KEY ISSUES TO CONSIDER WHEN ESTABLISHING A SOLID LINK TO CLIMATE VARIABILITY AND CHANGE

Summary of the Presentation given at the Training Workshop on Developing Adaptation Strategies for the Asia and Africa Regions, Yogyakarta, Indonesia

31st October-2nd November 2007

By

Fernanda Zermoglio⁵

with collaboration from Kai Kim Chiang⁶, John Corbett¹ Tom Downing⁷, Anna Taylor³, and Gina Ziervogel³

INTRODUCTION

It is increasingly acknowledged that climate change adaptation will form a necessary component of development strategies. Adaptation to climate change will be required from both natural systems (such as hydrological systems) and from social and institutional systems (such as farming systems). An analysis of the likely consequences to development sectors such as food production and water availability is complex as it involves food and its production, trade, nutrition and other aspects as well as how people access and secure food.

A sound risk assessment process is fundamental to ensure that climate change is appropriately taken into account in development planning and decision-making processes. The purpose of this assessment is to identify risks that may be inducted or exacerbated by climate change, and to evaluate their effects and likelihood. This allows the responses available to be prioritized and compared equitably with other risks, resource availability and cost issues.

A number of recent and ongoing initiatives of the SEI focus on screening analysis for climate change adaptation. This document highlights some of these approaches by breaking down the screening process into four basic components. This is a deliberate oversimplification of the activities, to present actions and issues clearly. In reality, however, the analytical needs of scoping a climate change issue will vary among users and groups, such that several analytical levels should be considered at each stage in the process.

Addressing the following sets of questions under the headings described below will help projects and country teams begin an initial screening of the climate change risks to existing and future activities. These questions, described in detail in this document, will help ensure that the selection, quality, accessibility and use of data and information are verified and improved as needed. Potential sources of information necessary to answer these questions are listed throughout the document.



Figure 2: Key Elements of the talk

⁵ Stockholm Environment Institute-Oxford Office/AWhere Inc.

⁶ Stockholm Environment Institute-Asia Centre

⁷ Stockholm Environment Institute-Oxford Office

ESTABLISHING THE CLIMATE BASELINE

Guiding questions:

- What are the major climate hazards impacting your country/ study area?
- What variables and attributes can be used to define these?
- What temporal aspects are important when defining these hazards?
- And where do hazards these occur?

To identify the key climate variability and change issues in your country, it is important to begin by making a list of the climate-related hazards that impact your country/ communities or sectors, both now and in the recent past. This list should include both a general categorization of the hazard (e.g droughts, floods, salt-water intrusion, sea level rise, and erratic or changing rainfall) as well as detailed description of the hazard in your specific setting. Data on current climate hazards and disasters will provide answers to this question.

Once a list of hazards has been developed, three key issues must be defined in order to establish a solid baseline of information to guide adaptation activities. These include:

1) Determining which variables and what attributes of these variables are important:

A critical step in establishing a solid link between a specific hazard and climate variability and change is to define the important variables, whether direct or indirect, that define the climate risk being considered. The variables of importance could be limited to simple observed values for temperature or rainfall for example, or more complex ones such as a drought period.

Once the variables are identified, then the relevant attributes related to these variables need to be well defined. Attributes are related to duration, seasonality, intensity, inter-annual variability, thresholds and combinatory changes such as hotter/wetter periods, dryer/hotter periods. An example table for various hazards is shown below.

Table 1. Describi	ng nazai us	
Hazard	Climate related variables	Attributes
Drought	maximum temperature, rainfall	evapotranspiration, dry spells (number of days <x drought="" during="" mm),="" of="" onset="" periods="" rainy="" season,="" season<="" td=""></x>
Floods	rainfall	hourly or daily precipitation $> x$ mm; annual max daily precipitation; decadal cycles, number of rainy days consecutively
Landslides	Rainfall	soil moisture; accumulative daily rainfall
Heat Waves	Maximum temperature	number of days Tmax $> x^{\circ}C$
Cold Spells	Minimum temperature	number of days T< $x^{\circ}C$
Winds	wind speed	wind speed – maximum daily wind speed

Table 1: Describing hazards

2) **Risks vary over time and space**– this reflects both the changing probability of the risk occurring and the changing scale of consequence when and if the risk occurs. Understanding the underlying dynamics that drive these processes is important. To this end, the baseline assessment should quantify the spatial and temporal risks from climate change by leveraging both online and real time access to spatial information with the analytical power of tools such as those available in geographic information systems (GIS).



Figure 3: Rainfall Anomalies in the Community Climate Action Model for Mali

3) **Location** - Highlighting the location of specific hotspots in the country where climate-related hazards are experienced or likely to be felt is a key step in identifying intervention areas. The initial screening process begins with these questions, which allows the user to reframe the climate change problem in the context of local conditions/constraints and opportunities. This can show whether climate change impacts are likely to be material for a particular development function, activity or service.

Moreover, isolating these locations for further examination is a critical starting point. Subsequent analyses of the trends and impacts of these hazards, when combined with key vulnerability indicators will help to narrow down priority zones for specific project targets.

The data used describe the baseline should include a mix of models, published evidence, empirical studies, past and present observations. The choice of data will invariably vary among countries and sectors, reflecting the data quality and availability, as well as time constraints of the process. Both existing and analytical maps, tables and charts can be used or developed to answer these questions.

DEFINING TRENDS

Guiding questions:

- What are the documented historical trends in these hazards?
- Is the nature and location of these hazards changing, and if so, how?
- What kinds of predictions have been made on these hazards for your country?

The purpose of addressing the following questions is to assess the range of future conditions. This step provides a link between the current vulnerability (hazards experienced so far), trends in hazards and the need for urgent action. If the trends observed above are consistent with the range of scenarios for future climate change, then the rationale for urgent action is much stronger.

A useful starting point for evaluating climatic trends is to map key variables and then to categorize these trends as those conforming either to: deviations from normal values, or geographic/temporal shifts in occurrences. The assessment should aim to highlight or estimate the major current and expected trends (direction, magnitude, and extent) of climate-related hazards. On the basis of available data and information, it is possible to analyze the recent trends in climate parameters, from the most basic data (e.g. maximum and minimum temperature and rainfall), to more elaborate indicators (duration of the growing season), to complex indices (satisfaction index of water requirements for the growing season). This type of analysis allows us to

identify important thresholds and trigger points on short and medium time scales. The information can be used to assess potential impacts and identify anticipatory adaptation measures. If this data are not available for your country/project or sector, it is possible to consult global and regional databases that provide monthly averages for a variety of climatic parameters.



