5th International Conference on Community Based Adaptation to Climate Change

March 24-31, 2011 | Dhaka | Bangladesh

[Abstracts]

Community Based Adaptation: The story so far

As adaptation to climate change has become more and more accepted as a necessary response to the adverse impacts of climate change around the world and it was realized that some of the most vulnerable communities will be poor communities in both the developing as well as the developed countries, some groups of people who had been working at community level with poor communities began to start thinking about community based adaptation (CBA).

In 2005 the first workshop on CBA was held in Bangladesh with around 50 people, mainly from Asia but also from other continents to come together and shared the experiences of working with poor and vulnerable communities and how to incorporate adaptation to climate change on top of efforts at poverty reduction and development.

Two years later in 2007 the second workshop was held, also in Bangladesh, with around 80 participants from around the world and this time besides practitioners working at community level a number of researchers and policy makers also joined the workshop.

In 2009 the third international workshop was held, again in Bangladesh, with over 100 participants, this time from a much wider array of organizations , both government as well ads non-government. At the third CBA Workshop it was decided to make the event into an annual International Conference on CBA and that Bangladesh would host it every two years, with the venue changing every other year. It was also decided to develop a website (www.cba-x) to bring together information on CBA activities around the world and also to form a loose coalition called the Global Coalition on CBA (GICBA).

The fourth International Conference on CBA was thus held in February 2010 in Dar es Salaam, Tanzania with over 180 participants and it followed the tradition of sending participants (in batches) to spend two nights in villages with local communities to see what they were doing to combat climate and other risk factors. The presentations made at that conference were published and are available at: (www.iied.org)

The fifth International Conference is being held in Bangladesh again from 24th to 31st March 2011 and is expecting over 300 participants from all continents around the world and mix of practitioners, NGOs, researchers, national and international policy makers and funders as well as media. It is also the first time that the Conference is being webcast. It will also be covered by the Earth Negotiations Bulletin which reaches over 50,000 people around the world.

One of the characteristics of each of the CBA conference was that the participants went to a field visit before the conference technical sessions started. These field visits to several different sites where community were undertaking adaptation measures, exposed the scientists to the realities of CBA.

It is expected that the thematic discussions during this CBA5 conference will be compiled into an edited book to be published later in 2011.

Oral Abstracts

Plenary Session 2: Key Concepts and Terms in CBA

Session Chair: Charles Ehrhart, CARE

Participants in the 2009 and 2010 Conferences identified a number of "frequently asked questions" about Community-based Adaptation (CBA). This plenary session will summarize how some experts answer those questions, highlighting where there is ambiguity as well as growing consensus. The session will consider what we mean by adaptation, how it relates to resilience, and how it differs from coping; and what we mean by CBA, focusing on common principles, core practices and relationship to Ecosystem-based Adaptation.

The session's overarching objective is to increase common understanding around key concepts and terms as a basis for productive discussions later in CBA5, addressing the key questions:

- What do we mean by saying someone is "vulnerable to climate change," and how does this differ from other forms of vulnerability?

- How can we differentiate between sustainable development and CBA projects, and is it necessary to do so?

- How can we differentiate between disaster risk reduction and CBA projects, and is it necessary to do so?

- What do we mean by "mitigation" in the context of climate change, and how does this differ from how this term is used by DRR practitioners?

- How does CBA relate to adaptation action at sub-national and national levels?

- What do we mean by "climate-proof," "climate-smart," "climate-resilient," or "climate-compatible"? And where does the challenge of mitigating climate change fit in relation to CBA?

- What do we mean by "empowerment," and why is it relevant to the adaptation challenge?

- Should CBA projects address social inequalities, or is this a distraction from the adaptation challenge?

CBA principles and practices

By Charles Ehrhart

This ten-minute presentation examines what we mean by CBA, focusing on core principles, practices and relationship to Ecosystem-based Adaptation. While the term "Community-based Adaptation" is still young, it has rapidly matured on the basis of principles and best practices gleaned from the last half-century of development and disaster-risk reduction/management experience. This heritage has many implications for how CBA is currently understood and applied. One of the most significant legacies shaping CBA is the widespread adoption of a Human Rights-Based Approach (HRBA, or RBA) to development and even wider acceptance of its participatory, process-oriented principles. Likewise, the decentralisation of government planning processes has profoundly shaped what CBA has become today and the role(s) it is likely to play tomorrow.

The presentation's objective is to suggest core principles and practices as fuel for discussion and debate throughout CBA5.

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Parallel Session 3: Adaptive Capacity – Why is it significant? How do we support it?

Session Chair: Rachel Berger, Practical Action

While climate change is a certainty, in many parts of the world the direction and speed of change is not known, and climate science will not provide the answers in the timeframe in which ordinary people make decisions about their lives. Adaptation therefore involves living and making decisions under uncertainty.

- Adaptive capacity draws attention to the processes through which communities are able to make changes to their lives and livelihoods in response to emerging environmental change.
- It entails the combination of skills, resources and information that a community can call on and use at a given point in time.
- Attention is drawn to:
    - how networks of relationships define the distribution, access and control of material and knowledge assets;
    - the quality of relationships, determined by characteristics such as power, culture and gender; and
    - multiple scales rather than communities in isolation.

- Three dimensions are of particular significance:
    - *Power and power sharing*: Complexity requires institutions that draw in actors from multiple scales (often with unequal power relations) for shared learning; securing livelihood changes that are locally relevant demands inclusive decision making.
    - *Knowledge and information*: Understanding complex systems requires knowledge and information drawn from multiple sources; selecting appropriate livelihood changes or transformations requires understanding of climate change, forecasting and adaptation options.
    - *Innovation and experimentation*: Avoiding brittle, rigid societies requires the fostering of innovation and experimentation, often at smaller or faster scales; generating livelihood changes or transformations requires new ideas that have been tested in the local context.

This session seeks to draw together experiences that show the significance of adaptive capacity and how it can be supported, at a variety of scales – local, regional and national.

Managing Sloping and Shifting Cultivation Lands for Climate Change Adaptation and Sustainable Livelihoods

By Krishna Lamsal, Gyan Bandhu Sharma, and Keshav Thapa

Climate change is one of the most serious threats to sustainable development, with adverse impacts on social, economic and ecological resources. This paper seeks to find about the climate risk, vulnerability, adaptive capacity and identifying and promoting some potential land management options and livelihood opportunities among the indigenous and resource poor communities to adapt to adverse impacts of climate change and improve the community livelihoods. The action research was carried out in sloping and shifting cultivation lands of seven marginal mid hill villages of Gorkha and Tanahun districts of Nepal, comprising Chepang and Gurung as the major ethnic communities.

The research adapted participatory tools and techniques in the field assessment. The study identified the socio-economic and technological options and opportunities for community based climate adaptation and to improve livelihoods of communities involved in shifting cultivation and sloping land management. The adaptation approaches like diversification of home garden, integrated hedgerows, other land management technologies and livelihood opportunities improved the production and economic potential of the sloping land and increased access to resources. Farm based income generation activities were diversified and improved through integrated agricultural packages, improved land management through agro-forestry and other agricultural practices that provided both ecological and economical benefits to the community. Technological and socio-economic packages in shifting cultivation areas were replicated through farmer to farmer dissemination to adapt to adverse climatic effects. Local stakeholders including government local authorities and community based organizations developed plan to integrate home garden, integrated hedgerows and other livelihoods options to their plan of action for better adaptation to the changing climate.

Keywords: climate change, adaptation, sloping land, livelihood

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Adaptaton Capacity of Fishing Communities to Climate Vulnerabilities and Changes for improving their Livelihoods- A Case Study Conducted in Cox's Bazar district of Bangladesh

By Srijita Dasgupta

The paper intends to present the findings of Rapid-Roving Survey and Focused Groups discussions conducted in five Upazilas (Cox's Bazar sadar, Chakaria, Pekua, Kutubdia and Moheshkali) of Cox's Bazar district on the community based adaptation to climate changes, practiced by the fishing communities. The study revealed that these fishing communities are becoming financially poorer and are finding it difficult to combat climate change issues with the negligible resources that they have at present and technical know how. They are also subject to social injustice. Decline in the stock of fishes in the coastal belt, high risks associated with fishing in deep sea (due to climate vulnerability and changes), increase in the frequency of natural disasters and exploitation of fish business community to fishermen community are found out be the main reasons for the decline in their livelihood security. Regular deaths of fishermen are making their families lose their sources of income leading them to extreme poverty. River erosion and sea level rise in some areas are making them more susceptible to becoming climate refugees. But the fact remains that these communities have very few or no options available to start new sources of income and are in great dilemmas about their future. Adaptation measures adopted by the communities and possible solutions and recommendations for their better future will be discussed in details in the full paper.

Key words: Climate change, vulnerability, livelihood security, Adaptation capacity.

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The importance of Adaptive Capacity in designing Ethiopian adaptation programmes

By Kirsty Wilson

The Africa Climate Change Resilience Alliance has developed a 'Local Adaptive Capacity Framework' (LACF), which lays out five distinct yet interrelated characteristics of adaptive capacity, with the underlying assumption that positive impacts on these characteristics should enhance a community's adaptive capacity. (Jones et al, 2010). ACCRA in Ethiopia has undertaken in-depth field research in three sites investigating the impact of different development interventions on the characteristics of adaptive capacity identified in the LACF.

The climate change impacts in Ethiopia are inextricably inter-twined with current vulnerabilities and development challenges. In addition, high levels of historic rainfall variability and limited data availability mean there are high levels of uncertainty in climate science predictions. This makes it harder to identify specific interventions which respond to easily identifiable climate change impacts, and many policy makers and donors prefer the focus to be on reducing vulnerability to current conditions and strengthening capacity to adapt to future changes. A thorough understanding of adaptive capacity and how to support it is therefore vital to the country's strategy.

ACCRA's research highlights the relevance of the LACF's characteristics to a range of different agro-ecological contexts and provides specific recommendations as to how they can be considered and strengthened in the social protection, market-based livelihoods and disaster risk reduction approaches studied.

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Participatory Approaches for Adaptation Project Identification

By George Kasali

The paper begins by presenting the participatory action research methods used to identify and characterize the socio-economic profiles, man-made and climate-related hazards, livelihood options, impacts of hazards, coping mechanisms and adaptation options of the target villages.

The paper then focuses on the revealed actual impacts of droughts, floods and extreme temperatures on the mixed crop-livestock livelihood system of the communities. The identified coping mechanisms are discussed with regard to their long-term sustainability, while the proposed adaptation options are examined with respect to their ability for enhancing the adaptive capacity of communities to floods, droughts, extreme temperatures and attendant indirect socio-economic and environmental effects. The paper concludes by analyzing the institutional circumstances for implementing the proposed adaptation options.

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Climate Change Adaptation: Experiences of Small Holder Farmers in Northern Nigeria

By John Ajigo

The majority of the world's poorest people rely on local ecosystems to support their livelihoods. For example, rain-fed agriculture is the dominant source of staple food production for most of the rural poor in sub-Saharan Africa. Many are struggling to cope with the current rainfall variability, and predictions of the impact of climate change suggest this variability is likely to increase.

Results from the Pilot Project component of "Building Nigeria's Response to Climate Change" (BNRCC) project confirms that climate-change-induced declines in crop productivity are already happening in northern Nigeria. The projects carried out in nine (9) communities in Northern Nigeria discovered that farmers have started migrating from drought-prone areas. For example, the Toshua community in the Sahel part of Yobe state has lost nine out of twelve oases it depends on for supplementary farming and animal husbandry in the dry season. Some farmers are managing to increase their resilience by planting crop varieties that are drought tolerant and early maturing.

While the communities develop a number of coping measures deriving from local knowledge, the intensity of changes seems to overwhelm these efforts. Therefore there is urgent need for external intervention. Policy makers, at National, State and Local Government levels, should enhance public spending on community centred projects such as agriculture, improved infrastructure, and enhanced access to agricultural extension services to increase the resilience of small holder farmers.

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Community Based Adaptation (CBA): The Initiatives of Caritas Bangladesh

By Anwara Begum and Mijanur Rahman

Bangladesh is highly vulnerable to the impacts of climate change because of hydro-geological and socio-economic conditions. These vulnerabilities are in the form of severe floods, cyclones, droughts, sea level rises and salinity intrusion that are adversely affecting the ecosystems and livelihoods of the people of Bangladesh, especially the people in the coastal areas who are facing several problems related to salinity intrusion, cyclone and tidal surges, river/land erosion and water logging, while in the northwestern region with low rainfall, depletion of ground water, drought and deforestation. These changes are leading to large-scale damages to crops, employments, livelihoods and national economy. As a result, the lives and livelihoods of the people especially the poor and marginal section are being stressed. Hence, Caritas has taken adaptation initiatives to enhance capacity of the vulnerable communities to address the adverse impacts of climate change both for present and future.

Rain water harvesting model like earthen pond based Pond Sand Filter (PSF), school based underground cemented tank and homestead based earthen Pitcher/ *Motki* has been established for reducing scarcity of drinking water both individual and community level. Year round homestead gardening, drip irrigation for effective utilization of water using solar pump, pond and canal re-excavation for household water use, irrigation and fish culture, introduce saline and drought tolerant fisheries and agricultural activities, environmental school, afforestration and income generating activities are the major adapting initiatives. Information center has been established for knowledge sharing and awareness raising. The CBA activities have been enhancing adaptive capacity of the communities and reducing risk due to climate change, which in turn facilitating sustainable community management of natural resources and enhancing livelihoods.

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Parallel Session 4: Water Governance and Climate Change Adaptation

Session Chair: Katherine Cross, IUCN

What is water governance?

Water governance sets the 'rules of the game' for the way water is managed. It determines how sustainable water resource management is implemented. Water governance includes the policies, legislation and institutions set up to manage water resources, but also requires the capacity within institutions to implement management plans and enforce laws around water use. Effective water governance requires an inclusive enabling environment providing joint decision-making among social and political stakeholders. Poor water governance results in degradation and over-allocation of water resources, is a cause of vulnerability for poor people, and can negatively affect livelihoods and economic growth.

Knowledge, skills and participation in decision-making create the capacity of water governance institutions to adapt to changing water availability. It will enable them to make climate decisions based on public participation and consensus to generate political support.

How is water governance implemented?

Water governance institutions can use a number of tools for managing water resources such as integrated water resource management (IWRM) plans, catchment or basin level planning, stakeholder cooperation, environmental impact assessment (EIA), and environmental or integrated flows analyses. These tools and strategies have been developed for stabilizing freshwater systems that are already stressed by unsustainable use and rapid growth. The barriers to implementing these approaches are largely those of institutional inertia and governance efficacy. In addition, these approaches need to be adaptive to a changing climate especially in regions with intensive water use.

Why is water governance integral to climate change adaptation?

The added dimension of climate change means that there will be changes in availability of water (due to variable and unpredictable rainfall and temperature) which can affect water supply systems, agricultural schemes, storage in dams for various uses including hydropower, and the environment. With regards to the environment, the roles of ecosystems and natural infrastructure need to be recognised in water governance frameworks (policy, law and institutions) as key elements that help deliver water storage, flood control, coastal protection, and reduce exposure to hazards and risks. The lack of governance capacity to manage water for these different users can further increase vulnerability to water related shocks such as droughts and floods.

Under a shifting climate, policies and management regimes must be regularly "updated" as climate variability alters and mean climate conditions create a moving target for water managers. The management of water resources must be flexible, span multiple possible futures, and focus on risk assessment. Water governance institutions will have to be able to learn and evolve in pace with the changing climate. How can climate change models, and their associated uncertainty be used to anticipate emerging aspects of climate that directly impact freshwater

availability and quality? What does sustainability mean in the context of an evolving definition of "normal"? Given the centrality of water to climate change adaptation, the implications are that water institutions must themselves become the instruments of climate adaptation.

How can (community based) climate change adaptation be mainstreamed into water governance?

Adapting to climate change impacts needs to occur across various scales of governance from national level policy to district development plans to local village governments. Mainstreaming climate change into existing and newly created water governance institutions at these scale, such as basin organizations and water user associations can be in the form of awareness raising on climate change impacts, application of vulnerability assessments, and implementation of adaptation actions from the community to the basin level.

Enabling water governance institutions to practically implement climate change adaptation approaches can be achieved in a number of ways. Adaptation approaches can also be identified from a climate change vulnerability assessment, traditional practices, local knowledge and appropriate technologies (e.g. rain water harvesting). These outputs can be integrated into catchment management plans and/or district development plans. Priority actions to be undertaken by different stakeholders should to be identified and agreed on in a participatory manner.

Priority actions from plans could include construction of cattle troughs, boreholes to provide alternative sources of water, and setting up a water user association to manage conflict resolution between different users. The aim is to ensure that adaptation to climate change impacts is an integral part of planning and development activities across scales of water governance.

What is the process of scaling up?

Implementation of adaptation actions taking place at the community level need to be monitored to determine their impact. This type of evidence is invaluable to inform policy in water governance institutions and how it can be transformed into practice across a sub-catchment, country and even transboundary basins. They key is to have clear and transparent documentation of processes that are shared between institutions. There also must be continued dialogue and exchange of ideas and practices across scales both horizontally and vertically.

Possible questions:

How can water institutions address climate change issues?
Why are water governance structures important to determining and implementing climate change adaptation approaches?
Are policies dealing with climate change adaptation and how are they being integrated into water governance institutions?
How are traditional and community based adaptation approaches used by water governance institutions? Are there mechanisms to include different sources of knowledge into decision making?
How are lessons being learned at the local scale being communicated into decision making frameworks and policy?

Integrating climate change adaptation into water governance institutions in Tanzania, Uganda and Kenya: Transforming policy into practice

By Katharine Cross, Onesmo Zakaria, Jasper Okello, John Owino, Robert Bagyenda, Barbara Nakangu, Emmanuel Mwendera, Daniel Gathima and Hamza Sadiki

Adapting to climate change impacts needs to occur across various scales of governance from national level policy to district development plans. The reform of water policies and legislation of Tanzania, Uganda and Kenya, provides for the decentralization of water governance institutions and can be a means to integrate climate change adaptation approaches.

In Tanzania, IUCN is mainstreaming climate change into existing and newly created water governance institutions , such as the basin organization and water user associations, which manage water resources at the basin and sub-catchment levels, respectively. This mainstreaming has been in the form of awareness raising on climate change impacts, application of vulnerability assessments, and implementation of adaptation actions from the community to the basin level.

IUCN is now scaling out this approach and using lessons from Tanzania in Uganda and Kenya to enable water governance institutions to practically implement climate change adaptation approaches. This can be achieved through integrating outputs of climate change vulnerability assessments into catchment management plans and identifying priority actions to be undertaken by different stakeholders. Priority actions from plans could include construction of cattle troughs or boreholes to provide alternative sources of water and reduce conflict between different users. The aim across all three countries is to ensure that adaptation to climate change impacts is an integral part of planning and development activities across scales of water governance.

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Dealing with domestic water supply in climate vulnerable areas: pilot and beyond pilot

By Kazi Rashed Hayder, Aftab Opel, Hasin Jahan and Arif Abdullah Khan

Domestic water supply infrastructure particularly in the coastal region of Bangladesh is not strong and efficient enough to contend with climate change induced natural adversities such as cyclones, water surge, etc. This was observed in the recent experience of two category 1 cyclones (cyclone Sidr in 2007 and cyclone Aila in 2009) which destroyed the domestic water supply infrastructure of the coastal regions almost entirely. In the absence of any viable alternatives, people in those regions depend mainly on 'water-relief' for relatively long periods of time. This puts lots of pressure on the poor communities, increases their health risks and affects their overall well-being. To deal with this, WaterAid experiments new technologies and upgrades the existing ones, pilots and scales up through community-based programmes to help poor communities adapt in the changing situation. Some of these technologies have already been taken up by the government and other stakeholders to replicate in other similar conditions though a horizontal learning approach. The proposed paper will report, based on systematic evidence and analysis, on the success of these experiments and pilots and the potentials of scaling up.

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Stop land degradation in Guidimakha

By Madyoury Tandia

Guidimakha is an area on the rocks of Mount Wawa with its volcanic and metamorphic rocks very hard. The region is in low-cons highland Assaba. Guidimakha receives an average of 500 mm/year of rainfall and receives the waters from the high plateau of Assaba. The lack of cups and strength of water currents in the wadis are causing high levels of erosion and reducing farmland despite the abundance of water.

In the village of Waret Hmoimid, located in the municipality of Tachott northwest of the region, people adapt to climatic conditions to preserve their farmland against erosion. The 520 villagers were surviving on less than 10 ha of farmland. What makes these people lived in a persistent food insecurity. They use only the banks of wadis and small bowls to grow during winter position. Rain-fed crops are very uncertain with very low yields associated with uncertain and irregular rainfall.

To adapt to uncertain climatic conditions and land degradation by water erosion, people use their plots scattered along the wadis of crop varieties with short cycle and various techniques of water conservation in soil such as zai, earthen bunds. It should be noted that farmers worked individually to reduce erosion on their land.

In the framework of natural resource management, the whole community Waret Hmoimid was mobilized to restore the land. People have joined forces to restore their lands in a watershed approach and management of natural resources.

This mobilization of the population relied on awareness raising, capacity building and supervision thereof, the recovery of materials and local expertise.

With the support of the program, people have made 7 books (2 filtering dikes, levees 3 mixed, 1 thresholds gabions, 3.6 km kilometers of stone bunds. All this work has required the mobilization of labor of 15,000 man / day. These books have helped to reduce erosion and recover nearly 100 hectares of farmland.

The most spectacular is the recovery of upland (the armor) that have never been cultivated. This was made possible through the strong mobilization and the availability of labor work. Farmers considered them poor land unsuitable for some local speculation. Indeed, the works have not only reduces erosion but also the deposit of silt adapted to local traditional cultures in the rain.

Currently, the community has 97 acres of land developed and cultivated. In 2009, local production of millet has increased considerably, from 12 tons to over 135 tons. In addition to this increase in production, storage structures are allowed to extend the stay of the water in the cups allowing rapid regeneration of vegetation and the return of certain species that had disappeared.

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Adapting an indigenous water resource management system to new climatic realities

By Bhathiya Kekulandala, Asoka Ajantha and Buddika Hapuarachchi

Climate change is regarded as the overarching development challenge of the century. Although Sri Lanka's contribution to global warming are negligible; it is vulnerable to the impacts of climate change in terms of increase in the severity and frequency of disasters, variability and unpredictability of rainfall patterns, increases in average temperatures and sea level rise. Coastal communities in the north and east of Sri Lanka emerged from 30 year old civil war recently. Community infrastructure (Irrigation tanks, channels, roads) and social institutions that supported their livelihoods have deteriorated over the war time period making them more vulnerable to challenges posed by climate change.

Kathiraveli situated about 80 km north of Batticaloa on the Batticalloa –Trincomalee) main road. It is a coastal village situated at the right bank of the Verugal Ara (perennial branch river of Mahaweli river: the largest river system in Sri Lanka). This village suffered heavy damage from the war and Asian tsunami. Main livelihood of the communities of this village is paddy farming and they depend on the "ThamaravilluKulum" (Reservoir filled with lotus) irrigation scheme for the water for the paddy lands. "ThamaravilluKulum" is natural Villu ecosystem situated at the lower floodplain of the "Verugal ara". Local farmers have constructed an earthen bund at the tail end of the "villu" creating a small reservoir to store water. Farmers in this village have been able to cultivate two seasons when others communities in the vicinity cultivates only one season. This has been possible due to collection of rainwater during the rainy season and getting water from the river through a small channel in the dry season. This irrigation scheme was damaged during the war due to lack of maintenance and from the tsunami wave that funneled along the river. As a result water holding capacity of the irrigation system was drastically reduced. This resulted in loss of livelihoods for paddy farmers, fishermen and cattle farmers. This is wetland ecosystem shared by multiple users such as fishermen, cattle farmers, women for domestic uses such as washing and bathing and wildlife. It helps to maintain the ground water table in the area and keeping water in the wells at stable level.

Practical Action started the rehabilitation of the irrigation system to secure the livelihoods and reduce the vulnerability of the local communities. Participatory discussions held with farmers and other user groups in the area revealed that there is a complex water management system, where farmer group manage the water inflow and outflow by adjusting control gates in three distinct management systems. Furthermore discussions, participatory analysis using modified PCVA and Rainfall data analysis to capture trends of

changing climate clearly indicated shifts in rainfall in terms of seasons, frequency and intensity. The participatory exercises and discussion clearly indicated changes in the intensity and shifts in the season. Statistical analysis of rainfall data over the last 30 years clearly showed the shifts in the on-set of the monsoon, where communities start sowing their rain fed fields and peak rainfall towards December – January from October-November. These results were shared with the community and adaptation strategies were identified. The farmers, agriculture extension officers and government officials were involved in devising new strategies. This was resulted in modifying the water management system, cultivation practices, crop selection and strengthening bunds and water control gates to suit new climate realities. Furthermore training and capacity building of local communities and government officials, creating linkages among village institutions and government agencies and developing a simulation model to forecast flood level changes are taking place.

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LOCAL KNOWLEDGE AND COMMUNITY-BASED ADAPTATION TO FLOOD MANAGEMENT IN AN GIANG PROVINCE, MEKONG DELTA OF VIETNAM IN THE CONTEXT OF CLIMATE CHANGE.

By Bach Tan Sinh

The concept of living with floods has existed for a long time in the Mekong Delta. Floods were not considered natural hazards by people living in cities or those in rural areas who did not cultivate rice during the flood season. After unification of the country in 1975 the Government implemented resettlement policies to bring people from the North to the less densely settled areas of Mekong Delta and set up new economic zones. Floods became a problem when the new settlers cultivated three crops per year including the one during the peak flood season. To cope with the harms caused by flood, a number of technical solutions and structural measures have been proposed and pursued including: building the dykes to prevent certain areas from being flooded; and, building raised and protected residential clusters. These technical solutions often created other problems , for example, reducing drainage and thereby prolonging flood durations when they exceed dyke heights. Resettlement of people into residential clusters created livelihood problems as there were few job opportunities in the clusters.[1]

In 2002, An Giang Province was considered one of the most innovative provinces in finding ways to adapt to floods. The provincial Program Number 31 entitled "Production, Creation of Jobs and Improving material and cultural living standards for people during the flood Season in 2002 and Development Directions for 2003 in An Giang" was successful in turning floods from a problem to an opportunity. The Province successfully promoted the new community-based approach to adaptive water management by engaging various stakeholders in responding the flood.

The paper presents the pro and cons of the flood in the context of climate change in the Mekong Delta and links these perspective with the governance (interaction between government agencies at central and local level and local communities) and local knowledge in shaping the way dealing with flood. At the end the paper points out some challenges the local communities are facing in implementing the livelihood strategy towards “living with floods” taken into account the new emerging problems associated with climate change such as sea level rise and development in upstream of Mekong River such as dam construction.

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[1] Neefjes, K., 2002, *Lessons from the Floods: Voices of the People, local Authorities, and Disaster Management Agencies from the Mekong Delta in Vietnam* , IFRC, VNRC and AusAid.

Using environmental flows as an adaptation approach to climate change

By Katharine Cross, Stefano Barchiesi, Mark Smith, James Dalton, Onesmo Zakaria, Sylvand Kamugisha, Hamza Sadiki, Emmanuel Mwendera

Environmental flow assessments can be used to support water allocation decisions that are based on development scenarios and multiple criteria. Flows assessments create adaptive capacity to identify and plan for ecosystem-based measures that include recharging of aquifers, refilling of wetlands as wetter areas with lower evaporation, and reconnecting floodplains to buffer against the damage of floods. In essence, implementing environmental flow management builds climate resilience as it provides a mechanism to 'engineer' environmental outcomes that benefit ecosystems and their uses.

An environmental flows assessment undertaken in the Pangani Basin in Tanzania is being used to organise ecological, social and economic knowledge of the basin to aid future planning and management of its water resources. In addition, climate change modeling undertaken in the Pangani Basin has predicted that the seasonality of stream flows in the Pangani is likely to be changed due to hotter and drier winters.

Based on these climate predictions and using the information from the integrated flows assessment, scenarios looking to 2025 are being developed to determine how different water allocations under this climate future will impact economic development, environmental health and social well-being in the basin. This paper demonstrates how environmental flows is being used as an adaptation tool in the Pangani Basin and how this approach is guiding decision making at the basin on water allocation as well as influencing at wider scales including the national, regional and international levels.

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Parallel Session 5: Gender

Session Chair: Achala Chandani, IIED

The Gender Working Group formed at the 4th Community Based Adaptation Conference (CBA4) focused on issues such as understanding vulnerability as a solution to the problem, identifying women as agents of change and seeking opportunities, mobilising and including men in gender discourse and understanding gender at different levels and organisations at community, local, national and international levels.

Gender refers to socially constructed roles, responsibilities and opportunities associated with men and women, as well as hidden power structures that govern the relationships between them. Throughout the world, there are gender-specific differences in consumption patterns, lifestyles, access to and control of resources, power, and vulnerability to environmental problems.

Climate change has specific effects on women and men because of the different roles they play in society and their differentiated access to social, economic and physical resources. It is generally recognized that women living in poverty bear a disproportionate burden of climate change consequences. Because of their greater dependence on local natural resources, their domestic burdens are increased. In many countries, these disparities resulting from the social positions of women within the family and the community are aggravated by the effects of climate change making climate change and gender inequality linked inextricably. Climate change slows progress towards gender equality and poses a challenge to poverty reduction efforts while gender inequality can further worsen the effects of climate change. Consequently, gender mainstreaming must be seen not only as an important factor in adaptation to ensure success and sustainability of projects.

The Gender session at CBA5 will follow the overall theme of the conference 'scaling up beyond pilots'. Therefore, beyond the above well-travelled observations, it is critical that this session focus on elements related to integrating gender sensitivities into all mechanisms, scaling up beyond pilots. Scaling up in gender will require an expansion of gender considerations in climate change agenda in order to go beyond describing the situation of poor rural women as victims and to relate vulnerability and adaptation issues to the broader cultural, economic and social processes that are at the root of climate change processes. Also, scaling up gender in community-based adaptation from pilots to larger scales may involve putting greater responsibility on women for their actions. Focusing on the role of women as critical potential actors in community based adaptation efforts would help foster necessary changes in approaches to development.

The gender session at CBA5 will identify and discuss practical issues related to scaling up gender in community-based adaptation beyond pilots such as:

- Why is it important to scale up gender mainstreaming in CBA?