Figure 4: Recent rainfall trends across Lesotho

VULNERABILITY

Vulnerability is a key factor that could be influenced by expected changes in climates. Several principles underlie the analysis of vulnerability.

impacts do and will differ:

- For different people (individuals, households, communities)
- For different sectors (health, industry, agriculture, fisheries, natural resources)
- In different areas (villages, towns, cities, districts)
- At different times (present, next 10 years, next 50 years)

Because:

- The specific climatic stresses and shocks experienced may differ
- Other environmental, economic and social factors are different
- In a specific area, some livelihoods will be affected while others might not
- Capacity to adapt differs; people's responses will differ

We therefore need to answer questions such as:

- Who (or what) is vulnerable?
- To what are they vulnerable? Answer in Steps 2 + 3
- Why are they vulnerable?
- What can be done to lessen this vulnerability?

Answers / Adaptation ideas to come out of the assessment process as a whole.

Suggestions have been made in this document on how to build an inventory of climate-related hazards, both those experienced due to natural variability in the climate system and those associated with changing climatic conditions induced by anthropogenic activities. Having identified the likely climate threats faced in the country, it is now important to look at who is exposed to these threats. We still have to ask the question

"vulnerability of who or what to what?" Where gaps are identified in existing information, a rapid vulnerability assessment should be undertaken (i.e. focus activities on responding to information needs).

The first requirement is to identify exposure units according to the identified climatic adverse effects. How is it useful to group people in terms of their being exposed to a certain threat i.e. at what scale, according to social relations or common economic activities, etc.? This is important to know when the time comes to start thinking about what adaptation activities may be appropriate. It also becomes important to identify where within the country these groups are located. Mapping overlays of socio-economic data and climate data can be useful in identifying key areas.

Having established who is likely to be affected by different hazards and in what ways, it is then possible to rate the vulnerability of different groups to various threats, thereby identifying which vulnerable groups require particular targeting for adaptation measures and which threats are most pressing. This synthesis of vulnerability identifies who is exposed to what. The next step is to identify effective responses for each vulnerable group and hazard. Which is the most important to pursue as an adaptation project is a judgment of the team that needs to be documented.

ANALYZING THE IMPACTS OF CLIMATE CHANGE

Climate related stresses can cause major adverse impacts on several sectors, including food production and agriculture, human health, and water availability, quality and accessibility, among others. Guiding questions:

- Where are these impacts known to occur?
- Where are the impacts of these hazards likely to be felt?

The purpose of addressing these questions is to assess and summarize the impacts of climate-related hazards on a specific region, country or sector. This step can provide the basis for defining both the measurable outputs and the implementation issues, particularly with respect to monitoring and evaluation in project activities. It also provides an opportunity for the risk assessment team to pay particular attention to sectoral studies at both regional and national levels, where data and information can be found concerning the critical climate values relevant to these sectors (e.g. rainfall values at which point agriculture becomes unfeasible). For example, poverty reduction and food security profiles and reports will generally include information on necessary caloric intake, the duration of the growing seasons etc. In addition, there exist national and regional reports on hazardous climate phenomenon in relation to food security.



Figure 5: Impacts of Drought in Lesotho

In order to better define project priorities and outputs, it is necessary to specify the impacts of climate-related hazards on target sectors/areas. The characterization of adverse effects should follow the treatment of issues,

whether by sector or vulnerable group, or otherwise. Characterization of climate-related effects could be carried out by sectors: Food Production and Agriculture, Human Health, Water availability, quality and accessibility, and Loss of Life and Livelihood, these are described in detail in the NAPA Technical Guidance.

CONCLUSIONS

The activities described this document should help to country teams to produce a document that solidly links climate change to vulnerable groups, thereby paving the way to the development of a solid adaptation project.

Product: Inventory of current risks and hazards, combined with estimates of the current and future trends in these issues, along with an initial analysis of their adverse effects.

✓ *Resulting in:* An analysis of current risks and hazards related to climate variability and climate events.

Product: Identification of vulnerable groups, sectors and resources.

✓ *Resulting in:* An analysis of the socio-economic and environmental groups/areas exposed to current climate risks and hazards.

Product: Estimation of current vulnerability of targeted groups/areas, and present trends.

✓ *Resulting in:* An evaluation of the most vulnerable socio-economic and environmental groups/areas on the basis of current climatic hazards, trends and exposure to future climatic hazards.

Product: Preparation for the identification of immediate adaptation needs.

✓ **Resulting in:** The identification of elements which will make it possible to guide and develop adaptation options for the reduction of vulnerability in order to manage risks and plan/formulate adaptation projects.

These results will be useful on several levels since:

- The identification of current risks and hazards will guide the process of identifying vulnerable groups, sectors and resources and will also make an essential contribution in addressing immediate needs, as well as during the consultations on future vulnerability. It is essential for adaptation initiatives to climate change to take into consideration current climate risks in relation to current climate variability. This will then make it possible to increase the resiliency and adaptive capacities now, as well as to the negative effects of future climate change.
- At the same time the identification of urgent and immediate needs for adaptation will constitute one of the priorities of the country. Therefore, in the following years the principal forms of adaptation initiatives to climate change will be guided by:
 - *National Priorities:* Guided by the needs of the county and the vulnerable groups, resources and regions at risk, with the support of national infrastructure and institutional capacities that are required for the increase and maintenance adaptive capacities.
 - *Urgent priorities:* Related to the sustainable management of resources in relation to current climate risks or climatic constraints (i.e. thresholds).
 - *Strategic priorities:* Dependent on increasing resilience and adaptive capacities of populations in order to better cope with climate related hazards.
 - *Development priorities:* Integration of climate response strategies into development policies and poverty alleviation.

3. OVERVIEW OF TOOLS AND METHODS AVAILABLE TO NAPA TEAMS

Summary of the Presentation given at the Training Workshop on Developing Adaptation Strategies for the Asia and Africa Regions,

Yogyakarta, Indonesia, 31st October-2nd November 2007

By

Fernanda Zermoglio⁸

with collaboration from Kai Kim Chiang⁹, John Corbett¹, and Tom Downing¹⁰

INTRODUCTION

It is increasingly acknowledged that climate change poses a significant risk to the sustenance of future generations. Adaptation-based responses offer one avenue for addressing these risks. One of the major challenges facing the adaptation community is the paucity of tools and established methodologies to understand a project, country or community's risk in the context of climate variability and change. Moreover, delivering information to decision makers is often a bottleneck in turning research results into effective decisions and policies. There are volumes of data available to decision makers from various sources, many of which are available via the Internet at little or minimal cost. This however is of little use to non-technicians who neither has the time to track down such data sources or the expertise to reformat, re-project and load them into appropriate information system tools.