- How do we mainstream gender in CBA?
- Why is it essential for governments and the international community to scale up gender in climate change activities?
- What is the role of education in scaling up gender in the adaptation policies and programmes?
- What is the role of institutions in scaling up gender in the adaptation policies and programmes?
- What are the conceptual rationale for linking women's empowerment and climate change resilience?
- What are the strategies and guidelines available for mainstreaming gender in CBA?
- What mechanism does project implement to go beyond pilot scale?

How to mainstream gender into CBA

By Lucy Wanjiru

Climate change is a defining challenge of our time - the harmful effects of climate change will most acutely affect the poor in developing countries, at the same time, risks associated with climate change threaten to reinforce gender inequalities and even erode progress that has been made towards gender equality. Poor women's limited access to resources, restricted rights, limited mobility and voice in community and household decision-making can make them much more vulnerable than men to the effects of climate change.

Yet, women play a unique role in the stewardship of natural resources and support to households and communities, they are active agents of change in shaping adaptive mechanisms in vulnerable areas. And it is vital that gender equality considerations, as well as men's and women's different needs, perspectives, knowledge and skills, be taken into account when planning CBA activities.

Reality on the ground however indicates that development practitioners and policymakers are often not clear on '*the how'* to mainstream gender in CBA projects. To address this need UNDP has developed a guidebook of simple tools and practical advice on how to take a gender-sensitive approach in planning and implementation of CBA projects.

Gender mainstreaming in CBA projects will support the vigorous and sustained participation of both women and men in all project aspects. And ensure that CBA projects have an approach that harmonizes human development, and efforts to address climate change - through a gender - balanced and culturally appropriate approach that promotes adaptation, for sustainable development at the grassroots level.

Further, gender mainstreaming will integrate gender perspectives into project design and programming – ensuring that the input of both women and men become part of the knowledge generated and lessons learned from CBA projects. And thus, facilitate efficiency in scaling-up of CBA projects, and enable forthcoming CBA projects to contribute to the achievement of gender equality and women's empowerment.

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Energy technology transfer to combat deforestation and reducing climate change vulnerability in Zagnanado (Benin, West Africa)

By Krystel Dossou

Technologies in the energy sector in Benin are outdated (including three stone stoves) and climate change vulnerability context reduced livelihoods of populations in climate change. Cutting trees up directly used for fuelwood or processed coal exported in urban areas, communities were involved in forest destruction and contributed to global warming. Our project aimed to do the following:

- Promotion and popularization of improved stoves and pressure cookers to reduce the consumption of fuelwood.

- Gradual reforestation of deforested areas.

Women's groups consuming production of large amounts of energy, artisans (blacksmiths, welders and potters) received technology transfer and capacity strengthening organized by our project to build economic stoves made of local materials for each, metal, alloy or clay for others. At the same time, women groups had to plant different varieties of trees (fast growing species, traditional and useful species, etc.) usable only after ten years of life and maintain them. Each woman had to transfer this technology to 4 other women. In total, 490 women were directly trained and 2490 economic stoves were built in households and are in use. The project targeted primarily women's groups whose activities needed full consumption of wood energy (production of gari, pulp, oil and peanut cookies, cooked cassava starch, etc.) which becomes rare in climate change context. This OFEDI project was funded by the GEF/UNDP.

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Weathering the Storm – Girls in a Changing Climate

By Assalama Sidi

This presentation is based on research conducted by Plan International in 2010 in the drought prone regions of Ethiopia and flood and cyclone prone regions of Bangladesh with girls aged between 13 to 18 years.

Gender and age discrimination are two root causes of climate risk. Girls face both of these. Their unique experience and needs compared to those of boys must be addressed in climate policies and programmes to ensure just and sustainable development.

Climate change compromises children's future. Girls are disproportionately affected compared to boys due to the roles and responsibilities they are ascribed by societies. Prospects for realising their rights to education, health, security, and employment have never been so uncertain; and the repercussions of this will stretch right into their futures.

Girls and boys alike have valuable contributions to make to climate change adaptation and reducing the risk of disaster for everyone. They will also be citizens holding their governments to account in future. So it is important to ensure that they have equal access to the information and support they require to adapt effectively to climate change today, and to help others do the same. In addition, urgent attention, support and action are needed to address the specific and disproportionate risks faced by girls globally as a result of increasing climate shocks and stresses and to address the underlying factors that make them more at risk.

Girls and young women remain ignored in policies aimed at tackling climate change and its impacts on development. This is not right. It's also short sighted. By properly including girls and young women in climate change adaptation activities and in planning and funding debates, a lot more can be achieved.

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Scaling Up community level work in North Kenya

By Basra Ali

The paper that I intend to present and share with groups working on long term livelihood diversification aspects is based on a published paper I wrote while working with Northern Kenyan communities in 2005. The paper will be a scaled up process on the community level work which had an entry point through the community women groups Association.

The key aim of the paper is to establish the linkages and scaled up process of the published paper which will be looking at the decades marginalized groups struggle to survival on diversified livelihood means and how Governments, Non-governmental organizations and International donors can and are able to scale up the experiences and working of the change agent to increase the projects impacts.

In conclusion the paper will look at and explore other great stories and case studies similar to the one done in Northern Kenya 2005 and see how the climate Impacts can be reversed and its massive effects be minimized through strategic and life saving actions that have a magnified scale rather than the piece meal small interventions that are blessed and appreciated by communities but whose impacts and continuous funding challenges are questionable.

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Climate Change is an opportunity for gender mainstreaming in Nepal

By Achala Chandani and Jony Mainali

The global problem of climate change that has pervasive and far reaching social, economic, political and environmental consequences cannot be solved by the power and knowledge of half the brains of the world, out of the exclusion of women. Different reports still show that the gender aspect has been excluded in policy and legal formulation in the national context. The societies, overridden by patriarchal value often resort to the privileged half in their decision making. The general situation signifies that there is less participation from women in the formulation of laws and policies of any kind. Since climate change has been the challenge for the whole of humanity, it is thus pertinent to explore whether women are involved in the legal, policy and program formulation process of climate change in Nepal.

Nepal has prepared and submitted the NAPA recently. UNFCCC's NAPA guidelines require the concerned state party to incorporate a gender element within its reporting. Moreover, NAPA is prepared so as to be contributory to the pursuit of development goal of Nepal. There are development planning frameworks that Nepal has so that it provides congenial environment to mainstream climate adaptation programs in the existing development frameworks. Within this context the relevance of the study lies in to explore whether or not Nepal's NAPA and other legal, policy framework make any gender considerations. Moreover, it is worth exploring if nor not the participation of men and women that advance the stake and concerns of gender consideration is made in NAPA formulation along with other relevant legal and policy frameworks. The paper thus explores both substance (incorporation of gender consideration) and the process (participation of women) of NAPA and other legal and policy formulation in Nepal. In doing so, the study shall be carried out in three stages: desk based research, field visits and analysis of data. Data collections will both be field based and desk based. The outcome of the study is believed to be relevant to the policymakers and the concerned stakeholders in devising gender sensitive policy and program and the implementation of the same. It is believed to make light of the relevancy of gender consideration in climate change regime because of its differential impact pattern.

The objectives:

To explore if the legal, policy and strategic framework in addressing climate change include gender language in response to climate change.

To examine if women's participation in such policy formulation is given space in Nepal's policy, and legal and NAPA formulation.

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Healthy Women, Healthy Planet: Women's Empowerment, Family Planning, and Resilience

By Kathleen Mogelgaard

Reducing unintended pregnancies and supporting women and families with tools to determine family size can improve socio-economic status of women, reduce strain on the environment, and improve resource conservation – all of which make significant contributions to resilience in the face of climate change. Access to reproductive health and voluntary family planning is an important part of strengthening women's capacity as leaders in adaptation, yet in many places around the world access to these services is limited. [As identified by experts at side event at the 16th Conference of the Parties to the UN Framework Convention on Climate Change in Cancun,] strategies to effectively link gender, reproductive health, and climate change resilience range from the community level to the international level, and include: 1) replication of successful, integrated, community-based programs in Ethiopia; 2) advocacy with elected officials to raise awareness of linkages and promote accountability; 3) cross-cultural youth exchanges that break down taboos and other barriers in discussing issues of reproductive health and sexuality; 4) ensuring a comprehensive approach to gender assessment in climate change finance mechanisms and tools; and 5) highlighting commonalities in existing state obligations that promote human rights, women's rights, and reproductive rights.

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Plenary Session 6: National Action to Foster Community Based Adaptation

Session Chair: Heather McGray, WRI

Communities and individuals will need to anticipate, plan and respond to the additional and growing challenges of a changing climate. Often, national level policy, investment and institutional arrangements will play a critical role in facilitating and enabling individuals and communities to successfully adapt to these changing circumstances. Conversely, out-dated or maladaptive national interventions can stifle adaptation or lead to perverse outcomes.

This panel during the 5th Community Based Adaptation Conference in Dhaka will look at the role of the national level in enabling and facilitating community based adaptation. This could take several forms, such as:

- **National laws and regulations can create mandates or incentives for communities to undertake adaptation.** Examples could include direct laws and regulations that call for specific adaptation activities, but they could also include land use planning directives, zoning laws, regulations pertaining to migration and poverty reduction, and other types of natural resource management laws and policies, all critical for increasing resilience.

- **National-level programs that provide resources (financial, and informational)—or help communities access resources -- to support adaptation activities.** Such programs will also need to allocate finances to communities in ways that use community knowledge and facilitate investments that decrease the vulnerabilities of the poor and vulnerable. The way climate information is delivered to communities may also be more important than the generation of the climatic information itself.

- **National laws that may underpin the legitimacy and sustainability of local institutions** (NGOs, user associations, co-ops, early warning systems, etc.) instrumental in community-based adaptation.

- **National leadership** that provides an example or creates a national discourse to which communities respond by undertaking adaptation. The national level can also play a critical role in providing high-profile demonstrations and communications to community based adaptation risks and successes as well as in coordinating several international processes and partners.

- **National policy and institutional arrangements may also create barriers to adaptation at the community level, or even lead to mal-adaptation.** In this case, solutions to scaling up CBA may involve national-level policy reform to reduce barriers or shift community-level incentives away from poor practice.

For additional information on the panel, please contact **Aarjan Dixit, adixit@wri.org.**

Developing national, regional and local adaptation programmes in Ethiopia

By Legesse Gebremeskel

In Ethiopia, 85% of the population are dependent on rain-fed agriculture or pastoralism. High levels of historical rainfall variability means the country has developed a number of mechanisms for dealing with extreme events such as drought and floods. As part of its adaptation effort, the country continues to give focus to these efforts given the likelihood that the number of extreme events will increase under climate change. However, this also requires longer-term adaptation measures to be integrated into development planning across all sectors with incentives created for local level action.

The Government body responsible for coordinating climate change policy in Ethiopia is the Environmental Protection Authority. This agency has led the development of a National Adaptation Programme in Ethiopia, which is a key part of its strategy in achieving a *Climate Resilient Green Economy*. However, given the responsibility of all sectors and to tackle the impacts of climate change and the federal system of government in place in Ethiopia, an extensive process of consultation was carried out on this programme and efforts are already being made to translate the programme into local level action. This presentation documents some of the learning from this process:

- How consultation informed the national plan
- Achievements and next steps in developing sector action plans
- How different government and NGO stakeholders were involved in the development of the Afar Regional Adaptation Plan
- Some of the achievements and challenges in developing wereda (district) and kebele (community) level adaptation plans
- Strengthening systems for the implementation of local plans: lessons from other experiences in Ethiopia such as from the *Productive Safety Net Programme*

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Enabling Child-Centred Agency in Climate Change Adaptation

By Nick Hall

Why it is vital to prioritise the needs and active inclusion of over 50% of the world's population - children and young people - and what attitudinal and institutional changes are desirable for more effective climate adaptation?

Studies to articulate a child's capacity and agency to contribute to climate change adaptation are growing. However with this interest in child participation there is a need to better understand how children can become effectively engaged in articulating their needs, identifying solutions and taking action to reduce climate related risks in ways that do not expose them to increased personal risk. Drawing on information about the national government context for climate change adaptation and DRR and child centred policy alongside empirical studies in El Salvador and Philippines, this presentation will review approaches to child-centred climate change adaptation in both countries to unpack the elements of the enabling environment.

Child-centred approaches to climate change adaptation (CCA) reflect the understanding that efforts to adapt to climate change cannot properly account for children's needs or secure their rights unless specific attention is paid to this during the design and implementation of any policy or programmatic intervention. From a child rights perspective climate change effects not only a child's basic right to survival and development, but cuts across their right to participate and for decisions to be made in their best interests. Child-centred approaches recognise the role and rights of children as citizens and agents of change, seeking to engage them in CCA decision-making and accountability processes and supporting child-centred community-based programmes of action.

Two key recommendations derived from the research will frame the presentation:

- National climate change policies and investments should resource decentralised training and capacity building programmes across sectors to provide duty-bearers with the skills to engage effectively with communities, including children, in climate risk assessment planning and programmes.

- Sub-national governments should have access to specialist technical and scientific knowledge available at the national or regional scale to enhance programmes and plans for climate change adaptation

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Community based adaptation – a new opportunity for social justice

By Harjeet Singh

The differential impact of climate change reflects and reinforces inequalities that exist in the society. It is one of the biggest obstacles to end poverty and enabling poor communities to realize their rights. Civil society organisations have demonstrated that community based adaptation is key to build resilience of poor communities. However, scaling up of good models and practices in the increasing fragile climate still remains a challenge.

Community based adaptation reiterates the need of involving poor communities, particularly women, in all stages of programme- assessment, designing, implementation and monitoring & evaluation. The scaling up of such programme is only possible when governments and donors bring in a paradigm shift in the way development policies and programmes are formulated and implemented. National development strategies must integrate climate change adaptation as one of the key components in their vertical governance structure and its interface with sectors and departments. The micro-level planning by communities must get utmost importance and resources should be made available at the lowest tier of governance to design climate resilient development plans that takes into account social, cultural, political, economical and environmental dimensions. Adaptation policies must be built on the principles of social justice and equitable sharing of resources.

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The Philippines Climate Change Act: Integrating climate change adaptation with disaster risk reduction

By Yeb Sano

The Philippines, an archipelagic nation of over 90 million people, faces severe threats from more intense tropical cyclones, drastic changes in rainfall patterns, sea level rise, and increasing temperatures. Recognizing its vulnerability to the adverse impacts of climate change, the Philippines has declared as the policy of the State to systematically integrate climate change in government policy formulation, development planning, and poverty reduction. The Philippines responds to the climate change challenge with the Climate Change Act of 2009, a law that aims to mainstream climate change into government policy formulation and make climate change an integral part of all programs of government. With the enactment of this landmark legislation, the Philippines highlights the State's affirmation of the right of the people to a healthful and balanced ecology, adopting a vision of sustainable development and working to reduce risk from climate change. The same law creates the National Climate Change Commission, the lead policy-making body of the government tasked to mainstream, coordinate, monitor and evaluate all of government's climate change programs and plans. The Commission has embarked on a national process of building a National Strategic Framework and a National Climate Change Action Plan, both of which are envisioned to enhance local action on adaptation and build resilience for communities. These processes are hugely anchored on adaptation best practices at the local community level, carefully integrating climate change adaptation with disaster risk reduction.

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Climate change and migration in Mexico: The role of national safety net programs

By Agustine Latipi

In absolute terms, the world's largest emigration flows depart from Mexico. Between 300,000 and 550,000 persons per year have left rural areas of country to move to urban areas and the United States in the last twenty years. Processes related to climate change, under way for over a decade, affect the livelihoods of rural and urban dwellers and have a large impact on the flow of these people.

This presentation will explore these processes, and then lay out the various causal relationships between climate change and emigration. While desertification, deforestation, changing rainfall patterns and other climate related phenomena affect the livelihoods of the poorest most acutely, these processes are not the main candidates for emigration. National policy and the various safety net programs set up in Mexico play a critical role in encouraging and decreasing this flow of people. The complicated interplay between various environmental factors at the community level and policies at the national level often result in the large flow of people across the border. This will have significant implications for developing plans and strategies to adapt to a changing climate.

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Enhancing local adaptive capacity to climate risks: an experiment on weather based farming model in the Semi-arid region of India

By Arivudai Nambi Appadurai

Reliable climate information products and services, effective and timely delivery of information services, and participation of the local institutions and communities in making use of the products and services are critical to designing effective strategies to adapt to climate change. We illustrate a case study on using weather based farming concepts as effective adaptation tool to manage climate risks at the local level for the farmers of Kundai village in Udaipur district of Rajasthan, India piloted by MSSRF and other partnering institutions. Lessons from these community based experiments have been linked with the various national missions under India's National Action Plan for Climate Change (NAPCC). This was in fact the first project to scrutinize community based adaptation learning in the context of national policy after the NAPCC was released.

The underlying hypothesis is that simple weather data (rainfall, wind speed, temperature and relative humidity) collected from village level mini agro-met observation facilities could help communities develop weather based rules of thumb for taking appropriate farming decisions. The study demonstrated that farmers who used such locally generated weather information regularly and fine tuned their agricultural practices accordingly, experienced marginal increases in agricultural productivity. It also demonstrated how the setting up of 'Village Knowledge Centers' working in tandem with the ag-met facilities could be effectively put into use to disseminate relevant weather information at the local level, thereby helping to enhance the adaptive capacity in the long-run. Though focused on a small group of farmers and lacking perspective on its applicability over longer time periods, seasons, different crops and cropping systems, the project produced important lessons and recommendations for the various missions under the Indian National Action Plan for Climate Change.

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Meeting Information and Advocacy needs for Climate Change Adaptation in Zimbabwe

By Jeremiah Mushosho

As the impacts of climate change continue to worsen, a number of countries in Africa are starting to come up with Policy Frameworks in order to guide their climate change interventions. Zimbabwe is one country that has taken long to develop a comprehensive climate change policy. Any Climate Change policy has to be evidence based and CSOs play a very important role in providing the needed evidence.

The presentation will touch on the project being implemented by ZERO Regional Environment Organization and Dialogue on Shelter in Zimbabwe Trust with Technical Support from IIED to provide the information necessary for drafting the national Climate Change Policy. Funded by DFID is an action-oriented research and advocacy initiative around the key climate change issues facing Zimbabwe, with low income urban groups and rural communities being its primary target. Its focus is to facilitate climate change adaptation through policy advocacy and research as support for government and civil society engagement in national debates and campaigns.

The presentation will look at the project's research component where the impacts of climate change on Housing, the legal framework on climate change in Zimbabwe, economics of climate change adaptation in Zimbabwe and the general impacts of climate change in Zimbabwe have been investigated.

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Plenary Session 7: Agriculture, Local Resilience and Climate Prediction Services

Session Chairs: Sudip K Rakshit, AIT and Richard Ewbank, Christian Aid

Agriculture increases the income of the poorest quintile of the population by 1.61%[2] for each percentage growth in agricultural GDP, a poverty alleviation performance higher than any other sector. However, it is also arguably the most climate vulnerable sector, with significant year-to-year variation in output that on a global scale has been causing food price volatility. In addition, it is facing increasing pressure to reduce the environmental externalities that have become associated with an overdependence on fossil-fuel based inputs. Agricultural land has the potential to act as a significant carbon sink if managed sustainably and yet currently, it generates 12.5% of greenhouse gases directly and, through land use change and deforestation, contributes to a further 10%. Despite this, over the next 40 years, agriculture will have to increase productivity by an estimated 70% if it is to successfully feed a global population that will reach 9 billion by 2050.

A key strategy to address climate risks will be to significantly enhance the use of meteorological services for short, medium and long-term climate change so that farmers can reduce risk and make productivity-enhancing decisions for their agricultural enterprises. Climate variability plays a significant role in the lives of rural agriculture based societies in the developing world. Farmers have to take a substantial burden of these impacts which range from energy, water access, food security and poverty alleviation. For example in the case if water – excess water (floods), no water (drought) or water at the wrong time (irregular precipitation) is a major source of concern. One potential means of reducing the impacts of climate variability of the vulnerable population is the seasonal climate forecast, but these are rarely developed into a tailored "farmer forecast" resource that would combine the seasonal overview with shorter-term weather forecasts.

In most cases the poor farmer's decision framework is based on reducing risk. Decision making to achieve this goal may include the household economic conditions including non-farm earnings, cultural norms and traditions, government policy, traditional indicators of climate conditions, etc. The farmer processes the information he has at hand in the best possible manner, but typically favors personal experience. Hence, how information is communicated and made available is often critical.

Weather and climate forecasts present a number of challenges to small-scale farmers – it is often presented in ways which farmers find difficult to interpret, at scales which are not specific enough for farmers to confidently apply it to their locality and includes levels of uncertainty that are difficult to translate into risk-reducing livelihood decisions. Even though considerable efforts have been made to disseminate agricultural information through national radio and television broadcasts, local language newspaper, extension workers, etc., there is in many cases no clear evidence that this has helped the poor farmer. The main reason for this is the lack of understanding of the mind of these rural farmers, the way in which they access information if it is available and then use it for decision making.

[2] Economic growth and the income of the poor – Gallup et al, CAER Discussion Paper No. 36 (Harvard Institute for International Development, 1997)

There is thus a clear need to determine the most efficient means of forecast dissemination from a "bottom up" perspective for the farmer who may seek such information. It has to be provided in a manner that is easy to access, easy to understand and focused in a manner that it is of relevance at both village level and farmer level. While most urban communication strategies get ruled out due to host of reasons including illiteracy of the farmers, it is clear that interactive personal discussions with a knowledgeable local expert in which the farmer has confidence has the greatest acceptability, besides the social networks farmers themselves create. This is possible only by having local extension workers who visit and have one to one discussions with the individual farmers.

Trust, availability in the locality and providing the information in an understandable form are thus key to the success of such efforts. This might be possible with the support of the governments but they are often considered unreliable. In some countries like India, universities are participating in such activities. Once such positive contact is made, it is possible to transfer information useful information in form acceptable for the farmer, in a language understood by the farmer, at frequencies required by the farmer. With the growing availability and confidence farmers have with the mobile phones, the above through this media seems to be working towards a good solution for some types of information, but with climate information of greater complexity, such as seasonal monsoon maps, other communication and extension channels will be needed.

The implications are therefore considerable for agricultural development, extension services and role of meteorology agencies. These include:

- The way meteorology agencies upgrade and enhance their capacity so that services to farmers become a top priority. As this happens, how can existing scarce meteorological expertise be used to greatest effect? Can local climate stations become more than just measuring stations?
- The communication channels that can be used to ensure that farmers get forecasts at all time scales that are relevant and can be used to facilitate risk-reducing livelihood decisions. Are farmer field schools and mobile phones the answer?
- The role of agricultural extension services that have in many countries experienced a long-term decline in coverage and increased levels of privatization. How will these and other sources of climate expertise be integrated to reach all farmers?
- The incorporation of local knowledge and reducing the skepticism with which forecasts are regarded by many farmers. Is local knowledge a key resource or is climate change itself reducing its effectiveness? How can the pilot and innovative projects combining science and local knowledge be scaled up?
- With the need to increase climate services to farming suggesting a more knowledge-intensive paradigm for agricultural development in a changing climate, are there other implications for both agricultural advisory services and environmental sustainability?

Climate change impacts on tropical agriculture and the potential of organic agriculture to overcome these impacts

By Mokbul Morshed Ahmad

Global warming mostly causes climate change which affects agriculture by increasing the temperature, modifying the rate of rainfall, water-preservation and soil fertility. Climate change impact on agriculture is different depending on the agro-ecosystem condition, but based on a number of studies, the most affected part of the world would seem to be the tropical region. South East Asian countries located within the tropical belt will be most affected. The feasible impacts include productivity loss, drought risk, varying monsoon pattern and shifting crop cycle. Since most of the agricultural products in South East Asia are climate-dependent plants, the impact will be widespread. For example, rice is a staple food in South East Asian countries and its cultivation is very dependent on climate conditions and water resources. Any loss of productivity with rice would cause socioeconomic problems and have implications for food security in the longer term. A number of studies have suggested that organic agricultural practices have the ability for enhanced drought resistance and greater adaptability to climate change. Organic agriculture is also self regulating and has proven to be a sustainable agricultural system. Based on the available evidence, organic agriculture is expected to help farmers overcome the impacts of climate change. This article will assess the impact of climate change towards agriculture in the tropical region, especially in South East Asian countries, as well as analyzing the potential of widespread application of organic agriculture to alleviate climate change impacts on agriculture.

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Scaling Up Appropriate Scientific Technologies in Indigenous Adaptation Strategies; Best Options for Enhancing Small Scale Farmers' livelihoods in LDCs.

By Ben Twinomugisha

Despite the fact that small scale farmers contribute over 75% to agriculture production in sub-Saharan Africa, they are hit the most by future climate change adverse impacts. The adaptation societies worldwide are making a solid move to Community Based Adaptation alternative approaches, while farming in Africa still survives largely on indigenous practices which are less effective for new and future climate adverse impacts. There is a glaring gap in knowledge and skills for absorption of appropriate scientific technologies necessary for enhancing farmers' livelihoods. If indigenous adaptation strategies effectively integrated and scaled-up scientific research and development insights, they would enhance sovereignty, inventions and innovations needed for building a climate change resilient farming community. Science and technology need to further improve; indigenous plant and animal varieties to be drought and flood resilient; integrate early warning systems and enhance value addition in terms of production, preservation and marketing. CBA approaches must emphasis strengthening the capacity of small scale farmers to adapt and scale up science in their own knowledge and survival systems.

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Ethno meteorology in the context of climate change in Nepal

By Dinanath Bhandari

Access and use of systematic meteorological information to rural remote communities is limited in Nepal. Communities have been utilizing their traditional tacit knowledge skills on forecasting and responding to weather events. This ethno-meteorological information is utilized in agriculture, mobility and other livelihood strategies. The assessment of the weather situations such as rainfall were found assessed based on the characteristics of the rainfall considering its implication in different aspects of livelihoods and resources. Less accurate information is available on the quantity of rainfall and other weather phenomena.

Communities use behaviours of birds, plants and animals in the surrounding as indicators in addition to wind, sunshine and clouds to assess and forecast weather pattern. Past experiences and observations are decisive in the forecasting. People also discussed each other to analyse the observed symptoms of indicators and their linkages to the future consequences. Strategies were then devised to cope and respond to the projected situation. The strategies largely depend on the intuition of some decisive people in the family and community. Role of the ethno meteorological knowledge on surrounding weather is significant and its importance is increasing to community based adaptation to climate change particularly in the context where systematic measurements did not take place in the past and efficient technologies are yet to reach.

Migration and introduction of formal education were identified as factors to dwindling down the indigenous knowledge on weather assessment. The changing weather pattern, characteristics of rainfall in particular has also challenged community's coping capacity based on the ethno meteorological knowledge skills.

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Enhancing the Adaptive Capacity of Communities in Semi-Arid Areas by Harmonizing Indigenous Knowledge Weather Forecasting with Conventional Forecasting

By Damian Casmiri and Linda Kiluma

Despite conventional weather forecasting information provided by meteorology agencies, indigenous knowledge (IK) forecasting in relation to weather is still relied on by many societies in rural areas. This has contributed first by the fact that the coverage of conventional weather information is too big due to limited stations therefore do not necessarily represent local conditions, secondly, package and dissemination of the information is not user friendly to these communities. IK forecasting has been part of discussion for many modern scientists who doubt their reliability taking into consideration the uncertainties brought about by climate change and variability. Although the views of these scientists might hold water at these uncertain times, poor communities keep on believing and learning to accommodate the changes. This indicates that, it is important to document and promote this knowledge especially in poor developing countries. In situation where conventional weather forecasting fails to provide information much needed by communities who depend on climate sensitive sectors of the economy to derive their livelihoods and poverty reduction in general, IK forecasting is an important tool to enhance combating impacts related to environment changes.

Early lessons from CBA project in Handeni District and CC DARE project show that communities in semi arid areas are very vulnerable to CC impacts. This is due to the fact that, agriculture and livestock keeping are the dominant activities and recurrent drought has made them develop indigenous and local skills which enable them to survive in harsh environment. However, to strengthen their capacity to survive, a need of having a proper system of harmonizing IK and conventional forecasting is very important. The world development report (2010) acknowledged that communities, especially indigenous peoples, already have context relevant knowledge and strategies for addressing climate risks. Therefore efforts aiming at reducing vulnerability and boosting adaptive capacity will benefit significantly from the ways people have always responded to environmental risks especially in Africa and elsewhere where communities have adapted to extended periods of drought.

Harmonizing the two knowledge will ensure that the weather information gap existing in rural areas will be bridged hence increase the adaptive capacity of vulnerable communities.

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Results of Christian Aid's Climate Change Innovation Fund projects in Africa

By Richard Ewbank

From 2008 – 2010, Christian Aid supported 7 projects implemented by partners across southern, east and west Africa with the aim of implementing *"activities to enhance the community-based adaptation of livelihoods to predicted climate change."* Of the 7, 5 focused on rural agricultural communities (Burkina Faso, Tanzania, Rwanda, DRC and Zimbabwe), one covered forest users (Mali) and one worked with communities in an informal urban settlement (Kabera, Nairobi).

The projects covering agricultural communities implemented a variety of approaches, including assessing local knowledge of climate change, understanding climate science, applying this to vulnerability assessment and implementing practical activities to enhance the resilience of farming practices. Challenges varied from country to country but highlighted some of the constraints of providing predictive climate services that can facilitate adaptive decision-making at farm level. In 2010, 6 of the 7 were evaluated for qualitative impact, primarily in terms of increased capacity to understand future climate threats and drew a number of conclusions and recommendations for meteorology services, national adaptation strategy processes, local and international agencies.

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Community Early Warning Systems for Disaster Risk Reduction in Sri Lanka

By Mohamed Azmey

The frequency and the intensity of natural disasters have been increasing over the last years in Sri Lanka, mainly due to climate change impacts. At the same time, food production is at an unprecedented level of risk that could be amplified by climate change. As 70% of the population in Sri Lanka depends on agriculture, disasters and climate change impacts are expected to significantly affect their livelihoods and increase their vulnerability to food insecurity.

Existing DRR tools can be used to assess the impact on climate change on food security and to inform hazard specific adaptation investments. Sri Lanka's national disaster management programme includes community-based DRR and early warning systems as key areas. Village level community-based hazard mapping exercises and disaster management plans have been developed and village surveillance committees established.

In parallel, seasonal crop forecasting provides production estimates of the country. A food security surveillance system with participation of local communities, which was established by WFP at Government Agrarian Research Institute, assesses and maps out vulnerability to food insecurity.

This presentation will highlight lessons learned on WFP's support to DRR and adaptation through linking climate predictions with food security information, and through capacity building of communities, community-based early warning systems and community adaptation plans. It will also outline how WFP aims to scale up these activities.