Analytical technologies and tools are continually maturing to provide more sophisticated tools for analyzing, visualizing, managing, and disseminating information. Successful integration and dissemination is dependent on creating flexible and scalable tools and methodological frameworks that enable the integration, analysis and communication of data and results in a systematic way that is both useful to researchers and accessible to decision makers.

This presentation provided an overview of a *selected set* of spatial and temporal tools and techniques that can be used by NAPA teams in the analysis of climate risk in adaptation projects. Reflecting on the experience of a series of adaptation projects currently underway, a special emphasis was placed on identifying the characteristics which make these tools successful for adaptation efforts and risk assessment, in particular. The principal goal of these tools is to store and manage information in a systematic way that is both useful to researchers and accessible to those other than researchers or technicians.

TOOLS FOR SPATIAL ANALYSIS

Vulnerability is the foundation of the analysis of adaptive strategies and measures. Vulnerable groups are exposed to a range of present climatic hazards, trends in climatic resources that may become significant in the near future, and other environmental, economic, and socio-political stresses. Defining who is vulnerable and to what is a key first step in the process of assessing the potential risks from climate change. Climate risk and vulnerability for a particular site or region is a collective function of a complex set of dynamics which can be evaluated with a wide variety of data sources including: peer reviewed and gray literature, local knowledge, field collected data, trans-disciplinary debates, various models. The organization of these data requires a sound data management scheme.

One solution is offered by Geographic Information Systems (GIS) technologies, which provide powerful tools for managing and analyzing spatial information to assist in complex risk assessment efforts. Mainstream use of GIS has been hindered in the past by high software and hardware costs, the need for specialized training, limited availability of properly formatted data, and potential end-user's lack of familiarity with GIS. The AWhere Spatial Information System (SIS), a GIS tool designed for non-specialists, addresses many of these limitations by providing readily accessible, user-friendly tools designed to help decision-makers integrate vulnerability data. It is currently being employed by several country teams engaged in National Adaptation Programmes of Actions¹¹ and the Advancing Capacity for Climate Adaptation Project (ACCCA)¹². The following outlines a list of key lessons have emerged on the use of GIS technology in the stated needs for data integration, analysis and climate change risks communication to decision makers.

⁸ Stockholm Environment Institute-Oxford Office/AWhere Inc.

⁹ Stockholm Environment Institute-Asia Centre

¹⁰ Stockholm Environment Institute-Oxford Office

¹¹ www.napa-pana.org

¹² www.acccaproject.org

1) Integration

- A GIS provides a logical framework for data sharing and collaborative work. Researchers, policy makers, and administrators have immediate access to GIS information at the moment they need it, directly from their desktops or laptops.
- The ability to couple climate data with other vulnerability measures can be used to better define the entities analyzed (eg. ecosystems, vulnerable groups, etc.) a priori. However, even when used after the fact, the analytic capabilities of the GIS enables users to quantitatively cross validate and evaluate their assumptions and/or results. Foundation databases available in AWhere including long-term-average climate surfaces which provide access to a variety of seasonal and other site descriptors combine to allow for a rapid first order assessment of vulnerable zones, based on a project-specific set of vulnerability indicators.



Figure 6: Spatial location allows the integration of multiple data sources.

- The ability to integrate data from many sources in a risk assessment leads to a more comprehensive, diagnostic approach that allows users to appropriately target vulnerable groups. A visual analysis of assessment results allowed users to evaluate the responses they obtained from villagers in individual areas for accuracy (Figure 1). It also allows enable groups to develop a targeted set of stakeholder-relevant questions, so that the project team could quickly see where to focus efforts on the group. For example, if vulnerability is defined in terms of the potential expansion of malaria into regions where malaria has not historically occurred: mapping areas where Malaria incidences are increasing can more accurately define a project's target zones.



Figure 7: Example of the graphical visualization tools available in AWhere

2) Analysis

- The analytic tools available to *visualize, describe and identify target areas based on multiple variables permits the identification of areas where multiple needs intersect* (eg. Drought prone areas and vulnerable communities). For example, intersecting areas at threshold malaria vector elevations with those where increased incidences can be seen, allows users to better develop a geographic targeting focus.
- Spatial query tools can enable users to maximize information across a spectrum of key vulnerability indicators at multiple scales. For example, by combining model output with other vulnerability indicators (see Figure 3). These allow the links and impacts between variables to be clearly described.



Figure 3: Reading NCAR model output in a GIS using SQL functionality.

3) Risk Communication to decision makers

• The integrated analysis and geographical targeting of project areas offers an *objective rationale for determining project sites* and justifying these choices to political and other entities. Links between vulnerable groups and climate hazards are clearly demonstrated, facilitating the justification of action, as well as the identification of indicators for monitoring and evaluation of project activities.

TOOLS FOR METEOROLOGICAL ANALYSIS

One of the challenges facing the adaptation community in the context of climate change lies in understanding the potential distribution of future climate relative to specific concerns (e.g. subsistence agriculture in semi-arid regions). Yet in the complex nexus of what the impacts of climate change will be and where, little attention has been given to the developing pragmatic methodologies that will help decision-makers leverage the best available data and synthesis tools when addressing the problem. A selection of some of the current efforts aimed at addressing this gap, from the perspective of meteorological data analysis was outlined during the talk. The three tools, which are described below, vary with respect to their purposes, and completeness, but share the characteristic that they are all available at no cost to country teams.

RClimDex

The RClimDex program is an analytical package designed to to run in the open source R statistical package13 that provides a user-friendly graphical interface to calculate climate extreme indices¹⁴. Developed and maintained by Xuebin Zhang and Feng Yang at the Climate Research Branch of Meteorological Service of Canada, it computes all 27 core indices recommended by the CCl/CLIVAR Expert Team for Climate Change Detection Monitoring and Indices (ETCCDMI)¹⁵ as well as some other temperature and precipitation indices with user defined thresholds. These indices already available for some regions of the world, allow users to examine key climate change thresholds by mining meteorological records in their respective regions, and include indices for frost/ice days, and warm nights/days, maximum 1/5 day precipitation, among others.



Figure 4: An example of the trend curves available from RClimDex

MetWhere

The MetWhere software is designed to provide user-friendly graphical access and analytical tools to examine daily meteorological records. Developed originally by Mud Springs Geographers, it is designed to deliver seasonal - and period based - frequencies of specific meteorological events (e.g., between March 15th and June 10th, there is historically a 70% frequency of receiving 350 mm at location X). It offers researchers the opportunity to evaluate the consequences of climate changes on crop production and natural resource systems, facilitating the predictive modeling and management of these. MetWhere targets the need to deliver to wide audience information on seasonal rainfall. The tool offers a variety of mechanisms to evaluate precipitation events and, in light of ENSO phenomena (El Niño / Southern Oscillation), enhances the capability to calculate the rainfall frequencies based on a user-selected set of years (the 'tele-connections' associated with El Niño or La Niña years).

The Climate Change Explorer (CCE)

The Climate Change Explorer (CCE) is a packaged set of data access routines with guidance and customized analytical and visualization procedures. Currently in prototype deployment-phase (see Figure 1), the Climate Change Explorer Tool is a collaboration led by Climate Systems Analysis Group at the University of Cape Town and AWhere, Inc. with contributions from the Stockholm Environment Institute and the University of Exeter, in cooperation with UNITAR and the Advancing Capacity for Climate Change Adaptation Program (ACCCA). It provides users with a sound analytical foundation from which to explore the climate variables relevant to their particular adaptation decisions. It is designed to simplify the tasks associated with the extraction, query and analysis of climate information, thereby enabling users to address issues of uncertainty when devising policies and strategies, and also when implementing actions.

The overall objective of analysis is to support adaptive management and planning responses to climate change by providing information and guidance on the results from climate models, in ways that will allow the potential user of the information to evaluate how best it may be applied.

¹³ <u>http://www.r-project.org</u>,

¹⁴<u>http://209.85.165.104/search?q=cache:YAgC_1UXiecJ:cccma.seos.uvic.ca/ETCCDMI/RClimDex/RClimDexUserManual.doc+RCL</u> IMDEX&hl=en&ct=clnk&cd=1&gl=us

¹⁵ http://www.ncdc.noaa.gov/oa/wmo/ccl/AMS-2005-workshops-preprint.pdf



Figure 5: Design of the Climate Change Explorer

The Climate Change Explorer (CCE) provides a way for users to focus on several key assumptions regarding the interpretation of climate science:

- Only by understanding the conditions, assumptions and uncertainties of model-based statements about future climate can decision-makers evaluate the relevance of the information, the appropriateness of response options, and so make an informed assessment of risk.
- An **envelope analysis of ensembles**, rather than a single model, is the only way of addressing the uncertainty inherent in making a decision which is influenced by the future evolution of the climate system. These envelopes of climate change help define the climatological boundaries of potential climate change from a wide range of multi-model projections, driven by the search for climate spaces from the needs of specific localities.
- **Exposure and adaptation are context-specific**. In climate analysis, one size does not fit all. This requires the analysis of different variables, time frames and analytical representations. An interactive exploration of the climate science is therefore critical to the provision of useful information, and appropriate contextualization for decision support.
- The **delivery of climate information** encourages users to become familiar with displaying and querying climate data, from a quick scan of future envelopes through to more detailed, downscaled information to explore the local scale details of regional change. A central feature of the CCE is that it not only provides analytical routines but also access to downscaled climate data, and user-guidance through a wizard-style interface.

CONCLUSIONS

Delivering information to country teams and subsequently to decision makers is often a bottleneck in turning research results into effective adaptation programmes. A key requirement for the synthesis expected from NAPA teams under Step 2 activities is that it be produced using available data and existing materials. This work needs both sound scientific knowledge and the concerns of the relevant population(s).

A proper synthesis allows teams to better support the decision-making process when planning the best strategies and actions for adaptation. The tools presented herein serve to facilitate and simplify the synthesis step, by enabling country teams with the ability to store, manage and analyze information in a systematic way that is both transparent and useful.

4. CLIMATE CHANGE IMPACTS ON LIVELIHOODS

Summary of the Presentation given at the Training Workshop on Developing Adaptation Strategies for the Asia and Africa Regions, Yogyakarta, Indonesia 31st October-2nd November 2007

na No By

Kai Kim Chiang¹⁶

with key abstracts from "Livelihoods and Climate Change"¹⁷

INTRODUCTION

One of the most important considerations of climate change is its impacts livelihoods. This presentation outlines the notion of livelihoods and describes some of the projected impacts on climate change on Livelihoods.

DEFINING THE TERM LIVELIHOODS

The term livelihoods is a concept that has been applied to studies on poverty, leading to new knowledge on how poverty, and the ability to move out of poverty, is determined by the availability or lack of capabilities and assets.

The most widely-accepted definition of livelihoods is that it "comprises the capability, assets (including both material and social resources) and activities required for a means of living". (Carney 1998). Carney goes on further to define livelihoods as sustainable "when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now or in the future, while not undermining the natural resource base"

Central to this definition and in the determination of the resilience of households, individual and groups to vulnerabilities is the concept of livelihood assets. These assets can be defined as means of production available that can be deployed in a series of livelihood activities and are the basis on which they gain income and meet their basic needs, including paid employment. Generally, the level of sustainability and security of livelihoods will be higher and more durable, the more varied the asset base.

The five forms of livelihood assets that have been identified in most of the livelihoods approaches in use today are human, natural, social-political, financial and physical capital.

Human capital comprises human capabilities such as skills, knowledge, and well-being which enable livelihood activities to be pursued, namely elements that make humans economically productive. In terms beyond that of a single individual, this includes the number of productive individuals, the knowledge and skills that have been learned from formal education and through experience and non-formal learning, and the amount of work they are able to undertake.

Natural capital is defined as the natural resource stock from which resources flows useful to livelihoods are derived. Its main function includes the production of resources (such as fish, wood and cereals), harnessing and retention of water, assimilation of waste, and provision of life support services (e.g. oxygen supply, carbon dioxide absorption, protection against ultra-violet rays, biodiversity etc). An important element of this livelihood asset is the actual resources available to individual households which are determined by the characteristic s of the local resource base and the extent to which households are able to gain access to these resources (e.g. land). It is linked to the next livelihood asset, socio-political capital, which encompasses issues of ownership and entitlements, and the availability of technologies that enables the potential use of the resource.

Social-political capital refers to the set of social relationships upon which people draw on as they pursue their livelihoods. This Include an array of contacts, networks, membership of groups and organizations, relationships of trust, the responsiveness of government institutions and access to wider social institutions that are important and enable the actual operationalisation of livelihood activities. This can be determined in terms of access to markets, credit, government services etc.

¹⁶ Stockholm Environment Institute – Asia, Bangkok

¹⁷ Burton I, Soussan J and Hammill A (2003) Livelihoods and Climate Change. Combining disaster risk reduction, natural resource management and climate change adaptation in a new approach to the reduction of vulnerability and poverty. The International Institute for Sustainable Development, Winnipeg.