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Parallel Session 8: The Economics of Community-based Adaptation

Session Chair: Muyeye Chambwera, IIED

Economics is one of the several dimensions that shape climate change adaptation. Decision-making and action from community to global levels always involve economic considerations among others. The economics working group formed at CBA4 has been exchanging ideas over the course of the year, leading to this concept that shapes the economics session at CBA5.

Scaling up adaptation from pilots to larger scales involves putting greater responsibility on communities for their actions. Resource intensity, which is usually high in pilot projects, gets lower and the ratio between external resources and communities goes down. When external resources per person go down, self-interest becomes a key driver of community action rather than external incentives. Models for stimulating and facilitating action at lower costs are required as communities now have to make independent decisions to invest in adaptation actions with minimum outside support. Under these conditions, community-based adaptation involves the actions of local people using more of their own resources and mostly driven by own interest based on considerations of the costs of inaction. They are also keen to build their own capacity to plan and implement adaptation actions that they devise on their own. Also important is the fact that the use of limited resources for adaptation should enable communities to meet their other existing needs such as food security, access to safe water, education etc.

Pilots are wide-ranging in scale and scope. A common feature is that pilots are mostly controlled (often from outside), and have provisions for failure as they are designed to try ideas (this does not mean pilots are designed to fail, but they help to test if ideas work or not). Scaling up involves doing the real business, and reaching many people and areas in need of adaptation. The economic viability of specific adaptation actions depends on the scale of application, including the social and institutional arrangements that drive large-scale action to address anticipated climatic changes. While scaling up has some complications, it also provides the opportunity to reduce costs per beneficiary if appropriately planned, and depending on the adaptation action. Scaling up also involves deciding the pathways and platforms for channelling adaptation support (financial, logistical, expertise) to the communities. These include local organizations, NGOs, district and provincial platforms, national government channels etc. These have different costs and level of effectiveness associated with them. Their flexibility to work in heterogenous and dynamic settings is also critical. These considerations raise several economic issues that the economics session of CBA5 will discuss.

Community-based adaptation is not simply a process of providing local communities with resources from outside to undertake specified adaptation actions. The economics of adaptation at community levels is not limited to formal rules and models accessible only to specialists, but includes taking into account the considerations made by local level actors, some of which are not captured by formal economic models, but necessary for successful action. Local households, individually and as part of a community, often

employ strategies that help them achieve their short term and long term goals at minimum cost. These strategies or models form the basis for effective scaling up of adaptation pilots. Governments and NGOs who have worked with local communities on climate change adaptation and other development initiatives have also developed models for community outreach and action at larger scales, which minimize the costs. Community-based natural resources management initiatives have also developed and applied models for wider community action on natural resources in larger scales.

Scaling-up CBA requires building on these models, and going beyond them as climate change presents some unique challenges. These additional challenges include dealing with uncertainty, which requires careful consideration of investment decisions by communities, NGOs and governments when expanding pilots. Another challenge is the long term nature of the climate change decision-making framework. This means making decisions and actions now for impacts anticipated decades from now. The way in which local communities value the future is important for these decisions and actions, especially if they involve re-allocating resources from current pressing needs.

The formal economic theories and models that represent these considerations are quite varied in nature and complexity. To avoid burdening CBA5 with a formal session on economic theories, which have their own value, it is necessary to identify those practical economic issues that support the scaling up of community-based adaptation beyond pilots. These include:

- Strategies for reducing the costs of facilitating adaptation e.g. through farmer-to-farmer learning as opposed to formal learning based on external agents.
- How existing development initiatives and models working with large groups of communities have managed the costs of operating at large scale e.g. CBNRM, Fairtrade etc.
- The incentives for voluntary adaptation action by communities without having to rely on direct inputs from outside
- Institutional platforms and pathways for effectively channelling adaptation funds from external sources to wider communities.
- How community development planning can align with local / provincial Government resource allocations and public funding streams. How can Provincial Governments best make use of national / international funding streams to support CBA at scale in their locality?
- The incentives from planned adaptation that make it attractive for local communities to respond voluntarily with minimum external push.
- How costs and benefits are assessed and valued by communities.
- Measuring Adaptation success: can communities use economic tools to evaluate and measure the success or failure of adaptation actions underway?
- The business environment, including access to markets that facilitates adaptation at larger scales. These not only enable communities to access inputs or sell their products, but they also make technologies required for adaptation readily available to local communities at low costs.
- The capacity of communities to manage large volumes of adaptation funds from national governments and international bodies.

- Other theoretical tools and considerations that can be used to inform scaling up, which have not been noted in this framing note.
- Economic safety nets - Scaling up and the economics of vulnerability: will the most marginal be left behind?
- Economics and ecosystem services – do the scales balance?

Economics of Adaptation to Climate Change of Sea Cucumber Fishers in the Philippines

By Maria Rebecca Campos, Ph.D.

The Philippines is the second major producer and exporter of sea cucumber in the world. However, climate change has affected this industry and has decreased income for the country's economy, the commercial fishing sector as well as marginal fishermen who rely on it as their source of livelihood. Three types of sea cucumber fishing techniques are commercial fishing, harvesting sea cucumbers as by-catch and by gleaning. This paper focuses on gleaning because the fishermen have no control of the shallow coral reef flats where they catch sea cucumbers. Collection is done by small-scale or artisanal fishers, involving men, women and children. This activity is carried out during low tide in shallow intertidal reef flats. Gleaning is often classified as "informal" work acting as a safety net for the rural landless. The community of sea cucumber fishers in Sorsogon organized themselves and came up with two options, using the marine protected area approach: artificial reef or ranch model. The second is now being implemented with an IRR of 40%, BCR 1.7, NPV of PhP 670,000 and payback in more than a year over the first which has negative NPV and payback in over 50 years.

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Social technologies for climate change adaptation

By Martin Obermaier

The semi-arid region of northeast Brazil (sertão) is the poorest of the country. Here over 60% of the local biome (caatinga) has been deforested mostly because of extensive pasture. Despite the unconfined grazing, milk production density in the region is among the lowest of Latin America, with an average of 3 to 6 liters per head per day. The main reason for such low yields is an unbalanced diet that limits the production of milk in the animal. In the state of São Paulo, the average is 20 liters per day while in the most productive regions of the world, animals in confined grazing manage to produce on average up to 70 liters per day.

In many regions of the sertão, milk is the main income generation activity for most farmers because it gives them a stable daily income but farmers need to buy expensive additional nutrients, such as cotton seed or soybean cakes if they want to even slightly increase milk production. This ends up eroding their total income. The production and yields of the most common crops like corn, beans and manioc are also severely compromised by a lack of knowledge and understanding of production process and land and crop management. The loss rate of crops of small farmers in the region is on the average about 70%.

Moreover, climate variability is already increasing due to climate change. According to several national and international scientific studies, agriculture is the sector that will be mostly hardly hit by such change. The impacts are likely to affect small farmers much harder because they have very little means to adapt. It is therefore necessary to develop a model that make underserved communities more resilient to an intensification of rainfall variability and that takes advantage of all resources that are available in the region.

Despite the semi-arid climate of the sertão, the region has plenty of unutilized water resources. Since the 1960's, the Brazilian government started constructing hundreds of wells and small and medium size artificial water reservoirs (açudes) to collect and store rainwater during the rainy season. The objective was to increase small farmers' access to water for domestic use, irrigation and pasture during the dry seasons and droughts. However, today most of these water infrastructures are still not used. Hand and inundation methods, both extremely obsolete and inefficient, are standard agricultural practices. Efficient irrigation technologies are responsible for 70% of the increase of crop yields in semi-arid climates but small farmers have still a lot of difficulties to access them because retailers are located in large urban areas, dozens of kilometers away, and keep the prices of such technologies high to compensate the little demand from small farmers. But even in case small farmers manage to increase their production, they may have limited benefits if there is no market that absorbs their production.

Since 2006, several private and not for profit organizations have been testing, under the umbrella of the "Adapta Sertão" (AS) project, several innovations in the distribution chain of irrigation technologies and commercialization of products of family farmers. The strategy that has been developed consists in the dissemination of small water-efficient irrigation kits and drought-resistant forage and crop varieties through a network of retailers based on local farmers cooperatives. The objective is to help small farmers produce more fodder and food on smaller pieces of land. This strategy has two main advantages. First of all, it provides the animal with a more balanced diet throughout the year, leading to higher milk yields and better profits for the farmers. Secondly, it increases the production of crops by
decreasing the deforestation rate and in some areas can even contribute to a natural restoration of the original canopy.
In the municipalities associated with Adapta Sertão, the distribution of technologies is now made through local cooperatives.

Adapta Sertão today needs to refine what has been developed so far into a model that could be disseminate throughout the whole semi-arid region of Brazil and also of other regions and countries. Adapta Sertão aims to become a social enterprise that acts as a catalyst for the dissemination of technologies that are used to increase the yield of agricultural products for milk production and subsistence crops within the region.

The objective is that by the end of year 2012, Adapta Sertão will have developed a full production and technology model based on water efficiency and technological innovations that allow farmers to grow more crops both for human and animal consumption. This would increase milk yields and total income and indirectly help decreasing the deforestation rate in the region that has extensive grazing as its key element.

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Community-based climate change adaptation and the provincial-level development policy: the roll-out of Papua New Guinea's Vision 2050 National Development Strategy

By Nahau Rooney

The National Strategic Plan (NSP) 2010-2050 now called Papua New Guinea Vision 2050 (PNGV50) was initiated in early 2008. The plan seeks to address Papua New Guinea's low social and economic indicators despite being blessed with abundance of wealth in natural resources. The plan addresses climate change as a core component. PNGV50 is a highly prioritized reform and development program of the Government.

As such it is both an opportunity, and a challenge, for a tiered Government system to implement. The opportunity lies in the streamlined development planning process at the Ward (local level), District and Province. There is a reformed institutional process now in place for integrating community-based plans and activities into formal land-use and development plans at broad scale, and for enhanced service delivery. The challenge is that, as community climate adaptation needs must now form part of these plans, so there is a need to provide resources and tools to enable communities to adequately address climate change in their submissions.

In the case of Manus Province, the main island and surrounding satellite atolls share common issues regarding social and economic development in the face of climate change. Due to advanced awareness and direct experience of the impacts of climatic changes, including serious inundation in December 2009, the Manus Government and people have been highly pro-active in networking experiences on climate change. In 2008 the Manus Environment and Climate Change Council was formed to include Government, Industry and civil society partners, comprising international, national and local organizations.

During 2010, several meetings with local leaders and representatives shared current community- and ward-level adaptation plans and experiences. Planning tools and processes were discussed. Follow-on project support has identified the costs of various strategies, especially where experience can demonstrate the benefits and efficiency of actions. Importantly, this will allow all stakeholders to isolate the incremental costs of climate change adaptation and provide the Government with an estimate of the required investment at all levels for meeting adaptation requirements. This can in turn inform budget allocations as well as submissions for external climate finance resources where applicable. This information is assisting an addendum to the 2008-2012 medium-term development strategy for Manus Province and will form part of the new Vision 2050 provincial plan once formulated; and in turn help shape the ongoing reforms that this National Development Strategy requires.

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Microfinance and climate change adaptation: supporting communities in a changing climate

By Mareike Hussels, Katharine Cross, Amita Vaux and Yanina Ivanova Taneva

Climate change in East Africa is leading to frequent cycles of droughts and floods, exposing the vulnerability of the population, government and economy to erratic and more extreme weather patterns. Communities in this region – especially those dependent on agricultural livelihoods – are particularly vulnerable to climate change and have the least capacity to "weather the storm". Microfinance Institutions (MFIs) serving such communities are likely to witness the viability of their clients' livelihoods being undermined by climate change, giving them an incentive to support investments in adaptive capacity of their client communities.

LEAD associates (www.leadeurope.org) are developing possible options to reduce communities' vulnerability. The aim is to promote investment in communities' ability to shape, create, and respond to continuous change, so that their adaptive capacity can be increased. For example, education about climate change and access to weather information can empower communities to understand observed weather changes and to develop more sustainable coping strategies. Access to finance can be critical to facilitate investment in climate-proof livelihoods and to prepare for uncertainty and extreme events.

These elements – information, education and access to finance – are crucial components of adaptive capacity. They are also core services provided by MFIs, leaving them well positioned to serve those needs while improving the viability of their customer's livelihoods. This paper explores how MFIs serving vulnerable communities may find it in their best interest to make climate change adaptation a key consideration in their strategic planning.

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Pre-project Assessment for community based adaptation: the need to go beyond Cost Benefit Analysis

By Rachel Berger

Cost-benefit analysis has important uses – and crucial blind spots. It represents only one of several economic tools that can be used to assess options for adapting to climate change in developing countries.

Cost-benefit analysis can fall short when it comes to meeting key needs in community adaptation planning. For adaptation to be sustainable at the local level, people must be able to control and adapt the technologies they use for their livelihoods and for managing natural resources. Assuming that adaptation will be sustainable on the basis of a cost-benefit rule alone could be risky.

If national and international funding for adaptation is to address the needs of those most affected by climate change, social and equity issues will need to be given greater prominence than they receive in current cost-benefit frameworks.

Adaptation planning and action must be dynamic and iterative. Because knowledge of long-term climate scenarios is imprecise, actors can plan in advance only for very general adaptation paths. In the future, quick action may be needed in response to seasonal weather forecasts and other climate information that is available only in the short term. Generic long-term plans will have to be elaborated in detail as changes emerge, and perhaps significantly revised to counter unanticipated climatic trends. Thus, even where cost-benefit analysis is required, the initial estimation of costs and benefits may become inaccurate over time.

Countries' decisions on what adaptation programmes to set up, and at what scale, will be informed by other factors such as risk assessment, not just by costs and benefits. At the detailed level of the community, costs and benefits of adaptation can realistically be tallied when comparing options for specific capital investment projects, such as water supplies.

The variety of activities and processes that constitute climate change adaptation should be assessed using different economic approaches. Well-rounded assessments can deliver illuminating results: in Namibia and Tanzania, for example, economic analyses found climate change could have an economic impact of less than 1% on gross domestic product, but equity and distributional analyses revealed that the burden would lie heavily on smallholding farmers and the urban poor.

If the task is allocating national resources to get the most adaptation bang for your adaptation buck, then there is some purpose for cost-benefit analysis. But even where costs and benefits must be

evaluated, methods for capturing and quantifying them need to go beyond traditional valuation techniques, especially in data-scarce environments. They should include concepts such as social return on investment, in which stakeholders help identify hidden costs and benefits that are not part of formal markets.

Instead of focusing narrowly on cost-benefit analysis, a 'toolkit' is needed, that is designed to help a diverse audience choose appropriate valuation methods for their needs. The kit's users will include communities, NGOs, local and national governments, and others in the international community.

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Parallel session 9: Urban areas

Session Chair: David Dodman, IIED

Context and Rationale

More than one billion urban residents worldwide live in conditions of inadequate shelter, poor access to basic services, insecurity of land tenure and uncertain livelihoods. Climate change will bring gradual changes and extreme events that compound the existing risks facing these people. A growing number of development NGOs and international organizations are beginning to engage in addressing the challenge of adapting towns and cities to climate change, with increasing interest in the potential of Community Based Adaptation (CBA) to build adaptive capacity among low-income urban residents. These approaches draw in aspects of governance, such as local decision-making and ownership, and utilize a range of tools and approaches intended to integrate community participation into urban planning. However, there has been relatively little discussion about the ways in which the particular nature of urban societies and economies might shape the ways in which CBA projects are implemented, or the potential for lessons learned to be transformed and scaled up within and across cities.

The session will explore experiences from a range of stakeholders in Asian cities, demonstrating the potential for meaningful engagement of low-income urban residents and communities in responding to the threats of climate change. Participants from different perspectives will examine particular cases of community involvement in adaptation in urban settings, including the challenges and opportunities presented by density, complex planning structures, and uneven power relations. They will also explore mechanisms by which lessons from community involvement can be scaled-up into city-wide, national and regional responses, particularly through networking of urban residents and of cities.

The session will take the form of a round-table moderated discussion, highlighting issues in CBA brought to the fore by discussants from the Asian Cities Climate Change Resilience Network (a network supported by the Rockefeller Foundation that is facilitating cities to increase their resilience in the face of the predicted impacts of climate change) and community organisations active in Korail, the largest inner city informal settlement in Dhaka. Questions relating to actors, structures, and processes in urban climate adaptation will be identified in advance and shared with the discussants so as to facilitate a more in-depth reflection of the complementarities and challenges present within and across urban networks. Members of the audience will be encouraged to contribute questions, thoughts, and insights during the discussion.

Asian Cities Climate Change Resilience Network (ACCCRN)

The Asian Cities Climate Change Resilience Network (ACCCRN) is comprised of ten cities in four Asian countries who are engaged in activities to strengthen the capacity to prepare for, cope with, and bounce back from a range of climate change impacts. Launched in 2008 with funding from the Rockefeller Foundation, ACCCRN has three primary objectives: 1) to strengthen the capacity of cities to plan, finance, coordinate and implement climate change resilience strategies; 2) to cultivate a network for knowledge, learning and engagement; and 3) to expand, deepen experience, and scale up. The speakers will share progress to-date from this network of cities, drawing in particular from the experiences of two core network partners; GEAG in India and NISTPASS in Vietnam. A range of tools and methods have been used in ACCCRN cities to

build engagement from a broad base of stakeholders and to cultivate an understanding of how climate change will affect each locality. This process of engagement and analysis has included vulnerability assessments, sector studies, urban systems analyses, and local capacity building. Each city has, as a result of these activities, developed a resilience strategy to guide priority resilience building actions. Over the course of the next several years, cities will be taking steps to implement some of these measures using local resources, seed funds from the Rockefeller Foundation, and finance and investment from other donors. The session will include examples from the first cycle of city-level projects supported by the Rockefeller Foundation.

Networking grassroots adaptive capacity in Dhaka

Other participants will share their specific experiences in relation to the long-term development of grassroots adaptive capacity in the context of Dhaka. This will shed more light on the politics and processes involved in developing a committed multi-stakeholder approach to resilience and adaptation, as well as opening space for consideration of both the practical and conceptual implications of working with individuals and groups endowed with different capacities and operating at different scales within the city. Adaptive capacity will be understood as a process which develops over time, through the negotiation of myriad institutional relationships: community based organisations engage in partnerships and networks (both formal and informal) which allows them to engage in a diversity of initiatives and programmes responsive to the needs, experiences and ambitions of a diversity of actors, including the urban poor. Organisational structures, relationships, skills, resources and mental models acquired within and challenged across the networks constitute the substance of urban community based adaptation. Examples will be drawn from three networks operating in Dhaka, focusing on tenure security, basic service delivery and environmental planning/disaster risk reduction. The insights from participants will examine the proposition that these three domains, and the engagement of existing networks of actors, are significantly important for underpinning urban adaptation to climate change. Pointing out long-term and potential synergies across such networks will serve to open a further debate on the nature of urban scales and the scaling up of CBA.

Anticipated outcomes

This session will bring together stakeholders from different cities in Asia, all of whom are engaged in different ways in the process of urban governance, and in ensuring that community engagement is centrally placed in planning for adaptation and resilience at larger scales. The discussion will facilitate the sharing of different perspectives on mechanisms for engaging a wide range of stakeholders in a process of building resilience that supports genuine inclusion and participation of low-income urban communities. The use of a moderated discussion format – with a high degree of preparation by facilitators and participants – will enable ideas and insights to be shared, and new perspectives developed, through a process of engagement and interaction.

Urban areas

By David Dodman, Anna Brown and Katarina Soltesova

Context and Rationale

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The session will take the form of a round-table moderated discussion, highlighting issues in CBA brought to the fore by discussants from the Asian Cities Climate Change Resilience Network (a network supported by the Rockefeller Foundation that is facilitating cities to increase their resilience in the face of the predicted impacts of climate change) and community organisations active in Korail, the largest inner city informal settlement in Dhaka. Questions relating to actors, structures, and processes in urban climate adaptation will be identified in advance and shared with the discussants so as to facilitate a more in-depth reflection of the complementarities and challenges present within and across urban networks. Members of the audience will be encouraged to contribute questions, thoughts, and insights during the discussion.

Asian Cities Climate Change Resilience Network (ACCCRN)

The Asian Cities Climate Change Resilience Network (ACCCRN) is comprised of ten cities in four Asian countries who are engaged in activities to strengthen the capacity to prepare for, cope with, and bounce back from a range of climate change impacts. Launched in 2008 with funding from the Rockefeller Foundation, ACCCRN has three primary objectives: 1) to strengthen the capacity of cities to plan, finance, coordinate and implement climate change resilience strategies; 2) to cultivate a network for knowledge, learning and engagement; and 3) to expand, deepen experience, and scale up. The speakers will share progress to-date from this network of cities, drawing in particular from the experiences of two core network partners; GEAG in India and NISTPASS in Vietnam. A range of tools and methods have been used in ACCCRN cities to build engagement from a broad base of stakeholders and to cultivate an understanding of how climate change will affect each locality. This process of engagement and analysis has included vulnerability assessments, sector studies, urban systems analyses, and local capacity building. Each city has, as a result of these activities, developed a resilience strategy to guide priority resilience building actions. Over the course of the next several years, cities will be taking steps to implement some of these measures using local resources, seed funds from the Rockefeller Foundation, and finance and investment from other donors. The session will include examples from the first cycle of city-level projects supported by the Rockefeller Foundation.

Networking grassroots adaptive capacity in Dhaka

Other participants will share their specific experiences in relation to the long-term development of grassroots adaptive capacity in the context of Dhaka. This will shed more light on the politics and processes involved in developing a committed multi-stakeholder approach to resilience and adaptation, as well as opening space for consideration of both the practical and conceptual implications of working with individuals and groups endowed with different capacities and operating at different scales within the city. Adaptive capacity will be understood as a process which develops over time, through the negotiation of myriad institutional relationships: community based organisations engage in partnerships and networks (both formal and informal) which allows them to engage in a diversity of initiatives and programmes responsive to the needs, experiences and ambitions of a diversity of actors, including the urban poor. Organisational structures, relationships, skills, resources and mental models acquired within and challenged across the networks constitute the substance of urban community based adaptation. Examples will be drawn from three networks operating in Dhaka, focusing on tenure security, basic service delivery and environmental planning/disaster risk reduction. The insights from participants will examine the proposition that these three domains, and the engagement of existing networks of actors, are significantly important for underpinning urban adaptation to climate change. Pointing out long-term and potential synergies across such networks will serve to open a further debate on the nature of urban scales and the scaling up of CBA.

Anticipated outcomes

This session will bring together stakeholders from different cities in Asia, all of whom are engaged in different ways in the process of urban governance, and in ensuring that community engagement is centrally placed in planning for adaptation and resilience at larger scales. The discussion will

facilitate the sharing of different perspectives on mechanisms for engaging a wide range of stakeholders in a process of building resilience that supports genuine inclusion and participation of low-income urban communities. The use of a moderated discussion format – with a high degree of preparation by facilitators and participants – will enable ideas and insights to be shared, and new perspectives developed, through a process of engagement and interaction.

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Parallel Session 10: Tools and Toolkits for Adaptation – supporting rapid replication and good practices

Session Chair: Tine Rossing, CARE International

Context and Rationale

The world's poorest individuals and communities are on the frontlines of climate change, with everything to lose and little to cushion the blows of its impact. Past experience has shown that interventions have the most impact when they are designed and implemented at the local level, while taking into account national priorities and strategies. Top-down responses are less likely to reach the most vulnerable people, given that they are often socially marginalized and live in remote areas beyond the reach of government services. In response to a strong demand from adaptation practitioners, the past few years have seen an impressive development of tools, methodologies and guidance to facilitate the design, implementation, management and monitoring & evaluation of such Community-Based Adaptation (CBA) projects.

Despite the global mushrooming production of adaptation-related tools and toolkits, very few adaptation tools address the importance of scaling up community-led activities to reach a critical mass. In 2010, for example, Action contre la Faim carried out a preliminary tools assessment related to 'Integrated DRM', including both DRM/R and CCA tools analysis. Among the wide range of relevant tools, toolkits and similar guidance pieces from CARE, IISD, Tearfund, Christian Aid, WWF, ADPC, IUCN, IDS, Tearfund, Oxfam, Cordaid, ProVention Consortium, HPN and Twigg's 'Characteristics' covered in the assessment, guidance on how to go about a process of scaling up was rare.

The session will therefore first explore the scope, application and experiences of different toolkits, tools and methodologies related to adaptation through brief presentations by the panelists. The panel will be asked to reflect on how we can better apply the adaptation tools and knowledge that we have developed to date to promote replication and more widespread application. The panel will be actively facilitated to promote discussion among panelists and between panelists and audience members. To facilitate a more in-depth reflection, the discussion will be focused on the three following questions:

What are the constraints to widespread application of the adaptation tools that we do have, and how can they be overcome?

One important constraint concerns capacity. Most practitioners are not able to pick up the tools and use them as they are without prior introduction or training. Without qualified trainers, organizations involved in CBA, such as CBOs, would have limited ability to incorporate rapidly evolving 'best practices' into heir proposals or absorb funding for CBA from national, regional or international funding sources. As a result, tools need to be accompanied by capacity development and sometimes also specific training manuals in order for them to be used. Another constraint is that most available tools tend to be gender-blind or, at best, encourage only a superficial treatment of gender as a 'tick-box exercise'. Or they are not sufficiently culturally sensitive or sufficiently context-specific. Empirical lessons show that tools that have been developed for one regional context may need important modifications before it can be applied in another region due to significant social, cultural, political and historical differences.

Another important constraint concerns the scope of the tools. Many of the tools lack guidance for a disaggregated understanding of vulnerabilities and capacities beyond community and household-level (e.g. gender/ age/ ethnicity) and, as such, of broader socio-structural dynamics underlying vulnerability. Without a solid understanding of how climate change is affecting different social groups (especially poor women, children and others with special vulnerabilities) or appreciation of local adaptive capacity, adaptation practitioners will be unable to develop fair and effective adaptation response measures. To provide a better foundation for scaling up, we subsequently need to make sure that tools are designed in the most practical and user-friendly way possible, while properly considering the target audience and scope for by which it will be applied.

How can we better capture experiences using the different tools so that we can improve them over time and/or develop new ones responding to evolving needs?

One possible answer would be to encourage a more collaborative development of tools. However, given how complex the climate change-related challenges are, it may not be either possible, or even feasible/desirable to aim for *the* vulnerability analysis tool that works for contexts and all development actors. This is not only the issue, when climate change is considered in isolation, but especially also when considered as an aggravating factor of existing challenges. What is important though, is that if one organization is developing or revising a tool to meet its own needs, that this given organization can learn from the experiences of other organizations, and vice versa. So how can we better capture and share what we are learning from the application of the tools, for example through the various platforms that are being established (weADAPT, AfricaAdapt, etc.)? Such capture and learning process would require a commitment by practitioners to engage with the broader adaptation community, and by the developers of these platforms to create space so that this sharing can take place efficiently and effectively.

How do we strike the balance between quality and scale?

Tools are typically designed for the "ideal" situation. For example, the CBA standards, which form the core of CARE International's *Community-based Toolkit*, were deliberately developed to set a very high quality bar for CBA projects. To deliver against these Standards requires, however, a significant investment of time, capacity development and resources. While CARE feels that this is the "right" way to go about its adaptation-related work, the reality is that it may be difficult to demand this high standard of work on a broader scale, as for many involved actors (e.g. local government) this simply will not be possible. So is the answer that we instead develop tools based on the principle of the "lowest common denominator" for the sake of increasing their uptake? After we have created a given "model" of any CBA-related work, how do we pick out the essentials for replication more broadly? This question also links with the issue of higher-level policies and what are the standards and incentives that need to be put in place for CBA to take off.

Anticipated outcomes

It is anticipated that the session, based on the moderated discussion format, will draw some implications for future tool enhancement and development in better support of upscaling of community-based adaptation.

Practical tools and resources for CBA: CARE's toolkit and CBA standards

By Julie Webb

As organizations and poor communities around the world are struggling with the emerging and dynamic challenges posed by climate change, CARE International has developed and released two new, digital interactive "how-to" Toolkits: one for Community-Based Adaptation (CBA) and another for Integrating Adaptation into Development Projects. This presentation will focus on the CBA Toolkit. The core of the CBA Toolkit is the CBA Project Standards, which are designed to help ensure high-quality analysis, design, implementation and information & knowledge management (including monitoring & evaluation) in CBA projects. The Toolkit offers a practical "how-to" guide for practitioners as they go through the project cycle, including step-by-step guidance and recommended tools for all stages of the project cycle, along with links to useful resources and checklists for key project documents.

The 1.0 release of the Toolkits by CARE's Poverty, Environment and Climate Change Network (PECCN) is designed as an initial pilot and testing phase for CARE staff, partners and peer organizations. Training for CARE staff and key partners is ongoing, and application of the Toolkits has begun. The Toolkits will be updated and refined over time to capture new tools and approaches, and to reflect experience gained through application.

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Planning for Community-Based Adaptation to Climate Change

By Anna Ricoy

FAO's e-learning tool on "Planning for community based adaptation to climate change" aims to enhance awareness and technical capacities for promoting community based adaptation in agriculture. It consists of four interactive learning modules, structured in twenty-four sessions, linking research-based knowledge on climate change impacts with examples and experiences on community based adaptation drawn from various FAO field projects, and a range of other country-specific case studies. The first module aims to improve understanding of climate and climate change impacts in general. The second focuses on impacts on agriculture, introducing and linking the concepts of food security and adaptation using a livelihoods perspective. The other two modules, aimed particularly at field practitioners, outline concrete procedures and steps for planning and implementing community-based adaptation, highlighting the application of participatory approaches and institutional aspects, and reflecting adaptation as a continuous and socio-institutional learning process. Case studies, videos and animated exercises facilitate the user's learning process. While designed primarily for field technicians and extension staff in agriculture and other sectors, the tool is also helpful for government and non-governmental organizations working to build adaptive capacity of rural livelihoods in agriculture.

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Community Led Carbon-Footprint Tracking for Climate Change Sensitization and Catalyzing Action

By Mayukh Hajra

Key Words: eco-card, sensitization, advocacy, scale-up, knowledge sharing network

In a unique approach, communities are assessing and tracking their carbon-footprint through participatory stakeholder based techniques facilitated by local CSOs. Based on assessment findings, village eco-cards are generated that document the baseline carbon-footprint of the community, environment quality in the region and the climate-friendliness and adaptive potential of practices adopted by the community. Performance is measured against identified sectors that are largely impacted by practices adopted and choices made by the community so as to help communities prioritize action sector-wise. Over subsequent periodic assessments, adaptation and mitigation efforts undertaken and improvement in environment quality are awarded stars in the eco-card to catalyze further action and scale-up.