Financial capital relates to the financial resources such as credit, regular remittances and pensions, social security payments or insurance, that are available to people and that provide them with different livelihood options. It also includes finances or credit which enable people to investment in new productive assets, procure inputs for productive activities, and to withstand and respond to the effects of different vulnerabilities and shocks, such as recovering and reconstructing their livelihoods in the aftermath of a disaster.

Physical capital consists of the basic infrastructure for transport, buildings, water management, energy, and communications and productive capital (tools, machine, etc) which enables people to pursue their livelihoods. This includes what people own and that which they have access to (e.g. roads, irrigation systems, telephone networks etc).

The poverty and environment link

All these assets are important, but for the poorest and most vulnerable (especially the rural poor), reliable and secure access to these resources, to land, water and biotic resources, the ability to farm and to exploit common property resources for livestock etc, are of particular significance to their livelihoods. Rennie and Singh (1996) recognized this poverty and environment linkage by noting that it is the poor people in the world who in particular depend directly on natural resources through cultivation, herding, gathering (e.g. fuelwood), fishing or hunting for their livelihoods. Therefore for livelihoods to be sustainable, the natural resources must be sustained". Thus, climate change impacts on the natural resource base (as well as physical capital) will have a direct effect on livelihoods of the poor.

Impacts of projected climate change scenarios on livelihoods

Assuming there is no action to limit greenhouse gas emissions, the IPCC Scenarios for 2080 describes the following changes in climate that will severely impact on livelihoods. This includes:

- a decline in water availability leading to over 3 billion people in the Middle East and the Indian sub-continent facing acute water shortages.
- an increase in sea-levels, doubling the of number of people (to approximately 18 million) exposed to severe flooding from storm surges people, especially coastal communities in south and southeast Asia. This would also lead to the displacement of coastal communities especially the poorest located in the least protected areas (e.g. small island states and low coastal areas and deltas) to urban areas where their livelihood opportunities are limited due to their lack of skills, capital and contacts needed to cope with urban lives.
- a reduction of natural capital such as coastal fisheries, mangroves and wetlands essential to current livelihood patterns of coastal poor, which has currently been observed to lead to increased erosion and salinity of productive lands and dangers of salination of water supplies.
- disruption of average and seasonal rainfall patterns resulting in semi-arid parts of the developing world becoming hotter and dryer with less predictable rainfall. This will invariably directly affect global crop yields and produce changes in ecosystems distribution and species ranges. Impacts in livelihoods will stem from a decline in food security in areas such as sub-Saharan Africa, South East Asia and tropical areas of Latin America and the viability in many livelihood activities such as livestock raising, fishing, the use of forest products and agricultural production will be threatened. Secondary impacts of changes to temperatures and rainfall include increases in urban food prices and challenges with the provision of services such as water supply and sanitation exacerbating pressures of rapid urbanization.
- increased frequency and intensity of extreme weather events such as slow onset (drought in arid areas) and rapid onset (floods and cyclones in low lying areas and deltas, and glacial lake outburst floods, erosion, landslides and flash floods in hilly and mountainous areas).
- impacts on human health from a combination of effect such as reduced resistance to disease weakening due to heat stress, water shortages, and malnutrition, increases in air pollution leading to a rise in respiratory illnesses, and the rapid proliferation of infectious diseases such as malaria, dengue fever, schistosomaisis under changing climatic conditions.
- impacts on new livelihood activities, such as tourism, will limit the diversification of opportunities, which combined with damage to infrastructure and other types of physical capital, will augment the vulnerabilities (such as limited access to markets) that the poor will face.

CONCLUSION

In all, poor social and political capital, along with extreme limited access to financial capital, means that poor communities are least likely to be protected by investment infrastructure or disaster mitigation and relief systems. The viability of the livelihoods of the poor may be significantly affected by climate-induced changes to resource flows (whether temporary, reflecting variability or structural, reflecting change). In many ways, the central impact of climate change is the changes to resource flows which are critical for the sustainability of livelihoods.

5. KEY NEGOTIATION ISSUES RELATING TO ADAPTATION AT COP 13 AND CMP3

By Festus Luboyera, UNFCCC Secretariat

Summary of the Presentation given at the Training Workshop on Developing Adaptation Strategies for the Asia and Africa Regions, Yogyakarta, Indonesia 31st October-2nd November 2007

1. BACKGROUND

Under the UNFCCC process adaptation is being advanced though a series of programmes mandated by the COP. Some of these programmes are listed below:

- The **Buenos Aires Programme of work on adaptation and response measures** (Decision 1/CP.10) focusing on furthering information and methodologies and concrete adaptation activities
- The Nairobi work programme on impacts, vulnerability and adaptation to climate change (NWP), (A SBSTA conclusion at SB 25) which was developed to assist countries to improve their understanding of climate change impacts and vulnerability and to increase their ability to make informed decisions. It addresses nine areas of work: methods and tools; data and observations, climate modelling, scenarios and downscaling; climate related risks and extreme events; socio-economic information; adaptation planning and practices; research; technologies for adaptation and economic diversification.
- The National Adaptation Programmes of Action (NAPAs) for the least developed countries (LDCs) focusing on the identification of priority activities that respond to the urgent and immediate adaptation needs of LDCs
- Vulnerability and adaptation **assessments** under the national communications process
- The development, deployment and transfer of **technologies for adaptation**

The Adaptation Fund was established to finance concrete adaptation projects and programmes in developing countries that are Parties to the Kyoto Protocol. The Fund is to be financed with a share of proceeds from clean development mechanism (CDM) project activities and receive funds from other sources. The share of proceeds amounts to 2% of certified emission reductions (CERs) issued for a CDM project activity.

2. Agenda items

The key agenda items on adaptation at COP13

• SBI AGENDA ITEM 7(A): PROGRESS ON THE IMPLEMENTATION OF DECISION 1/CP.10

What is expected in Bali?

Parties are expected to continue considering the outcomes of the regional workshops and the expert meeting on adaptation (that were held during the last two years) with a view to producing a significant outcome on adaptation – specifically implementation-related actions emanating from the outcomes of these events.

Issues to be agreed upon in Bali could include, inter alia: securing a mandate for improving access to existing funding and scoping for new sources of funding; defining a process for developing innovative risk sharing and insurance-related instruments; practical actions to enhance the integration of adaptation activities into national planning; instituting no-regrets adaptation measures; recognizing good practices and improving international collaboration.

However, lack of progress on the implementation-related actions for **response measures** could slow the negotiations on adaptation under this agenda item.