Besides scientific environmental tracking, the eco-cards serve dual purpose of sensitization of community and as advocacy tool to engage with local government to seek support for adaptation and mitigation action. The bottom-up approach of empowering communities to steer the planning process at local level for integrating climate-conscious decision-making into development processes promotes ownership and effectiveness of action initiatives. Building on the knowledge base and experiences residing with communities while complementing the action-planning with scientific knowhow maximizes impact and sustainability of efforts. The grassroots stakeholder network facilitates knowledge sharing between communities for strengthening adaptive potential.

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Community based adaptation for local empowerment and global influence: methods and practice from the Adaptation Learning Programme for Africa.

By Fiona Percy and Cynthia Awour

CARE's Community Based Adaptation (CBA) framework provides a holistic analytical approach for communities to plan adaptation actions which are informed by climate science and local observation of climate change. The framework recognises that effective adaptation requires a comprehensive set of interventions including identifying more resilient livelihood strategies, disaster risk reduction and building of adaptive capacity, which result in development and empowerment of vulnerable communities to manage climate change impacts. Sustainable and replicable local responses to climate change also depend on addressing underlying vulnerabilities and ensuring favourable policy frameworks. The presentation shares lessons from CARE's ALP programme in Ghana and Niger in particular from use of the climate vulnerability and capacity assessment (CVCA) tool. It focuses on community owned and gendered analysis for adaptation planning which reaches and empowers the most vulnerable within a community, linking communities to climate information and the role of civil society in influencing local to global policy and planning for adaptation.

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Climate change adaptation vulnerability assessments using adaptation tools (CRiSTAL and CVCA) in East Africa and Central America: next steps

By Onesmo Zakaria, Katharine, Robert Bagyenda, Diana Royas, Rocio Cordoba

IUCN and partners are carrying out climate change vulnerability assessments for water focused projects in East Africa and Central America using a combination of climate change adaptation tools, specifically the Climate Vulnerability and Capacity Analysis (CVCA) Tool and CRiSTAL (Community-based Risk Screening Tool - Adaptation & Livelihoods). CVCA is used to gather information at the community level, and CRiSTAL to analyse information with decision makers and planners. The outputs of this process are integrated into development plans at the district and basin levels. This demonstrates the impact of the projects in providing input into sustainable development of natural resources at a wider scale.

Participants in the analysis process plot a way forward beyond the assessment which identifies how adaptation activities will be implemented, when and where the activity will take place, who will be involved, and the type of resources required. The project team, government and civil society facilitate validation and ranking of the adaptation activities identified from the community consultations.

Lessons from Central America and East Africa in using the vulnerability assessment tools and implementing adaptation actions are being communicated at the national, regional and global level through various fora. This is demonstrating practical approaches to implement adaptation at the local level as well as inform climate change policy. The process is also used as a forum to raise awareness of communities about climate change impacts and options for adaptation.

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Parallel Session 11: Frameworks for Measuring Adaptation - Alternatives to quantitative approaches

Session Chair: SVRK Prabhakar

There has been growing importance for adaptation to climate change at various levels, reflected in terms of increasing flow of funds and institutional resources to be invested in promoting planned adaptation at all levels. This necessitates a mechanism to keep track of the progress in adaptation as an outcome of the interventions undertaken, and to avoid any possibilities of mal-adaptation and other concerns related to inappropriate planning and implementation of adaptation actions. The Bali Action Plan agreed during the Conference of Parties 13 in Bali, Indonesia and subsequent negotiations under UNFCCC has explicitly mentioned the need for prioritizing adaptation actions and incentivizing adaptation both of which also require a means to measure progress in adaptation. The subject of means to measure adaptation is termed here as 'adaptation metrics'. In the form of a formal definition, it can be defined as "*quantitative, semi-quantitative or qualitative measures for monitoring the effectiveness of adaptation actions*." Adaptation metrics is relatively a new area of science and has tremendous implications on how various stakeholders approach the problem of adaptation planning and implementation.

Studies conducted at IGES and elsewhere have helped a great deal in characterizing the adaptation metrics, its potential, opportunities and threats. Among the potentials, monitoring the effectiveness of adaptation to climate change and variability is useful not only to identify the most promising adaptation options during research and planning, but also to assist in prioritizing sectors, regions and locations for adaptation actions, and to monitor the progress in implementing adaptation actions for reducing the adverse impacts of climate change. In a project terminology sense, adaptation metrics covers the entire range of planning, implementation and evaluation phases of implementing adaptation interventions.

Among the issues limiting the use of adaptation metrics, diverse perspectives of different stakeholders on adaptation and its components make it difficult to assess the progress using a few indicators, especially at larger spatial scales such as the national level. Further, there are many methodological challenges in development of adaptation metrics. There is no consensus yet on whether approaches should be deductive or inductive, locally-specific or spatially-scalable, and based on past experiences or linked to future projections. Integration of both inductive and deductive approaches may be desirable, but further research is necessary to find ways towards successful integration. Likewise, an optimal mix of qualitative and quantitative metrics is perhaps more important rather than one type of measures. Qualitative indicators may be especially useful in data-poor regions.

Diverse characteristics of adaptation metrics could be identified through consultations and existing literature. Some of which include policy-relevance, scalability, transferability, context-specificity and comparability. Metrics should also capture the

multi-dimensional nature of adaptation. As metrics applicable at one level (e.g. household) may not necessarily be relevant at other levels, caution must be exercised in using metrics of narrow scope. Metrics in the agriculture and water sectors could be complex due to complex interaction of social, economic and environmental factors. Metrics should be used to measure adaptive capacity of people as well as policies and institutions. Applying metrics in decision making involves human and institutional capacity angle which needs to be considered with priority. However, metrics should not be developed hastily and an undue emphasis on metrics should not lead to administrative hurdles. Both analytical and policy challenges associated with adaptation metrics can be overcome through effective engagement of policy makers and other stakeholders in pilot testing under field conditions.

One of the important questions to be raised while developing an adaptation metric is to keep in view the complexity of adaptation actions and sectors and boundaries they influence. For example, an agricultural practice introduced into a community will not only influence the income of farmers but would have rippling effects on their nutritional standard, access to various services and resources etc. Hence, it has been noted that an adaptation metric should be able to take into consideration the five determinants of adaptive capacity (economic, social, environmental, institutional, and equity). A metric should also take into consideration the operational aspects of it i.e. implications such as financial and capacity to use when the metric is actually implemented by institutions in their internal processes. Hence, participatory processes were advised while developing the metric system so that the process of adoption of the metric is smooth.

Adaptation metrics also have an important application at the community level, for example in monitoring and evaluating the progress in community based adaptation. It is important to see if there exists any metrics that takes into consideration the essence of community based adaptation and if it is useful in scaling up of community based initiatives. Questions also arise on what would be the role of communities in designing and implementing an adaptation metric so that the fear of losing the relevance when it is aggregated at macro level is addressed.

A school of adaptation experts and practitioners suggest that the quantitative approaches to measuring adaptation could be too early to be true in terms of making sure what it measures is actually the adaptation, especially at an early stage of understanding on what constitutes adaptation to the changing climate. This group of scholars advocates political-economy approaches instead of quantitative and evaluative approaches. Some of the questions that are raised by this group of scholars include: Is ‘metric’ really the right term –rather than emphasizing quantitative measurement, one should be looking at a developmental approach to adaptation evaluation that brings in more learning and process rather than measurement at the current stage of the ‘adaptation learning curve’, the issue of for whom are the metrics and how they are used needs careful consideration, the area of adaptation in development deficit situations needs addressed, and relying upon qualitative and bottom up approaches using participatory processes as point of entry could be more effective rather than the top-down driven evaluative approaches. It is

important to take these views into consideration for a balanced approach to the problem of measuring adaptation.

In order to address the above questions, the session on frameworks for measuring adaptation aims to establish a debate among researchers and practitioners to find the role of adaptation metrics in community based adaptation, to dwell into any existing experiences, to see the relative merits and demerits of evaluative and participatory and bottom up approaches, and to find a way forward for effective deployment of adaptation metrics in scaling up community based adaptation initiatives. The outcomes of this session would be useful in drafting a paper that addresses above questions in a detailed manner.

Participatory monitoring and evaluation for CBA: tracking changes in vulnerability… together
Frameworks for measuring adaptation: alternatives to quantitative approaches

By Charles Ehrhart and Jess Ayers

Despite the increase in attention to and practice of community-based adaptation, there remains a lack of participatory, practical, replicable and relevant methodologies for measuring, monitoring and evaluating the results of adaptation in general, and CBA in particular. In response to this gap, an Experts Working Group[3] was convened by CARE in partnership with IIED in February 2011, to develop a participatory monitoring and evaluation (PM&E) framework for local and community-based adaptation. This framework is intended to be an open-source PM&E methodology that can be used by vulnerable communities, supported by and informing the work of planners, practitioners and researchers across the field.

The resulting framework is a Monitoring, Evaluation, Reflection & Learning (MERL) tool primarily intended to support adaptive decision-making in vulnerable communities. The framework presents a participatory methodology for developing and monitoring against CBA indicators, and in doing so provides a new platform for encouraging downward accountability of institutions and service providers to vulnerable groups. These dual learning and downward-accountability functions of the MERL framework for CBA present an opportunity for building local adaptive capacity as well as for facilitating the measurement of "effective adaptation" that can inform the monitoring and reporting needs of stakeholders across scales.

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Participatory Video for Monitoring and Evaluation of CBA

By Charles Tonui

The vulnerable community, Community Based Organisation (CBO) and Non- Governmental Organisations (NGO) staff were trained in Participatory Video for Monitoring and Evaluation (PV for M&E) for the Community Based Adaptation to Climate Change in Africa in August 2009 in Kenya. Participatory Video was felt to be really useful for monitoring a wide range of indicators, adaptation activities and sharing lessons on community based adaptation. The trainees were able to gather some of the information which was not captured during the inception of the project. The research team & the community members produced a short community video which captured baseline information including some of the key community coping & adaptation strategies. The community video was shared with community members and at the international climate change negotiations.

The PV for M&E supports the ongoing action research, enhance the capacity of the NGOs to communicate their findings and amplify the participation of communities involved in the community based climate change adaptation activities. Therefore, there is need to upscale the methodology to help communities consistently document the change, record the impact of the community based climate change adaptation programme activities & share to influence formulation of climate change policy at local,national,regional & international level.

Key words: Community, vulnerable, participatory, climate change adaptation, participatory video, monitoring & evaluation, up scaling, policy, Kenya & Africa.

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Towards a framework for the assessment of adaptive capacity at the local level: lessons from the LACF

By Lindsey Jones

The ability to directly measure and quantify an individual or community's capacity to adapt to climate variability and change *is not something that can be done empirically*. With this in mind, the concept of adaptive capacity is decidedly complex, and has to recognise the dynamic social, economic, technological and physical context that adaptation takes place in. What is more, the capacity to adapt to climate change at the community level will depend on a wide range of intangible variables, such as: *access and entitlement to key resources; flexible decision-making and governance; and an enabling institutional environment*. This complexity provides numerous challenges for our understanding of adaptive capacity at the local level, and how to go about conceptualise it.

One way of conceptualising Adaptive Capacity is to identify common characteristics that can help to enhance adaptive capacity at the local level. The Local Adaptive Capacity Framework (LACF), developed under the Africa Climate Change Alliance project (ACCRA), is one such initiative that has attempted to move towards a better understanding of its core features through isolating five '*characteristics of adaptive capacity*'. Demonstrated through findings from field research across three African countries (Ethiopia, Mozambique and Uganda), this session argues that frameworks for assessing adaptive capacity at the local level need to move away from focusing only on what communities have that enable them to adapt- *such as its various economic, social, human, natural and physical capitals*- to a greater acknowledgement to what a community does that enables it to adapt- *such as fostering innovation; promoting forward-looking flexible governance; and re-defining maladapative norms, behaviours and institutions*.

By departing from traditional frameworks for assessing local adaptive capacity- *which have so far tended to look solely at the availability of capitals, often through the lens of the Livelihoods Framework (LF)*- the study highlights the important role that wider development interventions play in supporting both capitals and dynamic processes at the community level.

The speaker will draw on experiences from Uganda, Ethiopia and Mozambique to illustrate his points, and make a number of recommendations for researchers, policy makers and development practitioners alike on moving towards a framework for assessing adaptive capacity at the local level.

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Frameworks for measuring the progress in institutional mainstreaming of adaptation

By Rajan Kotru

A wide range of adaptation activities are currently underway across Hindu Kush Himalaya including in Nepal. Most of the adaptation activities are either drawn from existing development related policies and programmes and poverty reduction strategy papers or are manifested in the National Action Plans for Adaptation (NAPAs). Such action plans are often based on project-based activities. These projects are often been implemented by various agencies where the adaptation principles and practices would have to be mainstreamed for effective interventions. The mainstreaming of adaptation in institutional activities could be understood as a step-wise approach where the institutions will first get to know what is adapation, and what could be their probable role in promoting adaptation. The second step is usually to start preparing plans for adaptation actions within the projects and programs implemented by these institutions, capacity building of the staff, making suitable allocation of financial and staff resources for implementing adaptation programs and finally to actually to implement adaptation programs. From this, it could be understood that there is a continuum of mainstreaming process that happens within institutional setup which is very important to be understood to know at what stage an institution is in terms of mainstreaming adaptation and how many institutions have reached to what level. This kind of assessment will help governments and other agencies to monitor the progress in mainstreaming adaptation and to allocate resources to enhance mainstreaming adaptation. The continuum will work only if the policy and regulatory frameworks use evidence based learning and monitoring.

In this context, ICIMOD is increasingly applying Community-Based Climate Change Vulnerability Assessment Tool to document locally perceived climate variability risks. Adaptation measures are then identified on participatory basis by matching community perception with climate scenarios developed from downscaled regional climate models. However, these adaptation interventions must be reflected in participatory plans based on prioritization (e.g. climate proofed local integrated watershed plans), which then could be the baseline document for adaptation metrics. However, project-based good practices must ensure participation of all relevant stakeholders so that the learning generated is utilized and mainstreamed at all higher levels of governance such as meso and macro levels (e.g. policy). Complex and dynamic socio-demographic scenarios, as well as non-climatic drivers of change at the bottom level will demand flexible local development plans backed up by short-term climate-related national strategic frameworks, which are then easily customized.

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Evaluation of Adaptation: Strengthening the science-policy interface*

By Suruchi Bhadwal and Sreeja Nair

For most of the adaptation assessments conducted in India, needs appear to being largely defined from a developmental perspective and mostly with reference to baseline vulnerabilities. From a long-term climate change perspective it is essential to address future uncertainties and risks and to incorporate likely future scenarios to select suitable adaptation action. There are challenges in terms of the time-frames that determine these scenarios, inclusion of future socio-economic development, validation of the scenarios and its applicability for decision-making. It is essential to understand what kind of indicators or monitoring and evaluation framework can be deployed to ensure that the strategies are being implemented properly, to ensure that the strategies do not enhance risk in the long-term (maladaptation), certify that they still consider and adequately address the changing nature of climate risk and developmental patterns in the state, and identify the need to modify the current design and implementation plan of these strategies, including introduction of new elements. While methodologies such as climate risk screening, integrated adaptation assessments (including top-down and bottom-up methods) are being used; data and methodological constraints still exist. There is a need to link the scientific assessments and policy needs to enable development and sustainability of adaptation initiatives on ground. Adaptation studies in India have largely been sectoral in nature and establishing cross-sectoral priorities continue to be constrained by institutional arrangements, making adaptation assessments difficult. Following the release of India's National Action Plan on Climate Change in 2008, that laid out adaptation and mitigation priorities for the country, all states in India are preparing their State Action Plans on Climate Change. The concept of adaptation metrics can assist national and state governments to monitor and evaluate the progress of adaptation initiatives at the community level. India currently offers a rich platform for studying adaptation metrics by sharing of experiences at the sub-national and national levels.

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A proposed framework for the planning, monitoring and evaluation of integration processes of Disaster Risk Management, Climate Change Adaptation and Development

By Paula Silva Villanueva

Adaptation to climate variability and change is increasingly gaining recognition in the development and disaster community as climate change may threaten the effectiveness of programming in the short, medium and long-term. However, despite this increase in attention to and practice of integration of Disaster Risk Management, Climate Change Adaptation and Development processes agencies are struggling to integrate these three areas of work. In order to support disaster risk managers in this process, the Climate Smart Disaster Risk Management (CSDRM) approach provides a conceptual guide for the integration of these areas of work. Nevertheless, work still remains in refining the understanding of the CSDRM in practice and monitoring and evaluation (M&E) plays, to this end, a critical role.

Monitoring and Evaluation (M&E) has been constantly evolving, as it has had to respond to changing conceptualizations of development and the various types of agency involved. The M&E of integration processes requires recognizing the specific features of working in a changing climate and then accommodating these methodologically. This paper critically examines the climate change implications for traditional PM&E practices giving rise to a set of " ADAPT principles" (Adaptive, Dynamic, Active, Participatory and Thorough) around which meaningful PM&E should be developed.

This paper then presents the outcome of applying the ADAPT principles to the development of a planning M&E framework for Climate Smart Interventions. The CSDRM PM&E framework offers a fresh approach to PM&E in a changing climate and a new indicator model by integrating a diverse set of indicators under the same framework. This is intended to support continuous holistic and strategic thinking about how to plan, monitor and evaluate integration processes. In this way, the CSDRM PM&E offers an opportunity to move towards a practical application of Climate Smart interventions and to a better understanding of the processes that shape it.

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Parallel Session 12: Institutional Capacity Dimensions of Scaling up CBA

Session Chair: Maarten van Aalst, Red Cross / Red Crescent Climate Centre

This session will look at the institutional dimensions of community-based adaptation (CBA): which institutions facilitate CBA, and how can their capacity to support such activities (at scale) be enhanced?

Community-based adaptation depends on local capacity to adapt. However, that local capacity is not determined entirely locally by the capacities of the community and its members in isolation. A wide range of institutions play a key role in supporting local adaptation, including access to resources, knowledge, and ability to influence wider decision-making, for instance by governments at various levels. Lack of institutional capacity to support effective adaptation may also be one of the essential bottlenecks in scaling up CBA. Many pilot CBA initiatives have proved unsustainable or difficult to replicate given the heavy demands on supporting institutional infrastructure, including human and financial support, tailored knowledge products, and carefully nurtured relationships with a wider set of stakeholders. So the wider question to be addressed in this session is: *what are the essential elements of institutional capacity that enable upscaling of CBA, and which capacity building strategies are most effective in addressing those needs?*

Institutions supporting CBA may include local community-based organizations, their local government counterparts, national and international civil society organizations, but also national government agencies and knowledge institutes, private sector, as well as international organizations, development banks and donor agencies. In some cases, their focus may be very specifically on adaptation, but in most cases, adaptation will be one aspect within a much wider mandate. Some of the questions around institutional capacity for adaptation are therefore similar to questions around institutional capacity to support poverty reduction or sustainable development (and one of the questions this sessions will address is: what's different?).

Interventions to build institutional capacity may span from awareness raising within institutions, development of human resources (including training), development of appropriate networks and channels for flow of information (bottom-up and top-down), development of appropriate methods and tools, but also wider policy questions within and between different (types of) institutions (for instance the role of ministries of finance in incorporating CBA in adaptation planning, or the role of CBOs vis-à-vis local government).

This session will focus discussions around four key questions:

- What are the main gaps in the current institutional support for community-based adaptation (not just a wish-list, but an attempt to diagnose the key missing pieces)?
- Which elements in institutional capacity for community-based adaptation are distinct from general institutional capacity needs for poverty reduction and sustainable development (and thus require specific attention in adaptation plans and programs)? In building institutional capacity, what are the tensions between mainstreaming, and a specific focus on climate change?
- How can national and international adaptation policy and financing more effectively support building institutional capacity for CBA (at all levels)?

The Importance and Role of Community-Based Organisations in Building Urban Resilience

By Nidhi Mittal

The presentation will focus on the importance and role of community-based organisations in building urban resilience. The DFID-funded Madhya Pradesh Urban Services for the Poor programme in Bhopal will be used as a case study to showcase the importance of community-based organisations (CBOs) in enabling access to basic services and through this process, enhancing their political spaces for negotiation to advance environmental justice for the urban poor.

In the context of the increasingly evident impacts of climate change on urban areas, the presentation also reflects on the role for community-based organisations as policy focus expands from the brown (poverty) agenda towards the green (sustainability) agenda. Strong community-based organisations of women and children can play a vital role in mobilising communities, raising awareness and bringing in the collective enthusiasm needed to shape the urban agenda and participate in political decision-making processes that affect their lives and future.
An array of ideas that could provide a route for CBOs to collectively engage in implementing community-based disaster risk reduction and environmental sustainability strategies to safeguard their future, are discussed. The presentation concludes with remarks on community-based organisations as a core driver of urban resilience and urban adaptation to climate change, and the imperative to ensure local strengthening and capacity building of such structures moving forward.

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Harmonizing Local Governance Systems and Community Based Adaptation

By Ranga Nadeera Pallawala

Although negotiations and discussions on climate change adaptation are taking place by considering national average scenarios as the baseline, addressing localized impacts is a vital aspect in the overall adaptation process. Local governance systems are the interface between grassroots level and the national level. Most of the decisions that immediately affect the vulnerable men, women and children, are made mainly at the local and sub national levels even though the National Policies also have some effects on same. Local Governance can be defined as the comprehensive systems that make decisions at various levels at local level that is comprised of both formal and informal structures. Often the development literature refers Local Governance to the formal systems pertaining to local government authorities including Municipalities.

A study has been carried out in 40 villages in Sri Lanka and State of Orissa in India to analyze the relationship of 25 different Community Based Adaptation (CBA) initiatives facilitated by local Non Governmental Organisations (NGO's) and linkages with overall local governance systems. Only 05 of these CBA initiatives have actually brought the holistic local governance systems into the adaptation framework while 15 and a further 5 initiatives each have been working largely within formal and informal local governance structures respectively. The data collection was once again carried out both through formal and informal discussions using interview schedules with various identified stakeholders including men and women involved in the CBA initiatives. The data was analyzed using Statistical Package for Social Sciences (SPSS).

The result shows that informal governance systems have brought traditional and local knowledge to the CBA initiatives at higher levels; of those the impacts felt by the stakeholders including the community members are high. The formal governance systems including the structures and systems to make decisions at local government level have acted as a barrier for the communities to take leadership and play role of being the driving force in adaptation of initiatives. However, based on the developed indicators, the effectiveness and the potential continuation of the CBA initiatives is significantly higher when overall local governance systems are taken on board. The synergy of formal and informal systems has brought higher adaptive capacities among the communities. Enhanced social networking, resource mobilization and establishing effective partnership with larger programmes are the most significant synergetic effects in building adaptive capacities of community groups through harmonizing holistic local governance systems and community based adaptation systems.

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What Ingredients for Climate change Adaptation beyond pilots Capacity Building and poverty alleviation in CBAA projects in Africa

By Sherpard Zvigadza and Charles Tonui

In order to harness resilience in the long-term, communities have to prepare themselves for real long term adaption and to institutionalise it as part of their efforts to minimise impacts of climate change. The answer to this is capacity building. The Presentation will showcase how the CBAA projects in eight African countries (East, Southern and West Africa) have promoted community and institutional capacity building at local level and how this means for adaptation action in future. The presentation will show the different ways of capacitating communities and local institutions in a participatory way in order to enhance acceptability and deeper understanding of the challenges and how best these could be addressed in a changing climate.

Poverty is one of the major challenges during this 21st century, unless adaptation projects are dealing with this, appreciation of adaptation by national governments, local institutions as well as the communities themselves can be far- fetched. The presentation will demonstrate how this process of preparing beyond pilots has contributed to poverty alleviation in each of the CBAA projects, thereby contributing to national priorities and the Millennium Development Goals, the main being reducing Poverty. This presentation will conclude by showing how local institutions have been involved in this entire process to ensure sustainability.

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Governing to Support Vulnerable Communities and Ecosystems Adapt to Climate Change

By Anna Taylor, Tahia Devisscher, Helen Jeans and Nadia Bood

The ways in which human activities are affecting the climate and the functioning of ecological systems, that in turn affect the availability and quality of ecosystem goods and services that underpin many livelihood practices and economic activities, are increasingly being explored and emphasised in both scientific and policy contexts. To tackle both current and future climate risks, there is a move to try and enhance ecosystem services and maintain healthy ecosystems in ways that support vulnerable communities develop and adapt to climate change. Key findings from three country studies (Belize, Tanzania and Nepal) are presented, considering if and how climate adaptation is currently integrated into natural resource management and development planning, and identifying what barriers and opportunities exist for further integration from a multi-level governance perspective.

Early findings suggest that, on the one hand, critical challenges in designing and implementing climate change adaptation strategies, taking an ecosystem-based approach, include: building a well-resourced and well-positioned coordinating unit within the national government structure that can effectively support sectoral ministries mainstream climate change considerations into their activities in a concerted way; creating incentive structures that encourage producers and consumers to value and enhance ecosystem goods and services and up-scale successful adaptation pilot actions; and fostering partnerships between civil society, government and academia to regularly monitor, analyse and evaluate social and environmental changes at a range of scales to support learning and inform action.

On the other hand, opportunities for further integration identified in the case studies include: strengthening existing partnerships (e.g. between environmental NGOs and development NGOs); identifying and implementing no-regret adaptation actions to address climate risks in the short- to medium-term (e.g. improving monitoring networks together with public awareness of their value, undertaking participatory land use planning that considers shifting climate patterns into the future, etc.); and fostering a market for new green technologies that increase efficiency and minimise environmental degradation (e.g. in the water, agriculture, building and tourism sectors). These preliminary findings do seem to indicate that mainstreaming climate adaptation into various ongoing sectoral and integrated resource management activities, ideally with good coordination capacity in place, may be a necessary and effective strategy for up-scaling.

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Governance of community based adaptation following the Cancun agreement

By Rachel Berger and Raju Chettri

The provisions for adaptation in the recent agreement concluded in Cancun could impact positively on programmes for community based adaptation, but for this to happen, NGOs will need to be pro-active in working both at local level to build capacity for adaptation and empowerment, and at national level to build understanding of the nature of adaptation and adaptive capacity.

The process to be established for national adaptation plans, and the role of the international Adaptation Committee in providing support and guidance to national governments, in strengthening the sharing knowledge and experience on adaptation, and in promoting linkages with regional and international institutions and networks are provisions that have significant potential. As yet, there is probably no clear vision held by any one or group of governments as to how these agreed provisions should be implemented. The scope for NGOs and networks of civil society organisations to influence future adaptation governance is considerable. Governments are invited to establish national level institutional arrangements to enhance work on adaptation at all levels.

This presentation will highlight areas where civil society needs to be active and suggest a framework for engagement with government and existing networks for collaborative action and sharing experience, with the aim of strengthening governance of community based adaptation.

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Parallel Session 13: Building Synergies between Disaster Risk Reduction and CBA

Session Chair: Marcus Oxley, Global Network of Civil Society Organisations for DRR

There is a need to develop synergies, reduce of duplication of effort, and increase of impact of actions to support sustainable livelihoods, reduce disaster risk and adaptation to climate change. These three sets of efforts are quite often separated at the conceptual, policy, budget and project level but they converge at the household level, where vulnerable people together stake decisions and act to build resilience or else suffer the consequences. Also, sustainable livelihood development (DEV), disaster risk reduction (DRR) and community-based adaptation (CBA) share pre-conditions such as good governance and access to resources, and similar obstacles such as institutional divisions, corruption and elite control of resources. Good governance in support of collaborative working across sectors and between institutional levels, access to resources and capacity building support are all issues that are critical to 'scale up'.

Experiences tells us DEV, DRR and CBA can all serve to increase the security and wellbeing of lives, livelihoods and assets in disaster-prone areas in the context of a changing climate. The Cancun Adaptation Framework recognises that disaster risk reduction constitutes a core activity under "adaptation". This session explores practical experiences and approaches highlighting how these different and fragmented activities can be harmonised to realise synergies, increase impact and support a massive scaling up of action from locality to sub-national, national and international scale.

Strengthening Climate Resilience: Developing a Climate Smart Disaster Risk Management (CSDRM) approach in Asia and Africa

By Terry Cannon

This presentation includes an outline of the CSDRM approach, with information on how it is being used in some of the ten countries in Asia and Africa where it is being supported by Plan International and Christian Aid.

The Climate Smart Disaster Risk Management approach provides a guide to strategic planning, programme development and policymaking and should be used to assess the effectiveness of existing disaster risk management policies, projects and programmes in the context of a changing climate. Its value will be explained for those responsible for managing disaster risks at national, sub-national or community level. The approach has three interlinked pillars of action, which are founded on long-standing concepts – mainly related to the progression of vulnerability from root causes to unsafe conditions, and to those associated with resilience, adaptive capacity and uncertainty.

The three pillars of action are:
1. Tackle changing disaster risk and uncertainties: Pillar one supports the priority areas of the HFA, highlighting the importance of collaboration between multiple actors. It calls for improved information on risks by conducting detailed risk assessments which recognises the value of multiple sources of knowledge.
2. Enhance adaptive capacity: Enhancing adaptive capacity is a key strategy for managing increasing uncertainty associated with a changing climate and allows people and organisations to respond to shocks and unexpected events more effectively.
3. Address poverty, vulnerability and their structural causes: Pillar three is strongly influenced by the 'pressure and release' model (Wisner et al, At Risk) and longstanding research that attributes the causes of disasters to failures in development.

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Disaster Risk Reduction and Climate Change Adaptation in Timor-Leste: Grassroots Realities

By Jessica Mercer

Increasingly the international community is recognizing the similarities between DRR and CCA and the need to link the two. There is an increased argument for embedding CCA within DRR which has already established tools and frameworks as opposed to creating new approaches for CCA activities. The argument for embedding CCA activities within DRR frameworks is given prominence through an analysis of community based CCA activities in Timor-Leste. Here, integrated DRR and CCA frameworks have been used to undertake an analysis of community climate change knowledge, their vulnerabilities and capacities in light of existing and future risk. Strengths and weaknesses are outlined alongside the need for a more holistic approach to be adopted at the grassroots level.

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Experience in building synergies and harmonization of DRR and CBA in the urban context

By Pramita Harjati

Optimizing decentralization policy can be the most effective way to build linkage between DRR and CBA. Multi stakeholders dialogues, combined with community based and scientific vulnerability assessments, and testing models implemented in selected pilot cities in Indonesia are key components to identify their vulnerability towards climate related disaster and climate change impact. Community action plan acts as scenario for community action and also was adopted in the annual local government budget plans.