Conference documents		
Symbol	Title	
FCCC/SBI/2007/2	Report on the African regional workshop on adaptation. Note by the secretariat.	
FCCC/SBI/2007/11	Report on the expert meeting on adaptation for small island developing States. Note by the secretariat.	
FCCC/SBI/2007/13	Report on the Asian regional workshop on adaptation. Note by the secretariat	
FCCC/SBI/2007/14	Synthesis of outcomes of the regional workshops and expert meeting on adaptation under decision 1/CP.10. Note by the secretariat.	
FCCC/SBI/2007/23	Synthesis of available information related to the impacts of response measures under decision 1/CP.10, paragraph 20. Note by the secretariat.	
FCCC/SBI/2007/24	Synthesis of available information related to the adverse effects of climate change under decision 1/CP.10, paragraph 14. Note by the secretariat	
FCCC/SBI/2006/13	Report on the expert meeting on response measures. Note by the secretariat	
FCCC/SBI/2006/18	Report on the expert meeting on economic diversification. Note by the secretariat.	
FCCC/SBI/2006/19	Report on the Latin American regional workshop on adaptation. Note by the secretariat	

• SBI AGENDA ITEM 7. (B) - MATTERS RELATING TO THE LEAST DEVELOPED COUNTRIES

What is expected in Bali?

The Least Developed Countries Group of Experts (LEG) will report to the SBI on: its work programme 2006–2007; its meeting to take stock of progress made by Parties in the preparation and implementation of NAPAs, held in Bangkok, Thailand, from 3 to 5 September 2007; and the outcome of its twelfth meeting, also held in Bangkok, from

6 to 8 September 2007.

The SBI will be invited to consider the information contained in the documents listed below and to review the progress, need for continuation and terms of reference of the LEG, and to recommend a draft decision on this matter for adoption by the COP at its thirteenth session.

Symbol	Title
FCCC/SBI/2007/31	Report on the twelfth meeting of the Least Developed Countries Expert Group. Note by the secretariat
FCCC/SBI/2007/32	Report on the Least Developed Countries Expert Group stocktaking meeting on the progress made by Parties in the preparation and implementation of national adaptation programmes of action. Note by the secretariat

Conference documents

• SBI AGENDA ITEM 10. ADAPTATION FUND What is expected in Bali?

Discussion on the key issues is expected to continue in Bali. The decision on the Adaptation Fund may provide an important precedent on institutional framework and arrangements for funding activities addressing climate change in general. The CMP may adopt a decision on:

- Eligibility criteria and priority areas for funding
- Monetizing the share of proceeds (who will be the trustee responsible for the monetization and provide some general guidance on principles), and
- Institutional arrangements

The secretariat has prepared a discussion paper to support such negotiations.

• SBSTA AGENDA ITEM 3: NAIROBI WORK PROGRAMME ON IMPACTS, VULNERABILITY AND ADAPTATION TO CLIMATE CHANGE.

At its twenty-fifth session, the SBSTA requested a range of activities⁵ to be carried out before its twentyseventh session as part of the implementation of the Nairobi work programme. Specifically:

The SBSTA invited Parties and/or relevant organizations to submit information and/or views under six focal areas of the Nairobi work programme between SBSTA 26 and SBSTA 27: adaptation planning and practices; methods and tools; economic diversification; data and observations; climate modelling, scenarios and downscaling; and socio-economic information;

The SBSTA requested the secretariat to prepare several synthesis reports before its twenty-seventh session. The adaptation planning and practices synthesis report and the economic diversification synthesis report will be prepared based on the information contained in the submissions; an additional synthesis report will also be prepared on adaptation planning and practices based on relevant outputs of the expert groups under the Convention.⁶ The methods and tools synthesis report will be prepared based on information contained in submissions and on relevant outputs of the expert groups. In addition, synthesis reports will be prepared on research and on technologies for adaptation, based on submissions and other previous relevant work carried out under the Convention;

The SBSTA requested the secretariat to organize two workshops before SBSTA 27, one on climate related risks and extreme events and one on adaptation planning and practices, and to make the reports of these workshops available to the SBSTA.

In response to the conclusions of SBSTA 25, the workshop on climate related risks and extreme events was held in Cairo, Egypt, from 11 to 13 June 2007, and the workshop on adaptation planning and practices is planned to be held at the headquarters of the Food and Agriculture Organization of the United Nations, Rome, from 10 to 12 September 2007. The secretariat has prepared the requested six synthesis reports, the two workshop reports and 10 miscellaneous documents containing the views from Parties and international organizations as mentioned in paragraph 15 above. In addition, views from non-governmental organizations (NGOs) on these matters were posted on the UNFCCC website

The SBSTA will consider these reports and miscellaneous documents during workshops and other expert meetings and activities leading up to and during SBSTA 28, in accordance with the conclusions on the Nairobi work programme adopted at SBSTA 25.

In addition to the above-mentioned activities, the SBSTA invited Parties to submit to the secretariat, by 21 September 2007, their views on the possible need for a group of experts and the role that they could have in the implementation and further development of the Nairobi work programme. The SBSTA requested the secretariat to compile these submissions into a miscellaneous document for its consideration at its twenty-seventh session, with a view to making recommendations, as appropriate.

What is expected in Bali?

Parties should take note on progress made on the:

- **Provision of information** by Parties and relevant organizations under six focal areas, including adaptation planning and practices; methods and tools; economic diversification; data and observations; climate modelling, socio-economic information
- **Preparation of synthesis reports**, including on adaptation planning and practices and on relevant outputs of the expert groups under the Convention in this area; on economic diversification; on methods and tools; on research and on technologies for adaptation
- Organization of two workshops: climate related risks and extreme events and adaptation planning and practices

Parties should also consider the information received from Parties with a view to making recommendations on whether or not an **expert group on adaptation** is needed.