Indonesia's propensity for natural hazards is dramatic and well-documented. Earthquakes, tsunamis, volcanoes, landslides, flooding, droughts, and storm surges all wreak havoc on populations. The effects of climate change are exacerbating many of these perennial hazards as well as causing new risks. The varied geography of Indonesia poses challenges to facing climate and natural hazards because there is a diversity of hazards and a range of vulnerabilities. As emphasized in the World Bank report (2008), the most adverse impacts of climate change are likely to be in urban areas where people, resources, and infrastructure are concentrated. Indonesia's urban growth is one of the fastest in the world, with a rate of 3,3% per year as the compared to the countrywide growth rate 1.1% per year. Currently, no less than 114 million people live in urban areas, making up approximately of its total population.

According to National Action Plan Addressing Climate Change (NAPAC), there were 1.429 disasters in the period of 2003-2005 and 53% of these were related to hydrometeorology (National Development Planning Agency and National Coordination Body for Disaster Management),2006). Flooding is the most frequent with 34%, followed by landslide (16%). The Government of Indonesia's NAPACC recognizes the
importance of adaptation measures, local contextualization, and integrating DRR and CCA. The NAPACC devotes an entire section to adaptation in which it notes that one of the key approaches will be to encourage local authority to integrate consideration of climate risk into local development plans.

From Asian Cities Climate Change Resilience Network (ACCCRN), we learned that integration of Disaster Risk Reduction and Community Based Adaptation was potentially conducted at local level and take a long way to reach the national level. Through dialogues, vulnerability assessments and pilot projects implemented in cities, stakeholders were involved to identify their vulnerability towards climate related disaster and climate change impact. At the community level, community awareness was built through dialogues and formation of community group to identify their vulnerability, strengthens and capacity to develop community action plan to reduce the risk and to

defined options to reduce risk from certain hazards.

The existing participatory planning mechanism allows opportunity for community action plan to act as scenario for community action but also for local government to allocate appropriate budget in the annual government budget plans. One of the challenges is to find ways to improve stakeholder's capacity at city level to better cooperate disaster risk reduction and climate change adaptation initiatives generated by the community into their plans within this mechanism.

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Disaster Risk Reduction in El Salvador

By Karina Copen

This paper presents Oxfam America's experiences in disaster risk reduction programming in El Salvador, a country that is considered to be one of the most vulnerable countries in the world. Oxfam has developed a model for programming that combines community organizing and training at the local level with collaboration between a range of stakeholders - NGOs, communities and authorities at different levels over many years to build a system of disaster prevention and mitigation that is more holistic and effective. The model has been successful in forming and training Community level Committees for Civil Protection, mandated by the 2005 Law for Civil Protection and the Prevention and Mitigation of Disasters, but rarely complied with in practice. The key to this model is the inclusion of not only hands on DRR practices but advocacy training to ensure communities can continue to interact with decision makers into the future. Our evidence to date shows that such an approach allows for more rapid and effective evacuations during emergencies, successful advocacy to local government for the construction of mitigation projects, as well as raised awareness at the local, municipal and national level about the vulnerability of marginalized rural and urban communities. Governments and donors need to further support this type of locally grounded approaches because adaptation is inherently a local level process and communities will to be organized to advocate on their own behalf.

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Community-managed approaches to climate change adaptation

By Stephane Bonduelle and Peter Raab

Concern Universal has been working in Bangladesh (CUB) since 1991 and in Community Managed Disaster Risk Reduction (CMDRR) and Environment and Climate Change Adaptation (CCA) since 2005. Based on evidences, CUB believes that actual DRR paradigms are not adapted to CC and is active and advocate for a focus on CMDRR.

CUB is a pioneer and leader in community managed Disaster- resilient Water and sanitation concept, answering to a big outstanding need and to reduction of waste of resources by development actors (continuously installing non disaster resilient facilities), with a strong and very cost-effective impact.

CUB implemented DIPECHO III, IV and V; and is currently associated to a strong DRR Consortium for the implementation of DIPECHO VI.

Working in conjunction with its funding partner CordAid, CUB has had very positive experiences with implementing the CMDRR and CCA approaches, and is currently working to share these approaches with 67 partner NGOs throughout Bangladesh.

CUB is conducting regular researches (currently together with ULAB and Science-Po Paris) to bring substances to governments and DRR stakeholders for CCA. CUB has policy to promote knowledge sharing and coordination in particular to face challenges of CC.

CUB welcomes opportunity to share these approaches to adaptation with conference participants.

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Plenary Session 14: Communicating Knowledge about Community-Based Adaptation

Session Chair: Pablo Suarez, Red Cross / Red Crescent Climate Centre

If adaptation to climate change involves people deciding to do things differently, then the challenge of scaling up community-based adaptation (CBA) is mostly the challenge of how to communicate and manage knowledge so it can be turned into action. This plenary session will address the CBA knowledge challenge through a combination of short presentations and videos, participatory decision games simulating actual choices in the face of likely future extreme conditions, and a discussion about desirable next steps to create an enabling environment for scaling up adaptation.

Future atmospheric conditions are increasingly predictable as a result of scientific and technological advances. From short-term storm forecasts to long-term climate trends, organizations working at the community level now have an unprecedented ability to anticipate threats to people at risk. At the same time, the complexity and range of decisions that can be made both by those at risk and the organizations serving them is rapidly expanding, owing to progress in technologies to obtain, process, communicate and use relevant information: from mobile phones and audiovisual equipment to participatory methodologies, we can collectively produce and disseminate information and ideas useful to communities at an unprecedented scale. Yet the climate problem seems to be growing more rapidly than the actual implementation of community-based adaptation measures. What can we do to accelerate scaling up of successful approaches?

An important first step involves improving our understanding of the challenges ahead. Just like atmospheric scientists have identified patterns that shape the future behavior of our global climate, social scientists have identified decision patterns, including cognitive and behavioral biases, that affect the perception, dissemination and utilization of new ideas. In other words: we can anticipate *issues affecting whether and how people access, understand, trust and use information about future climate conditions* – and about ways to adapt to them. This will be illustrated in two different ways. On one hand, a case study from Coastal Bangladesh will be presented on villagers' perceptions of climate and non-climate stressors. On the other hand, all conference participants will engage in "Weather or Not?", a game of forecasts and actions: Playing in teams, everybody will confront the decision of whether to act or not in response to a science-based prediction of a disaster. Like in the real world, in this game people's individual decisions will have collective consequences.

Similarly, we know that scaling up community-based adaptation to climate change requires a multi-stakeholder approach, with resulting *obstacles in terms of communication and interactions across sectors and disciplines*. Where illiteracy prevails and access to information is a challenge, there is need for both (a) building on familiar media channels to reach out to people at risk, and (b) establish innovative platforms for exchange to support knowledge generation and sharing. Case studies will be presented in this session to showcase various tools for community mobilization and strengthening collaborations to enhance adaptive capacity.

Finally, many of the challenges encountered today by CBA practitioners in terms of knowledge communication and management have already been experienced, and to some extent

addressed, in the related fields of development and disaster risk reduction. Presentations will include experiences of a range of methods that have been applied in the field with various smallholder farming communities, with suggestions that can help practitioners *towards a robust methodology for community based adaptation*.

Discussions during this session will focus on three questions for addressing the issue of communications for scaling up community-based adaptation:

- Are there conceptual or institutional tensions on how to communicate and manage knowledge for CBA? Do these tensions need to be resolved?
- How can we scale up CBA given the existing resource constraints?
- What can we do as practitioners to mobilize more human, institutional and financial resources for scaling up CBA?

Climate change and vulnerability of coastal communities in Bangladesh: Preliminary observations on villager perceptions of climate and non-climate stressors

By Mokhlesur Rahman and Bob Pokrant

Preliminary investigation in selected villages in coastal southwest Bangladesh suggests that dynamic interaction between social, political, institutional and environmental variables and systems in the coastal setting makes it difficult for local people and researchers to isolate climate change induced from non–climate–induced stressors. Local people use climate and non-climate-related factors to explain particular events and their vulnerability to them. For example, they link increasing tiger attacks in the Sundarbans to cyclone Aila, which reduced the availability of non–human prey for the tiger population. People identified increasing temperatures, reduced monsoon precipitation, shorter winters, and longer summers as changes in weather patterns, which resulted in concomitant impacts in the form of increased drought, frequent rough sea weather, increased erosion, higher salinity, siltation and increased storms. However, they found it difficult to comprehend that wholesale transformation of their local environments may occur as a result of climate change. These responses suggest that climate change adaptation measures need to be part of a wider development planning effort based on long-term collaboration between local people, NGOs and researchers. Our presentation summarises the preliminary findings and their implications for climate change adaptation policies.

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The Role of Community Radio in Climate Change Adaptation

By Charles Chikapa

Radio continues to be the most accessible medium of communication in Malawi. While new technologies, from wireless devices to blue-tooth to high-speed Internet seem to be everywhere these days, radio is highly regarded as one of the best communication tools for reaching the rural poor. Radio is popular, reaches a wide audience and is affordable and accessible. Farmers listen to local news, stories, and music in their own language without needing to be able to read English or French. In the last decade new techniques such as phone-in shows, live community forums, and radio diaries have made radio an interactive forum.

The Malawi Broadcasting Corporation partnered with Farm Radio International by working in selected areas of the country using radio as a tool for mobilisation. The Project was launched in April, 2007. It is a 42-month action research project supported by the Bill & Melinda Gates Foundation. (WUSC). Its aim is to assess the effectiveness of farm radio on meeting the food security objectives of rural farming households in Africa. The paper is aimed at sharing with participants the major outcomes of the Project in Malawi and how Radio can be used as a mobilisation tool for Community-Based Adaptation to Climate Change.

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STRENGTHENING COLLABORATIONS TO ENHANCE ADAPTIVE CAPACITY

By Susan Nanduddu

Professionals from different fields contribute to addressing issues of poverty and vulnerability from their different point of views. Rarely do the disciplines interact to discuss, share and practice beyond their mother schools of thought.) Effort however is being made to facilitate communication and interaction across disciplines. All these conversations are useful for the vulnerable and need to be done together with them. Where illiteracy prevails and access to information is a challenge, there is need for innovative platforms for exchange to support knowledge generation and sharing. Institutions need to embrace new ways of working –beyond isolation, to create and strengthen synergies given the nature of challenges we are addressing to enhance adaptive capacity. Lessons will be shared from a Community Based Adaptation in Africa project in Uganda, where a network of NGOs identified an NGO to pilot a project working closely with researchers from a university the beneficiary communities and local government.. As the project evolves, other research organizations and local practitioners are being identified and integrated within the project. Progress, issues and challenges will be shared.

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Small scale farmers taking action – towards a robust methodology for CBA

By Bettina Koelle and Shannon Parring

As the pressure to implement successful community adaptation projects is increasing globally, it becomes increasingly urgent to formulate a clear and robust methodology, including tools to support robust adaptation on the ground. For this we need to draw on lessons for the past from the fields of development and DRR and combine these creatively with new approaches and tools. As circumstances are complex and vary strongly this methodology must be flexible and focussed on learning yet must ensure accountability in the project context.

Drawing on the experiences of 8 community based adaptation projects in Africa, the presentation will present a range of methods that has been applied in the field with various small holder communities. In order to share some experiences from the field, methods used and some of the pitfalls encountered are presented. The tools presented include amongst others quarterly climate change preparedness workshops, climate dairies and climate calendars, climate monitoring and engaging with seasonal climate forecasts. Finally a framework for a CBA methodology is presented and a range of methods is suggested as a starting point towards a robust methodology for community based adaptation.

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Shannon Parring

Plenary Session 15: Bridging Local, Sub-national and National Levels in Adaptation

-

The articulation of institutions across scales

Session Chair: Robin Mearns, World Bank

The point of departure for this session is that institutions matter to adaptation outcomes, both in terms of the effectiveness of climate risk management, and the degree to which external support for adaptation and resilience-building meets the livelihood and other needs and priorities of poor and vulnerable groups of people. It is suggested that more socially inclusive or pro-poor outcomes in adaptation and climate risk management are more likely where there is greater and more equitable access to institutional support; where formal and informal institutions interact at local level; and where adaptive institutions and policies articulate across local, sub-national and national levels. Empirical evidence and lessons from practical experience across several regions will be shared, spanning several realms of engagement from action-research, capacity- and partnership-building, to planning and policy engagement that aims explicitly to bridge local, sub-national and national levels.

The session will focus on evidence of the value of institutions in mediating CBA; case studies of institutions that are or could be used for facilitating CBA; and mechanisms for mainstreaming CBA into institutions across scales.

Local institutions, social differentiation and adaptation outcomes: assessing cross-regional evidence

By Arun Agrawal

This paper presents new empirical data on local institutions and social differentiation in adaptation outcomes from recently completed, cross-regional comparative studies in West Africa (Burkina Faso, Mali, Niger and Senegal), Latin America (Dominican Republic, Mexico, Peru), Ethiopia and Yemen. It draws out implications for scaling up community based adaptation, paying particular attention to the ways in which formal and informal institutions articulate with one another both horizontally and across scales from the local to the national.

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Social Learning and Community Adaptation:
Local level study of environmental impacts and adaptation to climate change

By Antonio Oviedo

This paper looks for a perspective on community adaptation to climate change in the Amazon fisheries. We argue that three sets of factors are influencing their different approaches to adapt to climate change: culture, information and institutions. First, we propose to understand the processes that mediate perceptions of climate and ecosystem change and the adaptive responses at the levels of the individual and the community. Second, we should take into account the production and dissemination of biodiversity and climate information and models to regional and community levels, especially small fisheries. Third, we will focus on institutions and principles that must be designed for collective action. Adaptation to climate change depends on forms of institutional arrangements that facilitate decision making and response.

Amazonian fisheries communities are diverse and dynamic, varying in their knowledge of and dependency on the environment, cropping practices, cultural ties and density of social networks. They are shaped by cycles of forest economy and their connection to environmental systems and regional institutions and infrastructure. Small fisheries communities in the municipality of Manuel Urbano, Acre state, particularly susceptible to two interrelated environmental conditions associated with climate change: extended drought and duration of floods. These conditions directly affect their economic activities, livelihoods, residential patterns, dependencies on social networks and exposure to diseases.

The aim of the present paper is to present a sociological analysis of the work undertaken by WWF Climate Witness Project[4] in the form of a study in the local sphere of environmental impacts and social adaptations associated to climate change, bearing in mind the inherent variability of the floodplain ecosystems and the adaptability that typifies the lives of fishermen.

To understand community dimensions of climate change, we need to begin by examining the adaptive mechanisms of human populations to environmental change, the differential responses to the magnitude and the frequency of perceived and actual changes, and the differences between adaptive responses at the individual level and those visible at the community level. Adaptive responses to climate change are mediated by multiple factors, for example, perception of change in cultural dimensions, such as whether there is a repertoire of responses to that specific change. If flooding is a regular pulse in the region, riverine communities are more likely to have a specific terminology and the ways to cope than upland residents who have fewer experienced a flooding. But the memory of past events may not be part of inter-generational cultural knowledge.

[4] *Climate Witness Program*, internet address www.panda.org/climatewitness. *Oficina Testemunhas do Clima – Pescadores de Manoel Urbano* June 21 and 22, 2010 (Climate Witness Workshop Report - the Fishermen of Manoel Urbano.

A major problem on the upper Purus river is the potential loss of fisheries, agriculture and water resources. Understanding of the processes that lead to improvements or deterioration of natural resources demands a framework to describe and explain complex social-ecological systems (SESs). Manoel Urbano field survey have documented that the development of a community-based system is a continuous process of institutional learning and adaptation to resolve problems created by the different expectations of users and the institutional constraints on the range of possible options. The framework for SES (Ostrom et al. 2009) identify indicators that affect the likelihood of self-organization in efforts to achieve a resilient social-ecological system. SES framework, applied in Manoel Urbano studied questions, such as, when will the users of a resource invest time and energy to adaptive strategies to climate change?. Manoel Urbano field survey have found that the fishermen have invested in designing and implementing costly governance systems to increase the household economy and fish stocks (Oviedo, 2006).

Social learning, as a learning process that takes place in arenas of social interaction, plays a key role in enhancing adaptive strategies used by fishers in Manoel Urbano, especially in community areas, where access to information related to climate and resource use decisions might be very limited. In this municipality, social learning was important to cope with factors that contribute to uncertainty in the payoff structure of investments, such as a severe climate event (e.g., drought, excessive rains), lack of infrastructure and markets for fishery products (e.g. pirarucu), and little presence of formal institutions. By interacting with neighbors and observing their behavior and the outcomes of their decisions (e.g. collective fishing agreements), fishers complement and reconsider the knowledge obtained from their own experiences in important ways. In Manoel Urbano´ local group of pirarucu, managers have used biological indicators to demonstrate the extent to which a project has been successful, as well as revise management rules.

Collective fishing agreements is used to study situations where individuals would fail, according to the tragedy of the commons assumptions, to act as rational agents; however, under broader assumptions of bounded rationality, fishing agreements has been shown to be more efficient in achieving productivity goals than individualistic decision-making processes in the context of lake systems in Manoel Urbano, Acre (Oviedo, 2006). This is the case with the adoption of new management practices by fishers, as uncertainty about possible outcomes often frequently plays an important role in explaining the spatial and temporal patterns observed in floodplain areas.

One notable feature of floodplain culture especially important to the study of climate change impacts, is the way of living time marked by a very strong tendency to living in the present or "presentism" or "being a floodplain inhabitant means living for the present". Social and economic actions in the floodplain do not depend directly on calendar dates. Instead, they depend on the relations among the floodplain residents and their environment as of the 'present' instant. As people say in the region, in the floodplain everything is always beginning over again while on the upland it is possible to build and accumulate and cast an eye on future prospects.

Mentally approaching the future as if it were made up of two discontinuous horizons – one concrete and immediate that blends into the present, and another distant and abstract associated to elements that are of fundamental importance to the social reproduction, does not mean that floodplain fishermen are incapable of planning and carrying out actions that are aimed at future objectives. Studies in the Amazon have demonstrated the successes of many regions and communities in their management of the floodplain' natural resources. They are the result of a complex process which began as grassroots movements in different regions, gained support from

governmental and nongovernmental organizations end eventually brought about transformations not only in fishery policies but also in policies on land use and settlements. The construction and implementation of community fishing agreements calls for considerable collective planning and action skills – debating, negotiating, planning, executing, learning, evaluating, adapting and so on – all directed at a common goal which is future in essence, namely: the preservation of fish stocks and their habitats.

The results of the work undertaken among the fishermen of Manoel Urbano under the aegis of the social learning process for climate change and adaptation show that local experiences and/or perceptions of the effects of climate change as lived out by the communities may be at variance with much more ample scenarios portrayed by academic studies. The diversity of effects that can be felt and observed when a local scale is used is far greater and possibly more variable than the projections of scenarios on the broad scale would suggest. This experience in Manoel Urbano shows the important role of the social learning process in generating critical knowledge for studies of climate change and its impacts. Furthermore, it shows that what is needed to get to know more about potential or actual adaptation strategies already being used to enhance social and environmental resilience in the floodplains.

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The role of local government in building adaptive capacity in communities

By Margaret Barihaihi

Institutions can be categorized into two types: formal and informal. The formal include public or government institutions and private or non-government organizations, whilst the informal are mainly community based groupings, and the unwritten, sometimes unspoken rules and norms of society. For local governments, climate change adds and extra layer of complexity to existing development challenges. Local government's response to this challenge, and its ability to work with informal institutions to reach solutions, is critical.

The speaker will discuss ACCRA's experiences in Uganda of working to build local government's capacity to respond to with the additional challenges of climate change. The discussion uses evidence from Bundibudgyo, an area of Western Uganda where climate variability has exacerbated communities' existing vulnerability. ACCRA worked with local and national government to undertake a capacity gap analysis in Bundibudgyo to better understand the key needs, and to carry out capacity building activities with local government. This session highlights key lessons, challenges and recommendations from ACCRA's capacity building work with local government in Uganda, as well as recommendations around how local government can improve its collaboration with informal community institutions to support local adaptive capacity.

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Partnership building to scale up pilot CBA projects

By Adeline Aubry

Strengthening and diversifying partnerships is one crucial strategy to scale up pilot CBA projects amongst other strategies such as integrating CBA lessons into local/regional/national development planning, sharing newly acquired experience/knowledge, raising funds through extensive advocacy, and building adaptive capacities of all stakeholders.

Indeed, innovative and strategic partnerships based on the different strengths and motivations of the
local/regional/national authorities, communities, CBOs/NGOs/INGOs, bi/multi-lateral development agencies, foundations, private corporate sector and media, allow for:

• widely disseminating best practices and lessons from pilots for replication and more efficiency
• coordinating action, exploiting complementarities/synergies and optimizing resources for larger scale impact
(incl. human resources, technical expertise, funds and assets)
• institutionalizing community-based adaptation by mainstreaming it into development planning and anchoring
it into governments' strategies/policies for sustainability
• ensuring that adaptation initiatives answer to both local specific needs and national priorities
• merging scientific with indigenous knowledge
• getting a stronger voice and visibility to advocate for community-based adaptation
• strengthening accountability and transparency of adaptation related development action.

This presentation aims at sharing with other development practitioners our field experience and lessons related to partnership building through practical examples and advices emanating from our portfolio of 44 community-driven adaptation projects in 10 pilot countries (Bolivia, Guatemala, Jamaica, Kazakhstan, Bangladesh, Morocco, Namibia, Niger, Samoa, and Viet Nam). For example in Niger, all our NGO/CBO partners have been networked in order to better exploit synergies/complementarities and to launch a new programmatic approach (vs. project approach) for more efficiency. In Morocco, very promising partnerships are emerging as UNDP, GEF/SGP and UNV recently partnered with local CBOs representing the different vulnerable groups of the community; local authorities and governmental environmental departments for integrating our action into long term planning; the research programme ACCMA bringing data on adaptation; the GTZ adding its high technical expertise; and finally the Peace Corps volunteers ensuring a permanent presence in the field for hands-on support and capacity building.

Our Community-Based Adaptation Programme (CBA) is a five year United Nations Development Programme (UNDP) global initiative funded by the Global Environmental Facility (GEF). The Small Grants Programme (SGP) is the delivery mechanism. The UN Volunteers (UNV) partners with UNDP and GEF/SGP to enhance community mobilization, recognize volunteers' contribution and ensure inclusive participation around the project, as well as to facilitate capacity building of partner NGOs and CBOs. The UNDP-GEF CBA programme supports community-driven projects that pilot a range of climate risk management practices at the local level. The programme also seeks to encourage systemic change in national adaptation-related policy through evidence-based results from its portfolio of community-driven adaptation projects. Moreover, the programme promotes global learning by sharing lessons from a range of initiatives focusing on natural resource management.

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Institutions and Climate Change Adaptation: Challenges in Scaling up Bottom-Up Adaptation Planning

By Jess Ayers

Institutions play a key role in mediating adaptive capacity. Institutional systems like health, infrastructure or financial systems are a core component of adaptive capacity at the unit of a household or community. They mediate the extent to which climate induced changes will impact these units and they mediate the extent to which these units will be able to cope or respond to these change. Institutions, in the sense of rules and norms that guide collective action and as organizations, also play a key role in mediating the quality of institutional systems like health systems and in mediating access to the same.

Formal and informal, public, private and civic, institutions that function at local to international planning scales all have a role to play in mediating adaptive capacity. Adaptation planning needs to take on board these specific roles and enhance the interface between these institutions in order to move beyond a discussion of what should happen – adaptation outcomes – to a discussion on how this should happen, or what institutional design is required for delivering effective adaptation outcomes

Given that a number of climate induced changes are likely to impact systems at the local scale – this paper focus on the role of local institutions in mediating adaptive capacity & the challenges in scaling up such bottom up processes.

The paper draws on two ongoing IIED research projects that are looking at the role of institutions in adaptation planning (ICIMOD 2011) & at bottom up planning initiatives (Local Adaptation Programmes of Action in Nepal).

The paper will provide an overview of the role of institutions in mediating adaptive capacity; an outline of existing and emerging challenges in scaling up bottom-up adaptation planning; and suggestions for institutional change in order to enable a better horizontal and vertical interface between multiple institutions functioning at different scales.

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Is community based adaptation enough?

By Yvan Biot

The aim of community-based adaptation is to enable local communities to adjust their livelihood strategies to take account of a changing climate. In his short address, Yvan Biot will briefly examine the potential for the State to add value to community initiatives, using examples from DFID's research and policy analysis on national adaptation planning and resilient growth. Yvan will argue that without the support and additional activities by the State, CBA is unlikely to be able to address the wider, medium and long-term implications of climate change.

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Parallel Session 16: How Wider Development Interventions Contribute to Community Adaptive Capacity

Session Chair: Eva Ludi, Africa Climate Change Resilience Alliance (ACCRA) / ODI

For most developing countries, climate change adds another layer of complexity to already existing development challenges such as high levels of poverty and inequality, rapid population growth, underdeveloped financial markets and weak governance systems. Simulated climate projections suggest the impacts are likely to exacerbate these developmental challenges, '*as more floods, more droughts, more strong storms, and more heat waves make development policy and practice more complicated*'[5].

Unsustainable development, in the past and the present, is a root cause of climate change. Sustainable development is a necessary condition for overcoming this challenge. Simply 'adding on' mitigative and adaptive strategies to unsustainable development pathways will not work.[6] Given its wide array of impacts on and interactions with wider development, climate change will inevitably have considerable implications for the design and implementation of development interventions. Not only is there a high correlation between climate change impact and poverty, but efforts to reduce poverty are likely undermined by climate change. Accordingly, we need to consider how development approaches can contribute to reduced poverty and help enhance communities' capacity to adapt to a changing climate and prevent approaches and actions that undermine adaptive capacity.

People and places where levels of development are low are most at risk from a changing climate.[7] In many developing countries, those most likely to be vulnerable to climate change impacts are the marginalised and those who lack the opportunities, resources and support to adapt: *notably the poor, elderly and the young, and, in many societies, women and ethnic minorities*. The IPCC defines vulnerability as '*the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, its sensitivity, and its adaptive capacity'*.[8] Other approaches place greater emphasis on vulnerability to outcomes and focus on the dynamic interactions between exposure to climate variability and change and the social, political, institutional and economic structures that shape individuals' lives.[9]

[5] World Bank (2010) World Development Report: Development and Climate Change. Washington, DC: World Bank

[6] Parry M. (2009) Climate change is a development issue, and only sustainable development can confront the challenge. Climate & Development 1(2009), 5-9.

[7] Smith J.B., Klein R.J.T. and Huq, S. (2003) Climate change, adaptive capacity and development. London: Imperial College Press.

[8] IPCC (2001) Climate Change 2001: Impacts, Adaptation and Vulnerability. Third Assessment Report and Summary for Policymakers and Technical Summary. Geneva: IPCC.

[9] Adger W.N. (2006) 'Vulnerability'. Global Environmental Change 16(3): 268-281.

Causes of vulnerability relate both to the assets people own and to the accountability and effectiveness of institutions and, for many population groups, long-term processes of social, economic and political marginalisation. Lack of assets such as land, livestock, income, social networks and political links each play a significant role in influencing vulnerability, as well as wider development factors such as access to education, health care, agricultural services, justice systems and conflict resolution mechanisms.

Building the adaptive capacity of systems is therefore vital both to reduce vulnerability and to enable communities to adjust and develop despite a changing climate: this includes harnessing new opportunities as a result of climate change where they exist. The IPCC defines adaptive capacity as *'the property of a system to adjust its characteristics or behaviour, in order to expand its coping range under existing climate variability, or future climate conditions.'*[10] Adaptation goes beyond reducing vulnerability and preparing for hazards, and challenges development interventions to support and foster an ongoing change process where communities can make decisions about their lives and livelihoods in a changing climate.[11] Adaptation is undertaken by various agents, in different ways, at multiple scales.

In order to understand people's and societies' vulnerability and how they can better cope with and adapt to climate variability and change, focus must be placed on addressing the political, cultural and socioeconomic factors that may promote or inhibit individuals and groups from adapting.[12] Such an understanding is an essential component of programmatic adaptation approaches, which can range from addressing drivers of vulnerability (activities that seek to reduce poverty and non-climatic stressors), to building responsive capacity (building robust systems for problem-solving), to managing climate risks (incorporating climate information into decision making), and finally to confronting climate change itself (addressing impacts associated with climate change).

The Africa Climate Change Resilience Alliance (ACCRA)'s Local Adaptive Capacity Framework identifies five principal characteristics of adaptive capacity at the local level: *the asset base, institutions and entitlements, knowledge and information, innovation and flexible forward-thinking decision making and governance*[13]. Through the application of field research across 3 African countries, we suggest that different approaches – livelihoods, social protection and disaster reduction - build adaptive capacity in different ways, and that learning from these different approaches and increasing collaboration across the disciplines could enable governments and the development community to more effectively promote adaptive capacity across scales.

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[10]Brooks, N. and Adger, W.N. (2005) Assessing and Enhancing Adaptive Capacity. Technical Paper 7. New York: UNDP.

[11] Pettengell, C. (2010) Climate Change Adaptation: Enabling people living in poverty to adapt. Oxford: Oxfam.

[12] Smit I.B. and Pilifosova O. (2001) Adaptation to Climate Change in the Context of Sustainable Development and Equity, in IPCC (2001).

[13] See Jones L., E. Ludi and S. Levine (2010) Towards a characterisation of adaptive capacity: a framework for analysing adaptive capacity at the local level. London, ODI. http://www.odi.org.uk/resources/details.asp?id=5177&title=adaptive-capacity-framework-local-level-climate; or visit the ACCRA website at http://community.eldis.org/accra/

This session will explore how wider development interventions can contribute to adaptive capacity at the community level. In doing so, it seeks to explore future potential avenues to guide policy and practice. The presentations and panel discussion will be centred on the following questions:

- Innovation: how can programmes better foster innovation in communities, allowing them to explore and seize opportunities to innovate and possibly to adapt? How can interventions provide more space for communities to manage risks associated with innovation?
- Institutions and entitlements: How can interventions support an appropriate and evolving institutional environment, that allows fair access and entitlement to key assets and capitals?
- What influence do governance structures have over the adaptive capacity of communities, and how can programme interventions work most effectively with governance structures to support communities?
- What examples are there of integrated approaches to Climate Change Adaptation building adaptive capacity in communities?

Do livelihoods, DRR and Social Protection programmes contribute to communities' adaptive capacity in Africa? Preliminary findings from the Africa Climate Change Resilience Alliance

By Jo Lofthouse

As governments and the development community grapple with the implications of climate change for development planning and poverty reduction, we often make the assumption that existing interventions – livelihoods, disaster risk reduction and social protection interventions, for example – support communities to adapt to climate change. However, more evidence is needed to better understand whether this is the case.

ACCRA is a consortium made up of Oxfam GB, the Overseas Development Institute (ODI), Save the Children Alliance, Care International and World Vision International and funded by DFID. ACCRA aims to increase governments' and development actors' use of evidence in designing and implementing both humanitarian and development interventions that increase poor and vulnerable communities' adaptive capacity.

ACCRA has carried out detailed research on 11 projects across Ethiopia, Mozambique and Uganda to understand how climate change is affecting communities' livelihoods, how existing projects by ACCRA members build adaptive capacity to climate change in beneficiaries, and how these approaches can be strengthened. ACCRA has also undertaken policy influencing and capacity building work with governments around climate change adaptation. The session will focus on ACCRA's preliminary findings from the research in all 3 countries, and specifically focus on initial analysis of whether, and how, existing interventions build adaptive capacity.

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Community based adaptation in Mykahayya, western Sudan

By Sumaya Ahmed Zakieldeen

Sudan is a typical case of a least developed country within Africa, in that it is highly vulnerable to climate change and climate variability. The interaction of multiple stresses such as, endemic poverty, ecosystem degradation, complex disasters and conflicts, and limited access to capital, markets, infrastructure and technology have all weakened people's ability to adapt to changes in climate.

Over the past decades, livelihoods in western Sudan have been affected by frequent drought cycles, extreme fluctuations in rainfall and Floods. The current study is part of the community based adaptation in Africa. The study addressed the vulnerability of Mykahayya village in western Sudan and identified with its community the needed adaptation options. The important none-climatic-factors hindering the adaption process were also addressed particularly those related to policies and decision making. Accordingly a process of involvement with relevant institutions (agriculture, forestry, rangeland etc.) at different levels was facilitated in order to improve the situation. On the other hand the community was able to identify clearly their needs for capacity building and training and that was quite helpful for the implementation of some of the identified adaptation activities.

The involvement with the community (men, women youth) was quite important not only for raising the awareness, but also for changing the thinking of the local people and decision makers regarding climate change issues. It also draws the attention for the significant of adaptation for the vulnerable communities not only in Sudan but in eight African countries.

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Integrated Approaches to Adaptation

By Sarah Wiggins

Efforts to work in integrated ways on climate change adaptation are largely only in their infancy by early 2011. Given the evidence of scientific data as well as observed community experiences of climate change in developing countries, it is alarming that many developing countries have no working climate change adaptation plan in place, and little recognition of the overlap between climate change adaptation plans and broader development and disaster management plans. Even if adaptation plans exist, is often the responsibility of a few, relatively powerless government officials in environment ministries to attempt to lead any sort of coordinated, cross-ministerial and multi-agency response.

Non-government organisations and community-based organisations have significant roles to play in a country's climate change adaptation programme. The more they can be involved in the design, planning and implementation of adaptation programmes, the more sustainable those programmes will be for the medium and longer term.

Building on examples of some progress in developing countries, Tearfund presents possible practical options for encouraging integrated, cross-sectoral and multi-agency, approaches to adaptation.

Tearfund's research in this area has been strongly influenced by its partners (ie local NGOs in some of the 45 developing countries where Tearfund works) and developing country governments who have reported a disconnect between government, developed country and (I)NGO policies and the "real" situation on the ground. Tearfund has therefore sought out the voices of governments, local NGOs and other stakeholders in order to identify practical ways of taking an integrated approach.

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Role of Policies and Institutions in Community-Based Adaptation: Learning from field experiences

Partha J Das

The paper presents the findings of research on the role of institutions, both local and national, in contributing to adaptive capacity, and of the ways in which national policies and governance arrangement can support or undermine adaptive capacity at community level to cope with water hazards.

The research, based on the secondary information, policy review and field study conducted in four countries in the Hindu Kush Himalaya (HKH) region, viz. China, India, Nepal and Pakistan, provides useful insights and valuable lessons for other areas around the globe. The unique methodological approach, based on an analytical framework integrating institutions and adaptive capacity, is another useful contribution of this study, which brought partnership in adaptation with international partners like ICIMOD, SEI, IIED and national and local partners across the HKH region.

The results concentrate on the overarching question on the effectiveness of interactions between local and national institutions in building the adaptive capacity of local communities. It also identified institutional arrangements at national and local levels across the major themes like livelihood diversification, water governance, flood mitigation infrastructure and agricultural diversity and different ways in which these interact. A case study on Governance and Adaptation in Assam will also be presented describing the effectiveness of embankment as flood mitigation infrastructure to address water hazards.

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Parallel session 17: The Role of Ecosystems in Adaptation

Session Chairs: Helen Jeans, WWF and Hannah Reid, IIED

'Climate change … …challenges us to think differently at many levels. Above all, it challenges us to think about what it means to live as part of an ecologically interdependent human community.' Human Development Report, 2007/2008

Integrated Adaptation

This session is based on an understanding that natural and human systems are inherently interconnected and interdependent and that this suggests that what is needed is an integrated approach to addressing climate change.

By posing a number of questions about the role of ecosystems which will be unpacked through case studies and discussion, the session will explore:

- How the important role of ecosystems for human adaptation can be properly acknowledged in adaptation practice, and implications on the scale of adaptation plans and projects
- The benefits and challenges of development and conservation practitioners working in partnership and dialogue to develop a field of 'integrated adaptation'.

Questions to be explored through case studies and discussion

What can we learn or understand from ecosystem approaches to help us improve and scale up adaptation interventions that increase people's resilience to climate change?

An ecosystem is a community of interacting living and the non-living things that works as a functional unit. Ecosystems work at different and interconnected scales (e.g. mountain systems to small ponds) providing services that humans depend upon. Changing one element of an ecosystem can change the whole ecosystem. Such changes can alter the functions and services that ecosystems provide to people. Both climate change impacting directly and human decisions affect biodiversity and the flow of ecosystems services.

By designing adaptation solutions that address those ecosystem services that are crucial to human lives and livelihoods at the scale at which the ecosystems work to provide them may enable scaled–up adaptation that can help build resilience and secure benefits for people and nature into the future.

What opportunities and challenges are linked to scaling up and working at ecosystem scale? What's the role of institutions at local, regional and national level in enabling adaptation to take place at the ecosystem level?

Ecosystems do not always/often reflect administrative boundaries, and in fact they often divide them (e.g. rivers forming country boundaries). Working at an ecosystem scale may require multi-stakeholder and regional or trans-boundary collaboration to secure fair and effective management of the resource or ecosystem (e.g. watershed) that a community depends upon. This means working beyond the community level and engaging in governance systems and political processes. This also provides opportunity to develop adaptive capacity beyond the local

level by promoting collaborative governance and generating knowledge about and processes for addressing how the actions of one stakeholder/community can impact anothers.

What and how can we learn from CBA about traditional knowledge in specific ecosystems that can develop our understanding of adaptation (scaling up through replication and sharing knowledge)?

Human communities already exist in extreme natural environments and deal with extreme conditions, for example pastoralists in the dry regions of Africa survive in extreme climates by using traditional knowledge and movement to derive benefits from diversity at species and ecosystem level.

There is a need to conserve and better understand the wealth of knowledge and experience that such communities hold to help cope and live with climate change, as well as to ensure communities on the edge are not pushed over the edge through human induced climate change.

Is an 'integrated adaptation' field of practice necessary to address climate change and how might development and conservation organisations work together to develop the necessary knowledge, skills and tools?

Development and conservation practitioners and organisations have complimentary knowledge, experience, skills and tools which can contribute to the development of an integrated adaptation field of adaptation practice that can sit alongside and complement community based adaptation approaches. Partnership working, dialogue and shared lesson learning are necessary to build bridges between these communities of practice.

The session will also focus on the development of a "straw person" recipe for an integrated approach. This will be based around the following components:

- Thinking and planning at ecosystem scale as well as and in support of local community level
- Learning from local and traditional knowledge
- Maintaining ecosystem services (e.g. replanting deforested slopes, restoring and replanting mangroves)
- Increasing ecosystem resilience (e.g. biodiversity conservation, ecosystem management and restoration)
- Ensuring solutions for one community don't negatively impact another
- No/low regret, locally appropriate nature based solutions
- Mitigation as well as adaptation benefits
- Building adaptive capacity for present and future
- Partnership working and dialogue that brings together development and conservation practitioners for knowledge co-creation.

Exemplars of resilience in Pacific mangroves, people and livelihoods

By Metui Tokece and Monifa Fiu

Mangroves dominate three quarters of tropical coastlines, playing a major role in the cultural and economic livelihoods of coastal communities in the Pacific. Mangroves form, builds, hosts, helps, protects and provides. WWF South Pacific Programme's approach to empower grass root communities, facilitate positive change through key stakeholders, conservation practitioners, working at community-national-regional levels, strengthening where necessary the governance processes, capacities and knowledge sharing mechanisms. WWF's niche areas of building strategic partners and alliances, raising awareness with communities and civil society sector, strengthens capacities of important players at regional, national, provincial, district and community levels, complemented with targeted research in order to support sound decision making. Climate change has significant impacts on people's knowledge, innovation and practices. Adaptation strategies involve the protection of coastal ecosystems important to the environment services and ecological functions they provide as well as the appropriate space for species to adapt and the communities to sustainably derive benefit from these resources. Actions to protect these important ecosystems include awareness and education efforts for mangrove conservation, the rally of public support for regulations, strengthening support for management of these coastal mangrove systems. Herein lies, the practical solution for addressing our adaptation needs to adverse impacts of climate change.

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Ecosystems and community-based climate change adaptation across Lauru Island, Choiseul Province, Solomon Islands

By Jimmy Kereseka

Lauru, the indigenous name for Choiseul Province, is a large island situated in the east of the Pacific nation of the Solomon Islands. The island is administered by a provincial authority but customary land ownership and traditional institutions and governance is strong and adhered to. Infrastructure, transport, services are basic and there is little connectivity to the mainstream economy, and most people enjoy subsistence lifestyles. Despite issues with logging in some areas, many leaders of Lauru have rejected unsustainable land-use practices.

In 2008, the collected chiefs of Lauru joined together in a commitment to protect key cultural and natural resources across the whole island, with a network of protected and managed 'tambu' sites from reefs, inshore fisheries and coastal features to the watersheds, water sources and valuable forest areas, in every community by 2012.

A partnership between the Provincial Government, the Lauru Land Conference of Tribal Communities and external and Government agencies, including The Nature Conservancy, Swiss-RE and AusAID, helped the community leaders and representatives to map out and endorse key areas to prioritize for management. These include critical ecosystem services such as mangroves and watersheds.

With institutional, technical and financial support, communities are beginning to plan for an uncertain climate. In villages such as Boe Boe, on the West Coast of Choiseul, innovative and participatory tools – such as Participatory 3D modeling - are being used to explore how the islanders can adapt.

Networking between communities, exchange between other provinces, increased support from national government agencies and ministries, and initial external project investments, are helping fulfill the chiefs' commitments for Lauru. It is expected that by 2012 every community in Choiseul will have a plan that includes adaptation and an initial set of activities underway. In the meantime, updated prioritization of key ecosystem features to consider for protection is supported by planners from TNC and University of Queensland. Additionally, the Provincial Government's development planning process now includes community-based adaptation as a core component.

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Restoration of degraded lands of Djimbala: Case of palm groves of M'betou

By Mouhamadou Farka MAIGA

The project is located in the Djimbala, based on the principle of participation and accountability of rural communities along the Inland Delta of Niger River, in the restoration of degraded lands dominated by palm groves. This species, despite its economic and ecological value, is neglected by policy makers and destroyed by people who, however, that they derive their subsistence needs. Advisory support will be provided by the NGO APSAGA and its partners to bring people to organize themselves in order to facilitate the regeneration capacity of palm groves and ensures sustainable management in M'bétou, a village chosen as test area.

The project included a series of activities of advising, collaboration, organization and demonstration of techniques for restoration of marginal lands and fragile, the potential for regeneration and the rational exploitation of the doum palm. Then a process will be undertaken with local populations and decision makers to adopt a local agreement management palm groves on the basis of social and cultural norms.

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Sound ecosystem management in support of human-based adaptation. The case of SCAPES in San Ignacio Province, Cajamarca, Peru

By Nella Canales Trujillo

As part of the USAID SCAPES initiative, the CARE-WWF Strategic Alliance is aiming to increase resilience in both ecosystems and the livelihoods that depend on them in different parts of the world, including Peru. Within this framework, CARE is applying the Climate Vulnerability and Capacity Analysis (CVCA) in the San Ignacio Province. Through a participatory process, data collection shows that local stakeholders identify forest and páramos as well as their regulatory role on ecosystem services as part of their assets for adaptive capacity. The communities also recognize the importance of these ecosystems for and relationship with their livelihoods. As a result, a key finding is the need to adapt these livelihoods in an environmentally sound manner to better conserve the supportive biodiversity. In this way, the promotion of more resilient livelihoods generates a facilitating scenario for reducing pressure on natural resources and promoting better natural resources management. The CVCA results are part of a broader process that will lead to an inclusive and participatory formulation of the San Ignacio Province Climate Change Adaptation Strategy, the first Provincial-level one in Peru, which will be considered as an input to the Cajamarca Region Climate Change Strategy. In this sense, the experience shows that a community-based adaptation process linked with sound ecosystem management is applicable not only at a small scale, but in larger development process at local, subnational and national levels.

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Integrating sound ecosystem management into CBA projects: Preliminary findings from a projects' review

By Gretel Gambarelli and Pauline Buffle, IUCN (Ecosystems and Livelihoods Adaptation Network)

The presentation will focus on preliminary findings from an ongoing review of CBA projects and good practices that include ecosystem conservation, restoration, and management as integral parts of an overall human adaptation strategy. The review responds to a perceived need by both the development and conservation communities working on adaptation to be informed on concrete examples of ecosystem-based approaches for adaptation, and on lessons learned from early applications. The presentation will first propose an operational definition of ecosystem-based approaches for human adaptation (trying to avoid terminological traps that may lead to a false dichotomy between community-based and ecosystem-based approaches). Then, it will briefly introduce at least six CBA projects focusing on various ecosystem-types in different countries (including Bangladesh, Vietnam, Philippines, Sudan, Niger, Madagascar, Guatemala, and Mexico), and describe some of the ecosystem-based practices fostered by these projects. It will subsequently propose a comparative analysis of these experiences, focusing on commonalities, differences, and lessons learned. Finally, it will conclude by highlighting key areas that require practitioners' attention to make these projects successful.

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Parallel Session 18: Drylands and Pastoralism

Session Chair: Victor Orindi, Ministry of State for Development of Northern Kenya and Other Arid Lands

Drylands cover 41% of the earth's land surface and is home to over a third of the world population[14]. Pastoralism on the other hand occupy two thirds of dryland global areas and host a large share of the world poor who are largely dependent on livestock for income and food security[15]. Additionally, drylands support industries like tourism which is a major foreign exchange earner for many developing countries. It is therefore important that efforts towards adaptation focus on drylands (and pastoralism) because of the many need and opportunities it presents.

The majority of Community Based Adaptation (CBA) initiatives are dependent on the natural resource base which for dryland environments are the very high spatial and temporal distribution of transient and variable natural resources (pastures, water, etc.). This is due to: highly variable rainfall which when combined with diverse landscapes each with differing soil types and differing and highly diverse vegetation creates a very complex mosaic of natural resources that is constantly shifting in time and place –i.e. disequilibrium environments. We need to understand CBA and its up-scaling in this context.

Key features of CBA initiatives in the drylands.

CBA has always been a central feature of dryland communities. Productivity under conditions of variability - to disequilibrium in ecosystems and cycles of drought and flood - are built into dryland communities' livelihoods, institutions and knowledge systems. These conditions include:

(i) Land tenure arrangements that are geared to maximising access to productive resources in the wet and protecting/limiting access to productive resources in the dry seasons. For example, most pastoral area/land is held under a controlled access tenure systems where land and the resources it supports often include different types of tenure arrangements ranging from relatively open access common property regimes (e.g. wet season grazing pastures) to more strictly controlled common property (e.g. dry season grazing areas for calves or sick animals) to very strictly controlled almost private property (e.g. dry season hand dug wells 'owned' by a particular family or clan) within a wider communal system. The purpose of all these is to maximise productivity under conditions of high variability and unpredictability. Thus, wet season pastures are of relatively easy access (i.e. little/no negotiation) because it is a period of abundance and all pastoralists seek to maximise mobility in order to reach the most nutritious grasses to enable livestock to put on weight as fast as possible within the relatively short rainy season. In contrast access to permanent water in the dry season is usually very strictly controlled where, depending on pastoral group and location, access by others requires negotiation, possibly payment and comes with certain conditions (e.g. time of access).

[14] Mortimore, 2009. Dryland Opportunities: a new paradigm for people, ecosystems and development.IUCN,Gland, IIED London and UNDP/DDC, Nairobi.
[15] Neely, C; Bunning, S and Wilkes, A(2009).Review of evidence on drylands pastoral systems and climate change. Implications and opportunities for mitigation and adaptation. FAO, Rome.

(ii) Rearing different species and to a lesser extent breeds of livestock in order to make maximum use of the scattered and transient resources - e.g. camels/goats that browse at different heights; camels and sheep graze different species of grass – and cater to different requirements (e.g. sale of goats for small household expenditure, cattle or camels for more important needs). Pastoralists actively and carefully manage their herd age and sex structures, and practice selective breeding - e.g. keep those animals that are able to select the most nutritious pastures, to walk the long distances, to resist heat and water stress, etc.

(iii) Reciprocal and negotiated rights of access. Rights of access are not equal - often there are 'primary users' who have priority rights over resources in their 'home areas' and through negotiation allow others, often non-residents, 'secondary rights of access'. These are not fixed, but left open and flexible. This is more efficient than fixed rules given the fact that from one year to the next, no one is sure where resources may be (it depends on the rains). Negotiation allows flexibility and options for reciprocal arrangements. This is a form of insurance.

(iv) Natural resources are managed at a 'landscape' or 'ecological' level to take into account the need for access wet seasons resources and then later dry season resources - so ideally, pastoralists exploit different environmental niches (wetlands, highlands, riverine forests, salt licks) in their continual search for nutritious pasture and water.

Scaling up in the drylands

Dryland communities are among the least supported to cope with and adapt to climate variability and long-term change among other stresses. Indeed, they may have strategies to deal with climate variability but these are often inadequately supported by policy and formal institutions. The question that needs to be answered is how policy, processes and institutions may be reformed to support conditions that may enable 'scaling up' of these well informed strategies. For example, better articulation between customary and government planning is a condition necessary for successful government's recognition of the validity, rationale, and pertinence of CBA practices in the dryland areas. Greater devolved authority to allow decisions to be taken at the appropriate level just like land tenure reform to protect common property tenure systems are equally important in supporting adaptation and scaling up of CBA practices.

Issues to address during the session

Indigenous knowledge systems which inform household and communal level decisions in pastoral areas tend to be holistic but localized. How can these be strengthened in space and time more so to avoid mal-adaptation?

Impacts of climate change will be highly specific to regions hence enhancing adaptive capacity will require assessment at regional and local level. Are there good examples from drylands on linking local with national and regional level activities? What roles can policy play and are there opportunities?

Mainstreaming climate adaptation in planning in northern Kenya

By Victor Orindi

Kenya's dry land constitutes 80% of the land mass and is largely inhabited by pastoralists. For many years, they have been neglected, under resourced and their potential ignored leading to many disparities in terms of key human development indicators. Climate change is a critical issue for northern Kenya because it will exacerbate the challenges already facing the region, and because people living in the arid districts are among those least well-supported to cope and adapt. While communities have sophisticated ways of dealing with climate variability, these have not always been adequately supported by policy, investment or practice.

Our work in Isiolo County aims at finding ways through which local planning may be adjusted to address vulnerability of local communities geographically rather than sectorally. Lessons from Isiolo will be up scaled to other parts of northern Kenya while taking into account the differences among counties and local communities.

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Pastoralism, climate change and vulnerability in Ethiopia

By Gitte Motzfeldt

The Development Fund, in collaboration with local organizations in Ethiopia, and the University of Life Sciences in Norway, has recently carried out a study in two pastoral regions in Ethiopia, the Afar and Somali regions. The study is scheduled to be finalized by March 2011, and outcomes from the study will be presented at this conference. The objective of the study is to develop programmatic and policy recommendations for how adaptations to climate change can be strengthened among vulnerable pastoralist groups. This study hence focuses on how the long term vulnerability *context* of pastoralist groups can be changed, in terms of social inequity in access to adaptation options, long term environmental sustainability of options, and addressing the social, environmental and development processes that shape these options. In addition to climate risk to livelihoods, the focus is also on local capacity to respond to change as well as the fundamental causes of vulnerability. The study aims to identify i.e.: a. The strategies that pastoral groups currently use to achieve human security in the face of multiple stressors, including climate variability and change; b. Ongoing social and environmental changes that pastoralists have to manage, and the way that these changes may affect their vulnerability context and ability to manage change in future.

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APPROACHES FOR COMMUNITY BASED ADAPTATION IN PASTORAL AREAS

By Lucy Waruingi, David Western and John Kamanga

African Conservation Centre (ACC) is working in partnership with the pastoral communities in the South Rift of Kenya to explore opportunities which can support the environment and generate revenues for local communities while building their adaptive capacity to climate change.

The group ranches in the South Rift are in the drylands of Kenya receiving less than 250mm of rain annually and since 2000, using Community Based Conservation (CBC) approaches, ACC has assisted these pastoral communities in developing Community based tourism enterprises and developed a rangeland management system which generates income which is in turn used to diversify livelihoods, catalyze socio-economic and demographic transition of agro-pastoral communities, conserve biodiversity and in effect build resilience to the potentially catastrophic impacts of climate change. In a similar fashion, we are building the communities' adaptive capacity by assessing the vulnerability of these pastoral communities to the changing climate and developing appropriate strategies. In the last drought some of these groups lost over 80% of their livestock! Working with their local grass root institution – The South Rift Association of Land Owners (SORALO), and an action-by-doing approach, we are developing adaptation strategies across the different livelihood sectors and helping them confront climate change issues while conserving biodiversity.

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Conceptual Framework Approaches Applicable to Gender and Climate Change: Case Study of Pastoral Communities in Northern Kenya.

By Nancy Omolo

Gender aspect of climate variability and change is very important. However, there is insufficient studies which have developed relevant theoretical frameworks on gender and climate change. This study draws from three broad theoretical approaches: Sustainable Livelihoods Approach (SLA), Gender and Development (GAD) approach and Political ecology approach. Thus, a multi-theoretical approach will be adopted in this study to bridge the gaps between gender, pastoralism and climate change adaptation. Each theoretical approach will provide some insight into the topic under discussion. The livelihood strategies in Turkana include: pastoralism (main livestock kept are:- camels, cattle, donkeys, sheep and goats), crop farming, fishing (mainly in Turkana), weaving (of baskets and mats) and wage employment. The main objective of this study is to evaluate women's adaptive capacity to climate variability and change in pastoral communities in Turkana north-western Kenya. This study involves undertaking a literature review of secondary data, collecting household quantitative data, focus group discussions (FGD), key informant interviews (KIIs) and analysing compiled and modelled meteorological data on temperature and rainfall. The quantitative data was coded and entered in the statistical package for the social science (SPSS) for analysis while the qualitative data will be examined thematically in relation to the objectives that frame this research endeavour. The preliminary results reveal that the communities have developed coping strategies to deal with climate variability and change. However, there is variation in women and men coping strategies.

KEY WORDS: Climate variability and change, coping strategies, Gender, GAD approach, Pastoralism, Political ecology approach and SLA approach.

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Parallel Session 19: CBA, Disaster Risk Reduction (DRR) and Agriculture

Session Chair: Stephan Baas, FAO

Context and rationale

Agriculture provides jobs for 1.3 billion small farmers and landless workers and is the main source of livelihood for an estimated 86% of the 3 billion rural people in developing countries. At least 70 per cent of the world's poor people are rural, living on less than US$1.25 a day. It is the poorest households that typically rely most on farming and agricultural labour. Agriculture therefore plays a critical role in efforts to reduce hunger and malnutrition and to improve the living standards of all, especially the poorest, in an economically, socially and environmentally sustainable manner.

However, despite increases in productivity during recent decades in some parts of the world, the failure to advance agriculture in some of the world's poorest regions threatens the lives and livelihoods of millions of people. With 925 million people living in chronic hunger and malnutrition and a present population of 6.7 billion expected to increase to 9.1 billion by 2050, the world requires an increase of food production of 70% at world level and 100% in developing countries in a time of new global challenges for food security, including:

- the impacts of extreme events and climate change,
- increasing scarcity of natural resources,
- rising inequality and problems of access to food by the most vulnerable populations, and
- increasing food price volatility.

Increasing climate variability and climate change enhances production risks of farmers, livestock-keepers, fishers and forest-dependent people, particularly in regions that already suffer from chronic soil and water scarcity, high exposure to climatic extremes including floods and droughts, and poverty and hunger. Declining agricultural production and higher frequencies and intensities of extreme weather events also reduce employment and income opportunities, diminishing poor people's purchasing power and limiting their ability to invest in assets that would increase their resilience to shocks and stresses. Particularly communities in fragile environments, such as dry lands, mountain areas and coastal zones and marginalized groups within these communities, such as women and indigenous groups, can be affected.

Durable solutions to food security require increasing agricultural production and productivity, improving equal access to nutritious food and strengthening resilience, particularly of the poor and vulnerable so that they can benefit from services needed for sustainable livelihoods and enhanced coping capacities to better withstand current and future risks and shocks. Along with practices and technologies that improve farming systems in a way that supports food security and development, a shift to more holistic approaches to agricultural development under climate change are required.

Vulnerability is determined by exposure and sensitivity to changes, and by peoples' ability to manage these changes. To enhance poor agricultural communities' resilience to climate change, climate related risks have to be addressed in a coherent manner and in the context of existing food security risks. Adaptation is hence not a single intervention; it is a process incorporating

initiatives that range from addressing the underlying drivers of vulnerability to responding to the impacts of climate change. The most immediate impacts of climate change are already felt through the increased frequency and intensity of extreme weather events, with direct implications for disaster risk. DRR and its focus on building resilience to existing climate variability is therefore a useful entry point for adaptation and the first line of defence against climate change.

The adaptation of agriculture based livelihoods requires processes that are location- and context-specific, integrated and flexible and address short as well as long term implications of climate change. Small farmers and rural communities are key actors in making the shift to resilient and sustainable agriculture happen; thus, community-based approaches to CCA and DRR and their up-scaling are of fundamental importance.

Session objective and key issues to be addressed

The session objective is to develop some key messages and recommendations from an agricultural perspective related to the importance and up-scaling of CBA. This session will discuss the potentials of CBA in agriculture, particularly for vulnerable small holders. It will assess options for up-scaling CBA including through/in agricultural line agencies and/or other stakeholder. The scope for integrating CBA and CBDRR from an operational agricultural perspective will also be addressed. To facilitate the plenary discussion, the session will be structured around the following discussion points, which will be addressed by the presentations and subsequently elaborated through an open panel discussion with the plenary.

A) The role of CBA in agriculture in addressing climate change impacts

What and how does CBA in agriculture contribute to strengthening community resilience against climate variability and change? Which role do agricultural line agencies, extension and research institutions and other stakeholders play in promoting CBA? What is the role of other institutions and services, including public works, in enabling CBA?

B) Differences and convergences between CBA and CBDRR - agricultural perspectives

Do we recommend (or not) from an agricultural perspective, the operational integration of CBA and CBDRR at local level to promote overall resilience building, or even the integration of CCA and DRR approaches at the agricultural sector level?

C) Opportunities and constraints for upscaling CBA/CBDRR as an integrated approach in

Has agriculture the potential to be an “engine” for generic upscaling of CBA/CBDRR, and if so under which conditions? What role and actions should Ministries of Agriculture, national agricultural research & extension systems and other public institutions take in support of rural communities take to upscale CBA (or an integrated approach to CBA/CBDRR) in agriculture? Which constraints have to be taken care of? What opportunities could be tapped?

Development of sustainable agricultural techniques for adapting to climate change in three villages in the municipality of Roumbou, Department of Dakoro

By Katiella A. Mai Moussa

Context: The project aims to work with three villages of agropastorialists in Niger's Sahel zone. Together, the three villages number approximately 1,600 people. The village is faced with high levels of poverty and structural food insecurity, which is exacerbated by soil degradation, dune mobilization and deforestation. Increasing levels of poverty have led local people to seek livelihoods by selling crop residues and wood cut from the Tarka valley – exacerbating soil degradation and thereby exacerbating poverty. Furthermore, rainfall has declined by about 100mm in this region since the late 1960's, from an average of about 400mm per year to about 300mm per year during the present decade.

Ongoing climate change impacts will add to these pressures, increasing annual average aridity through increases in average temperature and evapotranspiration. In addition to changes in long-term average conditions, climate change is expected to increase the magnitude of interannual climate variability in the region. As climate conditions for agriculture and pastoralism worsen, crop failures are likely to increase (absent adaptation). These are likely to lead to maladaptive coping strategies – including deforestation for the sale of fuelwood. These will increase erosion, which in turn will decrease the fertility of the area and make crop failure increasingly likely – fueling a cycle of poverty, vulnerability and land degradation that is propelled by the impacts of climate change. By restoring land (co-financing) and building capacity to sustainably farm it in a climate-resilient manner, the project will decrease the climate change threat facing land resources in the focal region.

Objectives: The objective of the project is to build the capacity of the community to engage in livelihood practices that will contribute to the reduction of climate change-driven soil erosion pressures.

Outcomes:

1. Measures piloted to restore degraded land.
   - 25 hectares of degraded land restored, including 5 hectares of dunes
   - Community members trained to implement and monitor land reclamation practices.