FCCC/SBSTA/2007/6	Syntheses report on technologies for adaptation identified in the submissions from Parties and relevant organizations. Note by the secretariat
FCCC/SBSTA/2007/7	Report on the workshop on climate related risks and extreme events. Note by the secretariat
FCCC/SBSTA/2007/8	Synthesis of information and views on methods and tools submitted by Parties and relevant organizations. Note by the secretariat
FCCC/SBSTA/2007/9	Synthesis of information and views on adaptation planning and practices submitted by Parties and relevant organizations. Note by the secretariat
FCCC/SBSTA/2007/10	Synthesis of outputs of the work of the Least Developed Countries Expert Group, the Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention and the Expert Group on Technology Transfer, relevant to adaptation planning and practices. Note by the secretariat
FCCC/SBSTA/2007/12	Synthesis of ongoing and planned adaptation research and adaptation research needs identified in submissions by Parties and relevant organizations. Note by the secretariat
FCCC/SBSTA/2007/14	Synthesis of information on economic diversification submitted by Parties and relevant organizations. Note by the secretariat
FCCC/SBSTA/2007/15	Report on the workshop on adaptation planning and practices. Note by the secretariat
FCCC/SBSTA/2007/MISC.10	Information on adaptation approaches, strategies, practices and technologies at the regional, national and local levels in different sectors, as well as on experiences, needs and concerns. Submissions from Parties

Conference documents

FCCC/SBSTA/2007/MISC.11	Information on adaptation approaches, strategies, practices and technologies at the regional, national and local levels in different sectors, as well as on experiences, needs and concerns. Submissions from relevant organizations	
FCCC/SBSTA/2007/MISC.12	Information on methods and tools for impact, vulnerability and adaptation assessments. Submissions from Parties	
FCCC/SBSTA/2007/MISC.13	Information on methods and tools for impact, vulnerability and adaptation assessments. Submissions from relevant organizations	
FCCC/SBSTA/2007/MISC.15	Information on economic diversification. Submissions from Parties	
FCCC/SBSTA/2007/MISC.16	Information on economic diversification. Submissions from relevant organizations	
FCCC/SBSTA/2007/MISC.21	Information and views on socio-economic information. Submissions from Parties	
FCCC/SBSTA/2007/MISC.22	Information and views on socio-economic information. Submissions from relevant organizations	
FCCC/SBSTA/2007/MISC.23	Work that could contribute to the improved understanding of current and historical climate, and its impacts. Submissions from the World Meteorological Organization and its member States and other relevant organizations	
FCCC/SBSTA/2007/MISC.24	Ways to contribute to climate modelling, scenarios and downscaling. Submissions from relevant organizations	
FCCC/SBSTA/2007/MISC.25	Views on the possible need for a group of experts and their role in the implementation and further development of the Nairobi work programme on impacts, vulnerability and adaptation to climate change. Submissions from parties.	

AGENDA FOR THE OVERALL

"TRAINING WORKSHOP ON DEVELOPING ADAPTATION STRATEGIES

FOR THE ASIA AND AFRICA REGIONS"

Yogyakarta, Indonesia¹⁸ 30 Oct. – 2 Nov. 2007

BACKGROUND

The latest report of the Intergovernmental Panel on Climate Change shows that the global climate change is most likely to be caused by human activities. It also projects that developing countries will experience the brunt of the impacts of climate change due to the lack of resources and capacity to enable effective adaptation. In Asia, an additional 130 million people across the region could experience severe food and water shortages by 2050 brought about by climate change, while about 1.8 billion Africans will not have enough water by 2080, which could lead to a drop in agricultural revenues by up to 90 percent at the end of the century.

The Consultative Group of Experts from non-Annex I national communications (CGE), with the assistance of the UNFCCC secretariat, conducted regional hands-on training workshops on vulnerability and adaptation assessments in Maputo, Mozambique, from 18–22 April 2005 for the Africa region, and in Jakarta, Indonesia, from 20–24 March 2006 for the Asia and the Pacific Region, in order to enhance the skills and knowledge of developing country experts in the use of tools and processes in assessing vulnerabilities to climate change and developing adaptation strategies.

The United Nations Institute for Training and Research (UNITAR) assisted Least Developed Countries (LDCs) in the preparation of their National Adaptation Programmes of Action (NAPAs) since 2003 through regional technical assistance in cooperation with the LDC Expert Group of the UNFCCC and the Implementing/Executing Agencies of the Global Environment Facility. In this regard, UNITAR convened several technical meetings to provide a forum for NAPA teams to share knowledge and experience and hands-on training for NAPA formulation.

The World Conservation Union (IUCN) is an intergovernmental organization that is responding to biodiversity and climate change issues through building capacities at the national and community level. The technical assistance provided by IUCN involves transferring tools and methodologies for managing vulnerability and adaptation to climate change and supporting implementation of projects.

The Government of Indonesia, as part of its preparatory work for the 13th session of the Conference of the Parties of the UN Framework Convention on Climate Change and the implementation of the New Asian–African Strategic Partnership (NAASP), is organizing this training workshop within the context that most developing countries in Asia and Africa are vulnerable to the adverse impact of climate change and thus those countries need to be able to apply appropriate strategies to adapt to the climate change impacts.

¹⁸ Organized by the Government of Indonesia in collaboration with the UNFCCC secretariat, United Nations Institute for Research, Training and the World Conservation Union (IUCN) and the Asia Pacific Network.

OBJECTIVES

The aim of the workshop is to enhance the capacity of developing country experts and national teams in developing adaptation strategies with the view of improving the preparation of national communications, NAPAs and to develop fundable adaptation projects. Furthermore, the workshop is expected to increase the ability of participants to formulate national strategy on adaptation, to share perspectives on the significance of integrating adaptation strategies with national planning for sustainable development. In particular, the workshop aims to achieve the following:

- a. To reinforce regional and country-specific knowledge base that is critical for assessing, facilitating and removing barriers to adaptation and resilience to climate change in the Asia and Africa regions, in particular, the Least Developed Countries;
- b. To provide tools and methodologies on vulnerability and adaptation assessments of climate change at the local and regional level;
- c. To share lessons learnt and best practices on adaptation strategies and knowledge, experiences, and difficulties/constraints in the preparation and implementation of strategies for national adaptation programmes of action.

Day 1. 50 October, 1 uesuay	
Registration	8:30 - 9:00
Opening	9:00 - 9:45
Emcee: Ms. Novaliana Tambunan, Department of Foreign Affairs	
Welcoming remarks	
Ms. Suhartuti Sutopo, Assistant for Facilitation and Investment, Government Special Region of Yogyakarta	
Introductory remarks	
Mr. Yolando Velasco, UNFCCC secretariat	
Ms. Annie Roncerel, UNITAR	
Dr. Channa Bambaradeniya, The World Conservation Union (IUCN)	
Welcome remarks	
Mr. Primo Alui Joelianto, Director-General for Asia, Pacific and African Affairs	
Coffee/Tea Break	9:45 - 10:15
Departure for field visit	10:15
Note: casual wear and closed working shoes required)	