2. Decreasingly sustainable exploitation of natural ecosystems and extensive agricultural practices replaced with intensive practices which will reduce deforestation and be more sustainable in the face of long-term climate change pressures. Outputs to include:

- A community-managed bank of agricultural inputs instituted
- Demonstration of quick-maturing seeds with 45 pilot farmers

- 15 community-level "brigadiers" trained to disseminate identified best practices in climate resilient agriculture locally
- Agricultural implements provided to the most vulnerable households (15 households, who would otherwise be forced to subsist on clime-stressed ecosystems)

3. Lessons learned from project implementation integrated into local-level planning

Scalability:

1. More than 1000 people are testing the quick maturing seeds in their fields
2. The GEF National NAPA project scaled up the initiative in other neighboring communities
3. The CARE/Adaptation learning programme included some of the villages to pilot the project
4. The lessons learned and exchange workshop has been jointly organized by CBA/CARE-ALP and Niger African Adaptation Program (AAP) to move beyond pilot initiatives in the Roumbou Commune

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Mainstreaming disaster risk reduction in the programs/projects of department of Agriculture

By Marilyn V. Sta Catalina

Shorter and longer-term alteration and disturbances in local climates are linked to the natural phenomena that are occurring in our country and often times creating irreversible damage to life, properties and livelihood. The Philippine agriculture sector is both being fed and consumed by these micro and macro climate behaviors making it the most vulnerable and susceptible sector. Adding the fact that the agriculture and agri-business sectors essentially feed the population make them all the more important to be rendered risk resistant and disaster-prepared.

In acknowledgment of the relevant results and effectiveness of participatory and systematic approaches adopted by previous and on-going FAO projects being implemented in our country, specifically in our disaster-prone region-Bicol, this paper's main objective is to present in detail how to cohesively weave sporadic and independent DRR initiatives and projects into Department of Agriculture, other Government Agencies', Academes' and Local Government Units' programs for funding, capacity building and policy determination priorities in order to attain DRR program sustainability. In doing so, our region and people can make the best use of available information & resources in abating and minimizing the adverse effects of natural disasters and eventually graduate from a disaster-reactive to proactive community.

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Evaluating the vulnerability of small-scale cotton producers in Mali

By Boubacar Fall

1. Problématique

Le Mali présente un climat de type sahélien qui se caractérise par une grande variabilité inter annuelle de la pluviométrie qui se traduit par des années sèches devenues de plus en plus fréquentes à partir de 1968[16]. Selon la Direction Nationale de la Météo (DNM), l'évolution récente du climat au Mali s'est traduite entre autres par :

- Une décroissance régulière de la quantité de pluie, et une grande variation spatio-temporelle,
- La persistance des sécheresses à partir des années 1970 entraînant des déficits pluviométriques assez importants et une évolution des isohyètes vers le sud.

Par ailleurs, des études sur des cultures vivrières et de rente, et les conclusions du programme d'action national d'adaptation (PANA) ont identifié les petits producteurs de coton comme étant les plus vulnérables.

C'est dans ce contexte qu'une étude commanditée par OXFAM Mali dans le cadre de son programme coton a été menée dans les régions de Sikasso et de Koulikoro, afin de déterminer la nature de la vulnérabilité des petits producteurs pour les aider à mieux renforcer leurs capacités d'adaptation face au changement et à la variabilité climatique y compris les évènements extrêmes. L'approche adoptée durant cette étude pourrait être étendue au reste du pays pour aider les petits producteurs à mieux s'adapter.

2. Méthodologie utilisée

L'approche utilisée dans l'évaluation de la vulnérabilité des petits producteurs dans la zone cotonnière du Mali a été la plus consultative et participative possible.

Avant le démarrage de l'étude, les acteurs institutionnels et les différents acteurs partenaires du programme coton ont été rencontrés. Ces différentes rencontres furent saisies pour expliquer le projet et le rôle que chacun d'entre eux pourrait éventuellement jouer dans sa mise en œuvre notamment dans le choix des sites.

Les données de terrain ont été collectées à l'aide d'un questionnaire administré à des hommes et des femmes actifs dans la production avec des questions ouvertes. Les entrevues se sont déroulées à partir de focus group et/ou entretiens individuels. Les groupes étaient hétérogènes.

Les principales questions abordées s'articulent principalement autour des moyens d'existence avec un accent particulier sur les facteurs édaphiques (les sols et leur qualité), les principales cultures, l'équipement agricole, les techniques agricoles, les différents types d'agriculture, les spéculations cultivées, les intrants, l'accès à l'information climatique et aux prévisions saisonnières, les

[16] Pana Mali (2007)

mécanismes d'alerte précoce……
Les principaux risques climatiques dans les zones visitées et leurs impacts sur les moyens d'existence ont été également abordés avec les populations.

3. Résultats obtenus

- **Types d'agriculture :**
  - Agriculture familiale sous pluie constitue la principale activité de subsistance des populations ;
  - Superficies cultivées varient entre 0,5 et 30 Ha ;
  - Deux types de cultures: cultures de rente (coton et/ou arachide) et cultures vivrières (maïs, mil, sorgho, fonio, riz) ;
- **Niveau de perception des populations sur l'évolution climatique**
  - Bonne perception de l'évolution climatique passée et actuelle ;
- **Aspect genre**
  - Rôle important des femmes dans la production;
  - Difficulté d'accès à l'équipement et aux intrants
- **Facteurs de vulnérabilité**

  Facteurs non climatiques
  - grande pauvreté de la plupart des terres productives ;
  - cherté des engrais chimiques et faible production de fumure organique ;
  - sous équipement en matériels agricoles et de production de fumure organique ;
  - absence d'infrastructures hydrauliques villageoises ;
  - dépendance totale des producteurs de coton à la Compagnie Malienne De Textile (CMDT) pour l'approvisionnement en intrants ;
  - manque de connaissances de techniques culturales et de conservation des semences ;
  - non accessibilité aux équipements de production à temps, à la terre de bonne qualité et aux intrants pour les femmes et les vieux.

  Facteurs climatiques
  - raccourcissement de la saison hivernale ;
  - début tardif de l'hivernage ;
  - arrêts précoces des pluies ;
  - poches de sécheresse ;
  - Fortes températures ;
  - mauvaise répartition des pluies…
- **Impacts des changements et de la variabilité climatique**
  - Incertitudes liées au démarrage des activités agricoles ;
  - Assèchement précoce des puits, marres et marigots ;
  - Baisse des productions agricoles ;
  - Allongement de la période de soudure ;
  - Abandon de certaines cultures ;
  - Appauvrissement des sols ;
  - Inadéquation des semences de certaines espèces céréalières……
- **Réponses des populations face aux impacts des risques climatiques** ;
  - Abandon des espèces tardives au profit d'espèces précoces ;
  - Production de fumure organique ;
  - Activités de diversification (maraîchage, petit élevage, arboriculture, transformation et

vente du beurre de karité, embouche….) ;
  - Vente du bois de chauffe…..

- **Contraintes de mise en œuvre des stratégies d'adaptation des populations**

Malgré une bonne perception des impacts du changement et de la variabilité climatique et les stratégies d'adaptation mises en place, les producteurs se trouvent confrontés à des contraintes de mise en œuvre liées à plusieurs facteurs. IL s'agit:

- de la mauvaise qualité des terres due à leur exploitation ininterrompue depuis plusieurs décennies et aux mauvaises pratiques agricoles ;
- de la faible production de fumure organique et de la cherté de l'engrais chimique ;
- du sous-équipement des producteurs en matériels agricoles et de production de fumure et l'absence d'infrastructures hydrauliques villageoises (puits, micro barrages) ; ;
- du manque de connaissances de techniques culturales, de production et de conservation des semences des cultures vivrières qui sont souvent attaquées par les parasites ;

4. Recommandations

- Renforcement de la capacité de production des producteurs les plus vulnérables :
  - en équipements agricoles (bœufs de laboure, semoirs, charrues…..) ;
  - en équipements de production de fumure organique (pioches, pelles, pics….) et de son transport (charrettes)
- Amélioration des techniques culturales;
- Mise en place d'outils de production et de stockage de semences ;
- Système de veille et de collecte d'information agro météo permettant aux communautés de mieux planifier les activités agricoles et de les exécuter plus efficacement afin d'améliorer la production ;
- Appui pour des activités de diversification.

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Designing Local Adaptation Plan of Action for the Agriculture Sector

By S. K. Maharjan, P. Sapkota, R.B. Mijar, D. Rijal, B. R. Regmi, and K. Gauli

Government of Nepal (GON) has identified Local Adaptation Plan of Action (LAPA) as a means to mainstream climate change adaptations into development plans and RIMS Nepal has contributed in designing LAPAs for agriculture sector.

This paper provides glimpses on LAPA in agriculture in order to widen the understanding on how to assess local climatic contexts, vulnerabilities, adaptive interventions and integrate climate change adaptations into development planning processes. Moreover the paper presents several adaptation interventions that can enhance awareness and adaptive capacity of poor and vulnerable communities.

All the assessment was based on the participatory and social inclusive approach. Vulnerability assessment tools, pair-wise ranking, climate adaptive participatory well being ranking, cost benefit analysis and multi-criteria assessment were the major tools used during assessment and analysis. Adaptation interventions piloted were analyzed for their effectiveness in enhancing the adaptive capacity of poor and vulnerable. Further the institutional and financial mechanism suitable for the LAPA are also assessed and analyzed.

The paper concludes on the appropriate procedure for LAPA design along with the potential boundary actors involved and their role. This paper also suggests Village Development Committee (VDC) as an appropriate local institution for mainstreaming climate change adaption into development planning process at local level however its capacity needs to be strengthened.

Key words: Climate change, Adaptation, Local, Mainstreaming, Agriculture

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Enhancing rural institutions' and stakeholders' capacities for CBA and disaster risk reduction through Communication for Development

By Mario Acunzo and Cleofe Torres*

CBA and DRR imply an intensive use of knowledge and information, calling for appropriate communication processes among relevant stakeholders both at the community and institutional level.

In this context, viable CBA options can result from introducing communication processes into institutional arrangements, particularly in the framework of agricultural innovation systems. Similarly, planned communication activities are essential to improve information sharing in order to increase the resilience of small farmers and reduce the vulnerability of local communities vis a vis natural disasters and climate variability. Therefore communication is a strategic component of DRR interventions.

The Communication for Development (ComDev) approach encompasses and integrates activities designed to be site-specific and relevant to the needs of local communities, along with interventions to strengthen institutions and knowledge networks at the national and regional level. ComDev supports people's participation, learning and concerted action to ensure that local and indigenous communities are directly involved in the design of coping strategies, thus able to achieve effective livelihood adaptation and disaster risk reduction. At the national level, communication efforts are up-scaled with the aim of institutionalizing agricultural information and communication services that are participatory, demand-oriented and ICT-enabled.

The presentation will showcase field experiences with communication methods and tools applied to CBA and DRR, particularly drawing on the work of FAO "*Communication for Sustainable Development Initiative"* (CSDI) in Bangladesh, Bolivia, Jamaica and Congo.

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Climate Change Adaptation in Agriculture and Rural Development of Vietnam

By Dang Quang Minh

Besides the overview of climate change, disaster management system, potential impact of climate change on agriculture and rural development, activities on natural disaster management and climate change adaptation in Vietnam, the presentation mentions a number of initiatives in Vietnam on natural disaster mitigation and climate change adaptation in agriculture at some mountainous provinces of Northern Vietnam, including:

- Development and promotion the measures applied in agriculture for natural disaster damage reduction and climate change adaptation: rice seed reserve, hazard mapping, improvement plans and policies for natural disasters damage reduction
- Enhancement the capacity of natural disaster vulnerable communes; improvement of livelihoods, understanding and planning skills in climate change adaptation

Finally the presentation will share some general remarks and recommendations on community-based climate change adaptation and its up scaling in Vietnam.

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Parallel Session 20: Scaling up CBA for health protection

Session Chair: Joy Guillemot, World Health Organisation

Context and rationale

The impacts of climate change on human health are varied across world regions, but anticipated to be significant in least developed countries (LDCs) and countries where core health determinants such as water and food security are threatened by changing climatic conditions. Communities in LDCs are recognized as most vulnerable to negative health impacts of climate change, since they experience higher exposures to health risks associated with poverty, endemic infectious diseases, increased urbanisation, and inadequate water and sanitation infrastructure. These communities are already burdened with world's most prominent climate sensitive health challenges, such as malaria, diarrheoa, and malnutrition (IPCC, 2007), and rely on health systems frequently unprepared for increased burdens of disease and emergencies. The significance of these predisposing factors now makes adapting public health policy and measures to address additional risks posed by climate change a sector wide priority critical for human development (WHO, 2008).

To protect human health from the impacts of climate change over the longer term, it will be important that core public health infrastructure and services enable equitable access to underlying determinants of good health and that the health system and communities are prepared for additional shocks and stresses. Health sector climate change adaptation initiatives are now beginning in many high-, middle-, and low- income countries to identify needs and propose adjustments in health programming. Programmatic entry points vary greatly owing to the complex nature of both climate change impacts and public health management that demand top down interventions implemented by public health institutions are coupled with bottom up community level action (Ebi & Semenza, 2008). Both approaches are valid and necessary. To most effectively prevent health problems exacerbated by climate change strategic efforts are needed to ensure these duel levels of action reinforce each other.

This session aims to highlight how projects have been able to engage communities in identifying and addressing local health risks associated with climate, and translating national policy to the local level. The lessons sharing and insights from the first generation of CBA health projects can help identify key factors to improve vertical policy integration, and suggest how to better target programming that empowers vulnerable communities to respond to the most likely health impacts of climate change.

Role of Communities in Climate Adaptation for Health Protection

Climate change will exacerbate the magnitude and distribution of many health risks, and challenge communities' investments to maintain good health. The type of consequences experienced at the community level will depend upon the pre-existing health status of people, the type of health risks they are exposed to, and how well prepared a community is to cope with rapid and/or long term changes in the occurrence of extreme weather events and diseases. The localized nature of health risks and population vulnerability elevates the importance of community engagement in identifying risks and proposing locally appropriate solutions.

Community health programmes have been noted for decades as an effective way to deliver critical primary health services, enhance health education, and build social capital and community coping capacity to deal with emergencies and disasters. Community based programmes are particularly critical in low income contexts where communities are often self-reliant or have limited access to effective health systems and emergency services. The delivery of community health involves a range of actors and stakeholders including local authorities, NGOs, CBOs, private and public health service providers, leaders and educators. In the context of climate change, community health projects and practices are essential for recognizing and monitoring local health risks, and mobilizing communities to maintain good health.

Role of National Level Assessments, Policy and Coordination

The severity of climate impacts on health (Confalonieri et al, 2007) are now being taken seriously by the Health Sector (WHO, 2008). Many countries across the world are preparing Health Sector Climate Adaptation assessments and national strategies, either as independent sector specific exercises, or part of larger multi-sectoral efforts such as National Communications to the UNFCCC and NAPAs.. Global policy makers recommend that health sector investments be made in evidence based interventions which aim to protect the most vulnerable populations in a country and respond to the most likely health impacts (Commonwealth Secretariat, 2009, WHO, 2010). To develop such national strategies, top down perspectives which account for systemic, longer term, cross-border and broader scale multisectoral risks are needed to identify the distribution of vulnerability in a country, estimate likely future impacts of climate change, and identify future health risks. The adaptive measures included in national or sub-national strategies can range from changes in regulations, to multi-sectoral collaboration that ensure key health determinants like food and water security are adequate for health, to mainstreamed improvements of core health system functioning, and projects reducing *adaptation deficits* to better manage current climate related health risks. To ultimately protect people's health, all top down interventions must be implemented and translated in ways which are acceptable, understandable, and respond to communities needs and values.

Need to scale up climate adaptation beyond pilot projects

Adapting to climate change over the next 20-30 years will require strong community engagement and highly strategic interventions and mechanisms which can bring together the strengths and competencies of these top-down and bottom up efforts. Communities will need to be informed of future or broader scale risks that are difficult to perceive or judge from local observations. And multi-sectoral top-down policies need to be informed by both global and regional climate projections and risk assessments, as well as receive continuous input and monitoring of community needs and vulnerabilities. National policies and strategic multisectoral initiatives must ensure they reach the local level effectively by listening to communities, empower communities to take action to reduce their vulnerability in culturally appropriate ways, and acknowledging community perceptions of risk and priorities.

Thus, a critical aspect of scaling up is to glean insight from the first generation of health adaptation projects on needs and innovative ways to join up community based interests and

initiatives with top down national policies. What kinds of mechanisms and communications are needed and useful? What level of institutions are well placed to facilitate this dialog? What misunderstandings and differences in risk perceptions occur at different levels? And what types of roles are best played by different actors? This forum brings together representatives of some pioneering projects around the world to discuss the types of mechanisms and institutions needed to ensure the local needs and realities of communities are positioned at the centre of top down health and development policies.

Mechanisms and Opportunities for better "joined up" policies and interventions

This session describes mechanisms that enable the joining up of community based action with national policies to prioritize addressing most likely health impacts and protecting the most vulnerable communities. Examples/Case Studies: Vietnam / Samoa / Jordan / Bhutan / Bangladesh

The experience of CBA for health in five countries will be reviewed to identify how national policies and strategies to address climate change are translating to the local level, and what mechanisms are being used to ensure local needs and priorities are being addressed by national policies and measures.

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Protecting health from Climate Change in Himalayan Communities

By Sonam Chophel

Bhutan is located in the fragile mountainous ecosystem of the eastern Himalayas, and experiencing multiple pressures from the changing climate, including on health. Populations in Bhutan already suffer from high rates of climate-sensitive health burdens, and there is concern that increased temperature rise will increase the probability of Glacial Lake Outbursts and Floods (GLOF); changes and increases in malaria and dengue, as well as water borne diseases. With support from WHO/UNDP/GEF the Ministry of Health and local partners are strengthening the national capacity to identify, prepare for, and prevent health problems related to climatic conditions. The project is oriented by risk assessments that will identify vulnerable populations and districts, where integrated surveillance, early warning systems, and disease prevention and emergency preparedness measures will enhance local capacity and management of climate sensitive health risks. In Bhutan, community members are essential to protecting themselves from these problems. The project is developing innovative culturally grounded community awareness, capacity, and empowerment strategies to help communities prepare for and cope with increased stresses on the community posed by climate change or emergencies.

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Health Adaptation in Samoa

By Laulu Tamati, Anne Rasmussen and Kristie Ebi

Climate change is expected to increase the prevalence of climate-related water-borne, vector-borne, and food-borne diseases in Samoa. The Government of Samoa and UNDP designed *Integrating Climate Change Risks in the Agriculture and Health Sectors in Samoa* to strengthen the capabilities of Samoa's public health workers to make use of climate risk information and adopt measures that increase the resilience of communities to climate-induced disease risks. Three pilot studies are underway:

- Weather patterns, particularly heavy precipitation, associated with diarrheal disease outbreaks will be incorporated into a seasonal forecast early warning system, with appropriate training for health care workers, women's committees, and other groups.
- School children will be trained to conduct weekly larval surveys to supplement regular vector control activities for diseases such as dengue fever. The pilot is intended to improve vector control in a changing climate.
- The prevalence of hypertension in Samoa is about 30%. Coastal communities that rely on water from boreholes will increasingly have higher salt intake with sea level rise. The pilot study will augment educational activities to increase awareness of the role of salt in hypertension and that saltwater intrusion into boreholes is expected to increase with climate change.

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Managing increasing uncertainty: An operational research project on community-based dengue fever prevention in Vietnam

By Thuan Thi Nguyen

Climate change is likely to influence the geographical and seasonal distribution of many vector-borne diseases. While more research is needed, organisations working on community health need to start preparing for increasing uncertainty. Vietnam Red Cross in partnership with the Red Cross Red Crescent Climate Centre through the International Federation of Red Cross Red Crescent Societies is implementing a 2.5 year operational research project to build experience in addressing the risk of changing patterns of dengue fever.

This programme assesses, through interviews and surveys, the understanding of communities of climate change and the possible effects on health. Knowledge, attitudes and practices around dengue fever are also assessed. Results will inform the design and testing of communication materials and community-based interventions. A key question is whether to explain the links between climate change and dengue to community members and, if so, how this is best done. The programme will also build on the existing relationship between the Red Cross and local and national health authorities to improve the use of surveillance information in order to detect and plan for changing patterns of disease. The project is supported by a grant from the Rockefeller Foundation and is also implemented in Indonesia.

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Water Scarcity and Health protection from Climate Change in Jordan

By Usamah Kettaneh and Mazan Malkawi

Abstract: Jordan is amongst the poorest countries in the world in terms of water availability. The effects of climate change on water scarcity, acting on top of other stresses are expected to further increase water scarcity in the country and pose health risks to the Jordanian population, as well as threaten advances made toward strategic objectives such as the MDGs. The Jordanian Ministry of water and irrigation as part of its Climate Adaptation efforts issued a water strategy and several policies to increase water use efficiency, and seek alternative sources via: wastewater reuse, water harvesting systems, virtual water, and desalination. Water of good quality will be saved for drinking purposes, while waters of lower quality will be used in agriculture. Some of these adaptation measures also present health risks that need enhanced management by the health sector. Increasing the use of reclaimed wastewater to augment irrigation in the Jordan Valley, was identified as a high health risk intervention, increasing the threat of infection or contamination by waterborne pathogens, and by hazardous chemicals. Economically, export of agricultural products to the neighboring countries may be affected which again will have negative impacts on the health of farming families. The WHO/UNDP/GEF "Climate Adaption to protect public health project" focuses on minimizing or eliminating the potential health impacts associated with its scaling up wastewater reuse. The project will introduce the wastewater safety plan which will be enhancing monitoring and surveillance in high risk areas, building institutional capacity building through regulations, guidelines, and disease risk management, and will implement health protection measures at the community level.

Funding: Global Environment Facility (GEF) - Special Climate Change Fund (SCCF).

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Community Risk Reduction of Climate Change Impacts on Health in Bangladesh

By Iqbal Kabor

Bangladesh is highly vulnerable to the impacts of climate change, particularly the health of coastal and riverine populations. The Climate Change and Health Promotion Unit of the MoHFW, is piloting a new approach as a model in Bangladesh to identify adaptive strategies against outbreaks of climate sensitive diseases at community level. The project will include approximately 900-1000 rural community clinics across six districts of Bangladesh. Four districts located on the coastal belt (Satkhira, Bagerhat, Barguna and Khulna); two river erosion areas (Sirajganj and Faridpur); as well as selected sub-districts of Cox's bazaar and Chittagong. The project is researching the impact of climate change on diseases like malaria, dengue, diarrhoeal diseases and others; including the psycho-social support needs of women and gender relations related to stress and shock induced by climate change impacts on health, communities, and livelihoods. With improved understandings of specific climate risks to health, the project is developing strategies to monitor changes in water quality for safe drinking water and safe sanitation facilities for climate vulnerable areas; build capacity for comprehensive and participatory planning for climate resilience on human health in coastal, char, hilly and wetland regions; and establish a model for service delivery by Community Clinics, that targets climate sensitive disease vulnerability reduction.

Funded by:

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Drinking water salinity and maternal health in coastal Bangladesh: potential implications of climate change

By Aneire Khan

Background

Drinking water obtained from natural sources in coastal Bangladesh has become contaminated by varying degrees of salinity due to saltwater intrusion from rising sea levels, cyclone and storm surges and upstream withdrawal of freshwater. Abundant evidence indicates a causal relationship between dietary sodium intake and high blood pressure levels. Our objective was to estimate the seasonal intake of salt from drinking water sources in a coastal population, and generate hypotheses on environmental factors that could explain an observed seasonal excess of hypertension in pregnancy.

Methods

Salinity data of river and groundwater (1998-2000) were obtained from the Centre for Environment and Geographic Information System (CEGIS) to assess exposure of the population in Dacope, situated in rural coastal Bangladesh. A random sample of 343 pregnant women from Dacope was interviewed about their drinking water sources and provided 24-hour urine samples and blood pressure readings, between October 2009 and March 2010 (dry season). Furthermore, data from 969 pregnant women seeking antenatal care at Upazilla Health Complex in Dacope, between July 2008 and March 2010 were collected to estimate the hospital-based prevalence of hypertension in pregnancy (systolic blood pressure of >140 mm Hg or diastolic blood pressure of >90 mm Hg after the 20th week of pregnancy and not present before pregnancy).

Findings

We estimate that a large share of the population in Dacope may be exposed to salinity levels of 5 to 16 g/day only from drinking water in the dry season, compared to 1.2 g/day in the rainy season. The mean level of sodium in urine in the sample of pregnant women was 3.4 g/day (170 mmol/d), with levels ranging from 0.4 g/d (19.03 mmol/d) to 7.7 g/d (387 mmol/d). The odds ratio for having urinary sodium levels greater than 100 mmol/d was significantly increased (OR=2.05, 95% CI: 1.11 – 3.80) for women who drank shallow tubewell water compared to those who drank rainwater. The average prevalence of hypertension in pregnancy at Upazilla Health Complex was 9.28% (95% CI: 7.46 – 11.12) and was higher in the dry season, when water salinity reaches the maximum (prevalence rates were 5.09%, 95% CI: 2.91 – 7.26 in the rainy season, and 12.2%, 95% CI: 9.48 – 14.8 in the dry season).

Interpretation

The estimated salt intake in this population was found to be higher than the allowable limit, recommended by the Joint Expert Consultation of the WHO/FAO. This has serious health implications for pregnant women and their infants, which could potentially worsen with rising salinity. The problem of saline intrusion into drinking water has multiple causes and is likely to be exacerbated by climate change induced sea-level rise. Rising salinity potentially affects all 11 Asian large deltas.

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Parallel Session 21: Community Based Adaptation (CBA) Knowledge Management

Session Chair: Mozaharul Alam, Regional Climate Change Coordinator, UNEP ROAP

The role of knowledge is well recognized by all stakeholders involved in addressing climate change both adaption and mitigation. Though there is no agreed single definition of knowledge presently available what remain common in competing theories and definitions is "absolutely certain or confident understanding of something". At individual or community level, it comprises understanding, skills and expertise which gathered through combination of data, information and experiences (theoretical or practical understanding). Knowledge (understanding, skills and expertise) acquisition is a complex process and involves perception, learning, communication, association and reasoning, and therefore varies across stakeholders. Adaptation knowledge management became gradually important as it involves multiple stakeholders at different levels. Generally Knowledge Management (KM) comprises a range of strategies and practices to identify, create, represent, distribute, and enable adoption of insights and experiences.

Adaptation measures involve multiple stakeholders at multiple levels with required understanding, skills and expertise from multiple disciplines while planning, designing, implementing, and monitoring and evaluation. Therefore, it demands connecting multiple stakeholders at multiple levels with adequate knowledge, and knowledge needs to flow in both directions (upward and downward). Nairobi Work Programme (NWP) of the United Nations Framework Convention on Climate Change (UNFCCC) is one of the key stimuli to several initiatives of government, intergovernmental and non-governmental organizations, the private sector, communities and other stakeholders to connect multiple stakeholders at different levels to improve understanding and informed decision on practical adaptation measures.

Decision on enhanced action on adaption in Cancun suggested that action on adaptation should be based on and guided by the best available science and traditional and indigenous knowledge. It has also invited parties to strengthen data, information and knowledge systems, education and public awareness. Moreover, it has recognized needs for strengthening, consolidating and enhancing the sharing of relevant information, knowledge, experience and good practices, at local, national, regional and international levels. Strengthening networks for the generation, sharing and management of information and knowledge, including through North–South, South–South and triangular cooperation has also been agreed as part of capacity building of developing countries to address climate change.

At present, there are several initiatives at global, regional and country levels to connect multiple stakeholders from multiple disciplines for synthesizing available knowledge, generating new knowledge and disseminating through different means. Some examples are Database on Local Coping Strategies of UNFCCC[17] which intends to facilitate the transfer of long-standing coping strategies/mechanisms, knowledge and experience from communities that have had to adapt to specific hazards or climatic conditions; web portal of climate change adaptation in Asia and the Pacific Region;[18] Community Based Adaptation Exchange[19] which is a shared online resource

[17] http://maindb.unfccc.int/public/adaptation
[18] http://www.asiapacificadapt.net
[19] http://community.eldis.org/cbax

designed to bring together and grow the CBA community; climate and development knowledge network[20] that aims to promote dialogue and knowledge-sharing on climate compatible development.

The above initiatives and several others are providing several types of knowledge products and services. These include a) documentation of good practices and lessons learned by sectors, themes, and stakeholders including case studies, b) production of training or capacity development materials, and c) policy brief. There are also success examples of contribution of knowledge but many challenges remain in generation and dissemination of practical adaptation knowledge to foster Community-Based Adaptation (CBA), which is an innovative approach that focuses on enabling communities to enhance their own adaptive capacity, and empowering vulnerable communities to increase their own resilience to the impacts of climate change. It is important to note that recent survey of stakeholders conducted by United Nations Environment Programme (UNDP) indicated Community Scale Project as one of the first five primary areas of interest of adaptation.

Lack of collaboration, effective engagement and interaction between the two broader categories of adaptation practitioners (suppliers and users) to generate and disseminate of knowledge are often pointed out as key challenges. In addition, the collaboration between those mandated to produce and/or disseminate knowledge has been identified as a key barrier to effective knowledge support for adaptation on the ground.

The overall aim of the session is to recommend a pathway for effective engagement of different stakeholders (suppliers and users) to generate and disseminate adaptation knowledge and knowledge management with special focus on community based adaptation. The session also aims to handle several questions such as who need adaptation knowledge and types; how to enhance collaboration, effective engagement and interaction between the two broader categories of adaptation practitioners (suppliers and users) to generate and disseminate of knowledge; how to improve knowledge sharing mechanisms and effectiveness.

[20] http://www.cdkn.org

Scaling up local knowledge using innovative online knowledge management tools

By Sukaina Bharwani

weADAPT.org is an online 'open space' which allows users to access credible, high quality information on adaptation issues and to share experiences and lessons learnt with the climate adaptation community. It is designed to facilitate learning, exchange, collaboration, synthesis and knowledge integration, to build a professional community of practice on adaptation issues, while developing guidance for adaptation planning and decision-making.

This paper will document lessons that have been learnt in facilitating knowledge exchange and the processes that help scale local knowledge to regional application. There are many hurdles to overcome in creating such a space such as how to break down the barriers that prevent people from sharing information. This can be resolved by increasing trust in the platform and its objectives, which in turn can only be achieved by addressing the very particular concerns of different contributing communities. Making the benefits clear – the ability to learn from different knowledge networks, the increase of knowledge sharing capacity, improving potential collaborations, building on existing research and avoiding replication – must be balanced by creating a sense of collective ownership of the resource with full attribution of content.

Further ways to improve trust, knowledge sharing, dissemination and integration will be explored including ways to make information even more accessible, the opportunities to share more inclusive and broadening the types of information that are available, e.g. from indigenous knowledge to downscaled climate data. In addition, such knowledge management tools do not fully serve their purpose if they do not support the institutional change that is essential to improving adaptation decision-making processes. Different approaches that are being developed to achieve this with such online 'shared spaces' will also be discussed.