Day 1: 30 October, Tuesday

The objective of this session is to showcase a community-based reforestation and management project. At the project site, participants will be briefed about the background of the project and its benefits to the local community. The briefing will also outline tools/methodologies used in developing vulnerability and adaptation assessments including the use of geographic information systems and remote sensing.	
 Field visit to Karangduwet Forest Field visit to Wanagama Forest 	
Lunch Break	13:00 - 14:00
Project briefing and site visit (continuation)	14:00 - 15:00
Impacts of climate change	15:00 - 17:00
Chairperson: Ms. Dewi Wahab, Department of Foreign Affairs	
Water and agriculture, Dr. Ainun Nishat, IUCN Bangladesh	
Coastal resources, Dr. Sriyanie Miththapala, IUCN	

11:45 - 13:00

Biodiversity, Dr. Channa Bambaradeniya, IUCN

Presenter: Prof. Mohamad Na-iem, Gadjah Mada University

Project briefing and site visit

Livelihoods, Ms. Kai Kim Chiang, SEI Bangkok

Questions and Answers	17:00 - 17:30
Departure for the hotel	17:30
Welcome dinner by the Government of Indonesia (Hyatt Hotel)	19:00
Day 2: 31 October, Wednesday	
Day 2 Reflection – feedback on issues to address during day 1	9:00 - 9:15
Discussion session (Carousel session)	9:15 - 10:45
Lead facilitator: Dr. Sriyanie Miththapala, IUCN	
Small group discussion session to focus on lessons learned in vulnerability and adaptation assessments. Intended session outcomes:	
 Discussed status of vulnerability adaptation assessments Identified adaptation priorities, challenges and gaps Identification of emerging trends: how the information assists in identifying climate change priorities Identify the gaps in terms of our current knowledge Identify the needs for data, analytical tools, and interpretation 	
Coffee/Tea Break	10:45 - 11:00
Plenary and summary	11:00 - 11:45
The reports by rapporteur from each group outlining key lessons-learned, issues and challenges and recommendations identified during the small group discussions.	
Reflection by the facilitator of key points	
Overview of Adaptation strategies in the context of the Convention	11:45 - 12:15
Chairperson: Dr. Channa Bambaradeniya, IUCN	
Presenters: Mr. Yolando Velasco, UNFCCC secretariat	
Ms. Annie Roncerel, UNITAR	
The objective of this session is to provide the participants with an overview of the need to develop adaptation strategies in the context of national communications, National Adaptation Programmes of Actions.	
Questions and Answers	12:15 - 12:30
Lunch Break	12:30 - 13:30
Key issues to consider when establishing a link between climate variability and change	13:30 - 13:50

Presenter: Ms. Fernanda Zermoglio,

Parallel Sessions 1: 14:00 – 15:30

Tools/methodologies in developing adaptation strategies	Formulation of NAPA		
• Tools and approaches in developing adaptation strategies for coastal zones, agriculture, water and biodiversity.	 Policy introduction Status of NAPA/team posters Introductory remarks on climate change risk assessment, leading to adaptation options and project profiles 		
Resource persons:	Resource persons:		
Dr. Sriyanie Miththapala	Mr. Festus L Luboyera		
Dr. Ainun Nishat	Ms. Fernanda Zermoglio		
Mr. Mozaharul Alam,	Ms. Kai Kim Chiang		
Coffee/Tea Break	15:30 - 15:45		
Parallel Sessions 1 (contin	nuation): 15:45 – 16:30		
• Exercise in developing adaptation strategies	• Practical exercise using NAPA Technical Sheets step 2		
Climate risk assessments	16:30 – 17:00		
Presenter: Ms. Fernanda Zermoglio, SEI – Awhere			
The objective of this session is to provide the participants with an overview of the tools/methods used in assessing risks in the context of climate variability and climate change. The session includes exercise in application of tools/ methodologies such as geographic information system and remote sensing.			
The objective of this session is to provide the partition tools/methods used in assessing risks in the context of change. The session includes exercise in application geographic information system and remote sensing.	cipants with an overview of the of climate variability and climate a of tools/ methodologies such as		
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The objective of this session is to provide the partition tools/methods used in assessing risks in the context of change. The session includes exercise in application geographic information system and remote sensing. Questions and Answers Day 3: 1 Novem Day 3 Reflection – feedback on issues to address dur Integrating climate adaptation strategies into nation programmes.	cipants with an overview of the of climate variability and climate a of tools/ methodologies such as $17:00 - 17:15$ ber, Thursday $9:00 - 9:15$ onal development $9:15 - 9:35$		

The objective of this session is to present examples through case studies on approaches and process in integrating climate adaptation programmes into national development programmes. This session will also discuss institutional and policy arrangements needed for integration.

Discussion on financing options for adaptation projects and programmes		9:20 - 10:15	
Presenters:	Mr. Alex Heikens, Technical Advi	ser, UNDP	
	Ms. Annie Roncerel, UNITAR on	behalf for the GEF Secretariat	
The objective of experience in Ind	this session is to provide the particip onesia and financing options for ada	ants with an overview of UNDP pattern projects by the LDCF.	
Questions and An	nswers		10:15 - 10:30
Coffee/Tea Break	ζ.		10:30 -10:45
Developing adap	otation projects		10:45 - 11:45
Presenters: Mr. T	aito Nakevelu, SPREP		
Mr. Y	olando Velasco, UNFCCC secretari	at	
Mr. M	Iozaharul Alam, Bangladesh Center	for Advanced Studies	
The objective of processes for de national commun	this session is to provide the particle veloping adaptation technology pro- ications. An example on developing	cipants with an overview of the ojects and projects contained in an LDC Fund NAPA project.	
Questions and An	nswers		11:45 - 12:00
Lunch Break			12:00 - 13:00
	Parallel Sessions 2	2: 13:00 – 17:30	
Develop	bing adaptation projects	Application of NAPA proj	ect profiles
 Reviewing ada adaptation pro zones, water s warning/disas 	aptation strategies to identify ject proposals (livelihood, coastal ector, agriculture, health, early ter management).	 Technical needs to analyze in methods to address issues. Hands-on work (Step 8) 	npacts and

• Work with representatives of bilateral and multilateral agencies and international organizations.

Day 4: 2 November, Friday

Parallel Session 2 (continuation): 9:00 11:00

- Poster presentation and feedback-giving of project proposals
- Review work plans/action for final NAPA formulation

Exchange of views on technical support needs

This session will involve identifying skill-gaps of participants in developing adaptation strategies and in preparing adaptation project proposals.

10:30 - 11:00
10

Facilitator reflection

Panel discussion on key outcomes from the workshop.

Workshop closing session

Closing remarks

Mr. Yolando Velasco, UNFCCC secretariat

Ms. Annie Roncerel, UNITAR

Dr. Channa Bambaradeniya, The World Conservation Union (IUCN)

Representative from Government of Indonesia

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10:00 - 10:30

11:00 - 11:30

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