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Learning and sharing knowledge through Communication for Development: integrating local, regional and global efforts

By Cleofe Torres and Mario Acunzo

Local communication needs, knowledge, practices and opportunities on CBA have to be linked with national and global efforts if their outcome and impact have to permeate the wider development and policy agenda. This calls for strong capacities in Communication for Development (ComDev) especially in the agricultural and rural development sectors which are currently confronted by an increasing demand for information and knowledge sharing to respond to new, compelling challenges of community-based adaptation (CBA) to climate change.

ComDev involves strategic processes and approaches which when applied to CBA can help facilitate community mobilization and participation, two pillars of community-based action. It can also be designed to serve as a mechanism for institutional strengthening through the systematic integration and linkages among research organizations, advisory services, and farmers. Through the use of ICTs, ComDev can help bridge the information divide between local communities and global environmental and information systems.

An important service that ComDev provides is the design of learning and knowledge sharing system among stakeholders at the local, regional and global levels. Through communication platforms and networks, CBA efforts at various levels can be readily shared and enriched.

Hence, capacity development in ComDev needs to be pursued jointly with universities, research centers and communication organizations or networks in various parts of the world. FAO-CSDI is currently working on a ComDev learning initiative and on establishing a global network of ComDev capacity building providers in strategic regions in the world in partnership with selected centers of excellence in this area. This presentation will focus on the gains of such effort and on the prospect of scaling it up and out in support of CBA.

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Harnessing Community-based Adaptation Knowledge in Asia

By Roopa Rakshit

There is increasing awareness and calls for enhanced action and improved cooperation at all levels on community adaptation knowledge management. Presently, there is considerable understanding that access to relevant and usable knowledge is an important prerequisite for successful and cost-effective adaptation actions. Mobilization and sharing of knowledge and experiences is critical to informing adaptation decision-making, planning and practice. While much knowledge exists for successful action on adaptation, it is often fragmented and not always accessible to various stakeholders. Currently, developing country governments and community-based organizations find it difficult to access, interpret and apply good quality research and information in designing their own climate change adaptation policies and programmes.

Barriers and challenges are many, some being lack of frameworks and strategies, interests and inclination, resources and incentives. However, there is acknowledgement to the need for a coordinated approach and efforts to strengthen the sharing of knowledge including community-based adaptation.

The Adaptation Knowledge Platform and Asia Pacific Adaptation Network have established a regional knowledge sharing system that promotes dialogue and improves the exchange of knowledge, information, and methods within and between countries on climate change including ecosystem based and community-based adaptation, and to link existing and emerging networks and initiatives. The linkages will facilitate bridging gaps between knowledge providers and users enabling all stakeholders to enact informed responses to the challenges that climate change presents.

The presentation will share ongoing linkage modalities, processes, scope and possibilities towards the access of high quality, relevant information and tailored advice with special focus on ecosystem based and community-based adaptation.

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Plenary Session 22: Funding and Funding Architecture to Support Up-scaling CBA

Session Chair: Ms Fumiko Fakuoka, UNDP

It is widely acclaimed that reducing vulnerability and adapting to climate change should happen at the level where the impacts are adversely felt – the communities. It is also recognized that adaptation to climate change is cross-sectoral in nature cutting across many key areas that are sensitive to climate change (Water, Energy, Health, Agriculture, Forests and Biodiversity) but have considerable impacts on the lives and livelihoods of local communities that depend on the natural resources for their day to day existence. It becomes mandatory local level should support the cross-cutting adaptation actions through sustained financial resources, which becomes the critical component for not only operationalising existing projects but also scaling up projects to programmatic levels through supporting to develop coherent policies to facilitate local initiatives.

As the global climate processes on funding architecture progresses and different funding schemes are set up and tested, it is important to reflect on the opportunities and limitations/challenges for directing finance towards community-based adaptation. Presentations during the plenary session on "Funding and Funding architecture to up-scale CBA" is organized to share perspectives of the UN Climate Change Secretariat, development agencies, trust funds and private sector. The session will place emphasis on opportunities and constraints on using the available public finance instruments to leverage private and national/local financing for adaptation at community level

The presentations and discussions in this session will address the "how", "what" and "when" to muster support for CBA at global, regional, national and local levels. Specific themes that will be covered include:

(a) Accessing, combining and sequencing funding opportunities that are catalytic in nature and support ground level implementation of CBA projects.
(b) Innovative approaches and diversified sources for raising resources for CBA including philanthropists, hedge funds, private trust funds and corporate sector funds.
(c) Knowledge is not only powerful for long lasting impacts on the lives and livelihoods of local communities, but also critical in communicating the importance of CBA in building funding architecture.
(d) Need for enhanced coordination and collaboration, given the diverse range of activities under CBA that are already under implementation, including those that are multi-thematic and cross-sectoral.
(e) Funding schedule should be able to support
    i) The need for effectively engaging stakeholders and partner organizations through sharing of information, knowledge, experience and practices on adaptation
    ii) The role of key stakeholders (IGOs, NGOs, civil society, academic institutions, private sector etc) in supporting implementation of CBA as partner organizations

iii) Need for broadening the scope of work under the CBA to include sectors that are consistent with including gender, local governance, capacity-building and training.

It is anticipated that the plenary discussions will address core issues to scaling up CBA through mapping the funding architecture and preparing a road map to not only muster support for CBA in global climate finance architecture but also mainstreaming it into national development agenda and in particular:

1. Work in partnership with key actors and players to jointly develop work programmes and fundraising proposals to seek new and innovative finances that are catalytic in nature and that do not duplicate efforts. For example, setting up infrastructure and logistics for implementing CBA projects on the ground when such a modality (Eg. SGP) is already available.

2. Forging new alliances and facilitating collaboration among national governments, international development organizations and donor community to ensure synergy and complementarity of effort in supporting the development of and accessing to emerging sources of resources such as Green Climate Funds that emanated from the Cancun round of negotiations during CoP-16.

3. Generation and dissemination of multitude of knowledge products for up-scaling community-based initiatives and for supporting coherent policy development to integrate CBA into national development agenda.

Positioning community-based adaptation in the context of National Planning for Fast-Start Climate Finance in the Republic of Marshall Islands

By Albon Ishoda

The Marshall Islands Conservation Society (MICS) has led the development and implementation of climate change adaptation plans at the community-level on several atolls in the Ratik and Ralik chains in the outer Marshall Islands. MICS is part of an informal working group, the Coastal and Marine Action Committee (CMAC), that comprises development and environmental offices, civil society groups and experts. MICS and CMAC have helped develop a national strategy for natural resource management called 'Reimaanlok' (way forward) and piloted community-based adaptation tools to add a climate lens to local conservation and development planning on outer islands.

As an example, the citizens of Namdrik atoll have been assisted to developed their own adaptation plans and began implementation using available resources, combined with limited external pilot and project-based investments. Activities such as shoreline re-vegetation, water-lens protection, modified agriculture, improved waste storage and recycling, reef and mangrove management, are combined with climate-sensitive infrastructure and land- and coastal-use planning. Namdrik has provided useful lessons on the costs and benefits of various processes and activities, and are being applied at sites across the outer islands. Educational programs have highlighted the role of traditional practices and governance arrangements that can support and sustain effective adaptation actions.

Unfortunately, the transaction cost of providing external technical assistance to communities is extremely high in the Marshall Islands, with significant distances between sites, and only basic transport and communications infrastructure.

However, the multi-stakeholder CMAC group has actively disseminated results. The 'Reimaanlok' guidance on community-based adaptation on outer islands and atolls is included as a central pillar of Marshall Islands' portfolio for Fast Start Financing under the emerging global framework for climate finance. It is hoped that these external resources can effectively increase the reach and uptake of locally-applicable adaptation actions.

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Accelerating Adaptation Financing in Africa and the Roles of existing and new organizations

By Andrew Adwera

Climate change impacts continue to be experienced in many African states due to their vulnerabilities. The vulnerabilities are mainly because most of the livelihood support sectors are climate sensitive or they do not have the capabilities to support the secondary impacts of climate change. Such sectors include agriculture, tourism, health etc. The trends are worrying and there is need for urgency from both parties affected and affecting to discuss how best to finance the already existing efforts and new initiatives that have been ongoing and have shown positive impacts towards building the resilience within communities.

This paper discusses why adaptation financing remains number one critical intervention in Africa to enabling climate proofing in most vulnerable countries and also alludes to the sorts of institutional arrangements that are in existence, public and private and firms the arguments on when there is need to creating new organizations to have a systematize and strengthen the already promising adaptation fund pledges that continue to grow since the COP15 in Copenhagen.

The paper borrows much of its work from the efforts and persistence that has come from the Community based advocates and negotiators in the complex UNFCCC process.

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Incentivizing strategic investments – barriers and opportunities for private sector engagement

By Leena Wobeck

Whilst there are increasing and encouraging efforts of businesses to invest in communities and proactively contribute to devising solutions to sustainability challenges, a lack of clarity persists over the role of the private sector in sustainable development in general and climate change adaptation in particular. Adaptation experts and practitioners as well as businesses and their stakeholders are still struggling to determine how the private sector can best be engaged and incentivized to devise and scale up strategic investment strategies.

There is considerable business interest to engage in partnerships with NGOs as well as public agencies and to improve community investment strategies to deliver measureable impacts. However, significant barriers for more proactive engagement persist as the incentive structures necessary to drive the scaling up of what so far are limited if sometimes very successful private sector investments and engagement initiatives are not yet in place.

Against the backdrop of key findings from a recent research and engagement project on harnessing the innovative capacity of the private sector for climate change adaptation, conducted by CSR Asia and funded by the Swedish International Development Cooperation Agency SIDA and with a special focus on community based adaptation, this contribution will discuss key barriers and opportunities for incentivizing and scaling up strategic private sector investments that create business value whilst contributing to building adaptive capacity to the impacts of climate change.

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A thematic approach to community based adaptation: experiences of the UNDP-CBA pilots in developing countries

By Charles Nyandiga and Fumiko Fukuoka

The Community Based Adaptation programme is implemented in ten countries. These countries represents diversified geographical and ecosystems that are considered highly vulnerability to climate change. The programme seeks to encourage systemic change in national adaptation through results and evidence generated in specific thematic or archetypes areas, validated through a portfolio of projects. These projects are aligned to individual country's support strategy (CPS), an initial instrument that sets the context, priority sectors and ways, in which to build capacities of local and indigenous communities to increase their resilience against variability of climate. The adaptation approaches within each archetype or sectors are replicated in pilot countries. Using the CPS, categories of vulnerability are determined and projects are formulated and implemented to provide lessons on how communities are and can better adapt. The measures and solutions for each category within a specific theme or sector are a subject of a synthesis report that will be discussed with a view to enrich it to provide replicable strategies and practices at community and sub national levels. The report recommends six clear strategic themes useful for adaptation activities at community's and sub national levels.

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Financing CBA under the UNFCCC financial architecture

By Achala Chandani

Community Based Adaptation (CBA) requires strengthening adaptive capacity and building the resilience of communities and ecosystems at the grassroots level. Effective CBA includes reduced community vulnerability, increased resilience of communities to climate change risks, and enhanced capacity to adapt to climate change. For CBA to be effective, finance is an essential element.

At international level, some funding is being available to support adaptation in poor countries. However, simply providing governments of poor countries with some financial assistance does not mean that it will reach poor and the most vulnerable communities. Because, such communities are often marginalised and receive limited resources from their governments. In addition, recent estimates show that only around ten percent of current climate funds have been spent on most vulnerable to adapt to climate change.

Under the current UNFCCC financial mechanism, adaptation is funded through the Least Developed Countries Fund (LDCF), the Special Climate Change Fund (SCCF) and the Adaptation Fund (AF). However, these funds do not see CBA as a central priority. Under the current UNFCCC negotiations on the financial architecture, governments focus on adaptation with respect to national level impacts. Thus, discussions and decisions are not rooted in community based adaptation.

However, opportunities exist. For example, the proposed Cancun Green Fund as well as the Adaptation Framework under the Cancun Agreements are seen as frameworks to be developed in the near future and can be shaped to ensure that CBA is taken into account when scarce financial resources for adaptation are allocated. The aim of this paper is to examine the current financial mechanism and opportunities that exist for financing CBA under the UNFCCC regime.

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Resourcing community-based adaptation at scale: initial lessons from a conservation trust fund in Melanesia.

By James Hardcastle

The Mama Graun Conservation Trust Fund is an independent regional financial organization that supports a variety of mechanisms to support conservation and environmental sustainability. Financial mechanisms include endowments, advised funds and pilot projects that explore sustainable resourcing of conservation efforts. Based in Papua New Guinea, MGCTF also works in Solomon Islands and elsewhere in Melanesia.

MGCTF has experience in resourcing communities through several granting and financing programs in the region. In Papua New Guinea support to community-managed 'Wildlife Management Areas' has proven effective in both cost and sustainability of impacts. Focusing on the gap between required resources and those that can be feasibly mobilized at the local level has given MGCTF an insight into the right level of incentives for community-action; the correct balance between provision of external resources and community mobilization.

With an increase in demand from communities for support to deal with the impacts of climate change in the region, especially amongst coastal and island communities, MGCTF has sought to apply lessons gained in conservation granting to the role of ecosystems and ecosystem-approaches to community-based climate change adaptation. Project lessons from support to communities and local-level Government in Collingwood Bay and Manus Province have demonstrated how granting for adaptation can be cost effectiveness and incentivize local action.

MGCTF is also active in offering provincial and national governments, and international development agencies and institutions, an independent means to channel resources at the right pitch, pace and penetration.

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Lessons from the Local Disaster Risk Reduction Fund (LDRRF) in Bangladesh for up-scaling CBA

By M. Aminul Islam and Sarwat Chowdhury

In the evolving field of Community Based Adaptation (CBA), the ideas of disaster risk reduction and climate change adaptation issues are integrally related. Therefore, deliberations on funding mechanisms for up-scaling CBA can take lessons from ongoing successful activities at the field level. This presentation focuses on the lessons of the Local Disaster Risk Reduction Fund (LDRRF) experience in Bangladesh. The funding mechanism of LDRRF is a model case for utilizing planning tools (assessment, training, funding); which has proven lessons learned that can be adopted by other Least Developed Countries.

The LDRRF's key objective has been to support the implementation of risk reduction measures identified by vulnerable communities through Community Risk Assessment (CRA). The latter is a tool that is used to identify and address risks at the community level. This risk assessment tool leads to the creation of Risk Reduction Action Plans (RRAP); which in turn leads to the sanctioning of small grants. The LDRRF is the fund that provides these small grants to the NGOs / local governments under the leadership of Disaster Management Committees. Risk reduction measures at the community level are therefore implemented by NGOs and local governments.

Implementing the Risk Reduction Action Plans through the LDRRF provides a practical and concrete dimension to community-based disaster risk management process. It exhibits to the local authorities the viability of a comprehensive disaster risk reduction approach. Experience also shows that funding high priority disaster risk reduction interventions provides the local Disaster Management Committees (DMCs) at the Union Council and village level an opportunity to get involved with the implementation of these measures. This encourages local authorities take ownership of disaster risk reduction initiatives and increases the level of community participation in such programmes.

The innovative funding mechanism of LDRRF was first established under the Comprehensive Disaster Management Programme (CDMP), a multi-donor disaster risk management programme implemented by UNDP in Bangladesh during 2004-09. At the moment, Phase II of CDMP is operation in the country with scale up of LDRRF mechanisms through integration of disaster risk reduction and climate change adaptation as well as engagement of local governments. So far, LDRRF provided funds for 699 small-scale risk reduction interventions spread across five districts of Bangladesh; which will be scaled up to 40 districts eventually.

This presentation suggests that in the LDRRF model, disaster risk reduction already includes consideration of climate induced phenomenon such as floods, cyclones, drought, tidal surges etc. which threaten lives and livelihoods of millions of Bangladeshis. The methods employed by community risk assessment as part of LDRRF funding mechanism provides an opportunity for further scale up to institutionalize this process by bridging the gap between scientific information

and community experiences. This integrated process allows for more informed decisions from communities for developing more improved and effective Risk Reduction Action Plans.

While the world is still grappling with ways of utilizing climate change adaptation resources from the Conference of Parties decisions; we believe the mechanism outlined above can potentially be an excellent tool to directly channel adaptation funds to the front-line victims of climate change.

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Mobilizing and Promoting Communities' Contribution to Adaptation to Scale Up Pilot CBA Projects

By Anne-France Wittmann

Community mobilization and promotion are critical to sustainable CBA projects, and provide an essential basis for upscaling at national and global levels, among other capacity-building and awareness strategies. Innovative and culturally appropriate mobilization methods, implemented in an inclusive way and with a human rights approach, allow to:

- Collect, Recognize and Sustain the essential contribution of local communities to adaptation: local knowledge and practices on climate change, natural resource management, traditional adaptation solutions, local solidarity

- Build on these practices and knowledge, and foster interaction with scientific knowledge, to tailor sustainable adaptation projects

- Reaching the needs of the most vulnerable groups and fosters their participation to ensure local ownership and adequacy of adaptation initiatives, and to strengthen long-term resilience

- Bring up the communities' voices to strengthen accountability, and to facilitate dissemination of lessons learned

- Raise awareness and promote solidarity and volunteerism, and concrete application of inclusive approaches (human-rights, gender…) at from the local to the global level

This presentation aims at sharing our field experience and lessons related to community mobilization through practical examples and best practices drawn from our portfolio of 44 community-based adaptation projects in 10 pilot countries (Bolivia, Guatemala, Jamaica, Kazakhstan, Bangladesh, Morocco, Namibia, Niger, Samoa, and Viet Nam).
Our CBA approach is based on community involvement and inclusive volunteer participation from the inception of the projects, and throughout the life of the projects, facilitated by field support from SGP National Coordinators and UN Volunteers. CBA promotes the community contributions through incorporation of local knowledge in the projects, through measuring the concrete contribution of community volunteers (using a specifically produced UNV methodology) and counting it as cofunding for the projects, and through mobilizing the community in the Monitoring and Evaluation process. One major feature of our CBA is a unique participative tool, the Vulnerability Reduction Assessment, which has been experimented for community mobilization, data collection and monitoring. Other community mobilization best practices have emerged from inclusive volunteers task forces in Niger; from youth

mobilization activities in Bolivia; and from Participatory Videos implemented in Morocco, Samoa and soon in Niger, which give a global echo to local voices.

Our Community-Based Adaptation Programme (CBA) is a five year United Nations Development Programme (UNDP) global initiative funded by the Global Environmental Facility (GEF). The Small Grants Programme (SGP) is the delivery mechanism. The UN Volunteers (UNV) partners with UNDP and GEF/SGP to enhance community mobilization, recognize volunteers' contribution and ensure inclusive participation around the project, as well as to facilitate capacity building of partner NGOs and CBOs. The UNDP-GEF CBA programme supports community-driven projects that pilot a range of climate risk management practices at the local level. The programme also seeks to encourage systemic change in national adaptation-related policy through evidence-based results from its portfolio of community-driven adaptation projects. Moreover, the programme promotes global learning by sharing lessons from a range of initiatives focusing on natural resource management.

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Community Based Natural Resource Management as a Vehicle for Community Adaptation to Climate Change

By Vincent Ziba

Community based natural resource management (CBNRM) is an approach to conservation and development which has evolved over the past 25 years in southern Africa. CBNRM programmes in the region are concentrated in drought prone and marginal rainfall areas. With increase in uncertainty of rain patterns and declining yields due to climate change, local communities tend to rely on natural resources as safety nets.

CBNRM is predicated on the principle that people living with the natural resources them when they derive value and net benefits. Southern Africa experiences indicate that CBNRM offers opportunities for livelihood security in areas of marginal agricultural potential and decrease exposure to agricultural failures during droughts. Thus net benefits from CBNRM as a climate change adaptation strategy will increase over the years.

This paper will share CBNRM experiences in southern Africa, and provide a compelling case for CBNRM as a viable strategy for climate change adaptation. It will discuss CBNRM's contribution to disaster risk reduction, mitigate vulnerability, and secure livelihoods for poor communities, including women, the elderly, people living with and affected by HIV and AIDS.

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Theme based poster presentation schedule

Thematic Table of the Knowledge Fair

Room Name: Chameli
1: 08:30Am - 09:30 Am
Date: 28th to 31st March
- 07:00 Pm

Timings: Session

Session 2: 06:00Pm

Date & Them	Poster Title	Author	Organization/ Country	Email id	Time
28th March, Monday **1. Gender & Health**	▪ How Can Community-Based Adaptation Respond to Vulnerabilities Related to Rapid Population Growth? Investigating Links between Population, Health and Environment (PHE) Approaches and Community-Based Adaptation (CBA)	Kathleen Mogelgaard	Population Action International	KMogelgaard@popact.org	06:00-07:00Pm
28th March, Monday **2. Sustainable Development / Policy / Strategies/ Actions**	▪ Sustainability in energy production and consumption: A case of Adaptation to climate change in Muktsar district, Punjab	Arivudai Nambi & Santosh Kumar Patnaik	Swaminathan Research Foundation	arnambi@yahoo.com	06:00-07:00Pm
29th March, Tuesday **3. Agriculture/ Ecosystem/**	▪ Application of Geospatial Analytical Tools for Developing Community Based	Md. Abu Syed	Bangladesh Centre for Advanced Studies (BCAS)	abu.syed@bcas.net / syedda@hotmail.com	08:30-09:30 Am

Conservation	Adaptation Options to Climate Change in the Forest and Wetland Ecosystems in Bangladesh	Dr. Paramesh Nandy	UNDP Bangladesh		08:30-09:30 Am
	▪ Forest, Fish and Fruit: A new model of CCA in Bangladesh	P.B. Dharmasena	Future In Our Hands Development Fund	dharmasenapb@ymail.com	08:30-09:30 Am
	▪ Adaptability of Traditional Rice Farming in Sri Lanka to Climate Change	Dang Thu Phuong	CARE International	phuong.dt@care.org.vn	08:30-09:30 Am
	▪ Climate change and farmers adaptation in mixed-farming systems in the coastal area: A case study in Trieu Van Commune, Terieu Phong district, Quang tri province, Vietnam				
	▪ System of Rice Intensification (SRI) An Effective measure to respond to Climate Change				
29th March, Tuesday **4. Disaster Risk Reduction/ Vulnerability**	▪ From Vulnerability Assessment to Adaptation: A Case Study from the Central Ganga Basin	Sangeeta Agarwal & Divya Mohan	WWF India	sagarwal@wwfindia.net dmohan@wwfindia.net	06:00-07:00Pm
	▪ Disaster Resilience and Adaptation to Climate Change through Livelihood-Centered approach.	Farhana Sharmin	Practical Action Bangladesh	farhana@practicalaction.org.bd	06:00-07:00Pm
	▪ Community-Driven Disaster Risk Reduction: Practice and theory of Lefebvre's "Production of Space".	Soo Jin Kim	University College London, United Kingdom	soo.kim.10@ucl.ac.uk	06:00-07:00Pm
	▪ Hazard, Capacity & Vulnerability Assessment	Dang Thu Phuong	CARE International in Vietnam	phuong.dt@care.org.vn	06:00-07:00Pm
	▪ Community based adaptation				

	Participatory Watershed Management - PWM				
30th March, Wednesday **5. Development Interventions/ Sustainable Livelihoods/ Poverty**	▪ Adaptation to climate variability for sustainable livelihoods by the poor and vulnerable farming communities of Zimbabwe: Experiences from the Protracted Relief Programme ▪ Low carbon pathways by Farmers in Bundelkhand ▪ THE ROLE OF COMMUNITY RADIO IN CLIMATE CHANGE adaptation ▪ Diversifying Livelihood Options: – Scaling Up Adaptation Activities Amid Climate Uncertainty ▪ Scaling-up Community Based Adaptation	B. M. Mvumi Arobindo Mahato Charles Chikapa Raju Pandit Chhetri David Ngatae	GRM International Development Alternatives, TARAgram Malawi Broadcasting Corporation Unite Mission to Nepal (UMN) Cook Island Climate Action Network	brighton.mvumi@grm.co.zw amahato@devalt.org arobindoyp@gmail.com cwchikapa@yahoo.co.uk raju.p.chhetri@umn.org.np cookislandsfilmcompany@gmail.com	08:30-09:30 Am 08:30-09:30 Am 08:30-09:30 Am 08:30-09:30 Am

30th March, Wednesday	**Award ceremony for the best posters**	**05:15 Pm till 05:45 Pm**

Poster Abstracts

How Can Community-Based Adaptation Respond to Vulnerabilities Related to Rapid Population Growth? Investigating Links between Population, Health and Environment (PHE) Approaches and Community-Based Adaptation (CBA)

By Kathleen Mogelgaard

The size, composition, and spatial distribution of human populations are constantly changing, yet assessments of climate change vulnerability rarely include population trends. High fertility rates, lack of access to family planning, and gender inequity contribute to population growth and have important implications for health, livelihood strategies, and natural resources management. This poster highlights experiences from integrated population-health-environment (PHE) programs that have been successful in improving women's health, reducing pressure on ecosystems and promoting development. The poster identifies similarities in PHE and CBA approaches, and identifies opportunities for sharing lessons that can strengthen both approaches to advance human health and development in the context of climate change.

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Sustainability in energy production and consumption: A case of Adaptation to climate change in Muktsar district, Punjab

By Arivudai Nambi and Santosh Kumar Patnaik

The rural farming community of Muktsar district, Punjab confronts with water logging and soi salinity as biggest impediment in agricultural growth. Climate change exacerbates the situation Cotton farming produces considerable quantum of agricultural biomass without any sustainabl use. Unreliable and highly erratic electricity supply for agricultural and domestic usage spurs th community to come up with a strategy to produce electricity from surplus agricultural biomass This case study discusses the cyclic cause and effect relationship among agriculture base livelihood and prevalent energy vulnerability from the context of climate change. The methodolog developed for this study is driven largely by the objective of analyzing and capturing the loca experiences central to the power plant encompassing social economical and environmenta dimensions. A survey has been conducted to assess the long standing impact of biomas procurement and use of electricity in household and agriculture. The survey has been conducted i 18 villages with 60 respondents that sell biomass to the power plant. The study indicates that th electricity production and consumption not only has got significant emission reductions ta associated with it but also serves as a essential prerequisite in enhancing adaptive capacity of th participating community. The study concludes that though the strategy has fared well but at th same time the use of biomass for energy generation has to be looked in the light of traditional us pattern by the poorest section of community. Another important inference drawn from the study i that the water logging situation may be exacerbated by the unsustainable use of generated energ supplemented by climate events which may bring additional vulnerability. In addition, embarkin on a low emission development pathway by promoting renewable energy does not suffice to buil a sustainable future rather ensuring judicious use of the resource is of paramount importance.

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Application of Geospatial Analytical Tools for Developing Community Based Adaptation Options to Climate Change in the Forest and Wetland Ecosystems in Bangladesh

By Md. Abu Syed

The climatic characteristics either create favorable conditions for an ecosystem to function better, or put stress on it and increase its vulnerability. Climatic and landscape features determine the geographic distribution of species-both aquatic and terrestrial, and their seasonal conditions for establishment, recruitment, growth and survival-thus goods and services from the ecosystem. However, it is now well established that climate change is happening at a faster rate. Tropical forest and wetland ecosystems are fragmented and human-dominated and thus climate change adds to the uncertainties in how landscapes can be managed so that communities could enjoy natural goods and services from these ecosystems on a sustainable basis. Landscape level planning (LLP) is an emerging concept in managing ecosystems whether it is terrestrial or aquatic. In accomplishing LLP it is crucial to understand ecosystem strengths and opportunities as well as the driving forces of their degradation in a holistic approach with their spatio-temporal dynamism. Remote sensing and GIS are the tools that facilitate a landscape level perspective, which are much appreciated by scientific communities. A study was carried out in two ecologically important landscapes of Bangladesh, which are likely to be impacted by climate change, -the Teknaf Wildlife Sanctuary and Hakaluki Haor, to synthesis relevant geospatial data coupled with socio-economic information, using GIS and remote sensing tools. The study discerned potentials of different degraded clusters in the landscape for their eco-restoration with community participation. Spatial analyses were carried out to generate community based adaptation options in the form of "Sustainable Eco-restoration and Management Recommendation" maps for each of the landscapes. The geospatial mapping exercises developed various site-specific options for sustainable eco-restoration, forest, wetland and agro-forest resource development considering climate change scenarios in the two ecosystems. This study presents a methodology of producing spatio-temporal data of a given ecosystem, which can be integrated into interactive community based adaptation options.

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Forest, Fish and Fruit: A new model of CCA in Bangladesh

By Dr. Paramesh Nandy

UNDP's Community Based Adaptation to Climate Change through Coastal Afforestation project (Coastal Afforestation for short) has been working with vulnerable coastal communities in Bangladesh to explore new options for income generation and improving livelihoods. The project works by integrating climate change adaptation and mitigation concerns with expanded livelihood options, ensuring the long-term sustainability of climate change response by making it valuable to communities. The Coastal Afforestation project is piloting in 14km of Bangladesh's highly vulnerable 710km-long coastline

One aspect of this work has been the development of the "Forest, Fish and Fruit" (or "Triple F") model, a mound and ditch model that comprises short, medium, and long term resource generation and diversification options that help communities along the coast to adapt to climate risks. The FFF model uses a combination of protective and productive vegetation, mound and ditch land structures, and a fish nursery pond to create multiple sources of income and climate risk protection for the long-run.

The FFF model works in numerous ways:

1. A protective patch of mangrove species is planted along the coastal shore. These help to buffer the land against storm surges, strong winds and sea level rise. They also provide a protective barrier for the community and their homes, which are often situated close to the shoreline. Mangroves also provide a biodiversity benefit by creating coastal environments which support the growth of healthy water, shore ecology and safe coastal ecosystems.
2. The mangroves then meet a mound and ditch structure. The mounds are made of compacted mud from the surrounding area, which create a raised platform that creates a suitable environment upon which to grow mainland timber species, cultivate fish, and plant fruit trees, vegetables and other medicinal plants.
3. FFF model is being implemented in the exposed gap left behind coastal forests which are periodically inundated moderately raised lands that are neither suitable for agricultural species nor mainland species and supposed to be encroached in future.
4. The model provides adjacent coastal communities additional income generation options in addition to their routine livelihood activities.

Benefits to communities are through:

a. **Forest**: Planting forest trees and palms provide communities with long term timber, midterm fuel-wood from branch pruning and also food products. These also add another layer of protection to the FFF model and the surrounding land from climatic impacts.

b. **Fish**: By excavating to 1.7m in depth, a single ditch can produce an estimated 140–150kg of fish annually, generating up to USD 300 per year. Harvesting of rain water in the

ditches also ensures regular water supply to plantations on the mounds and increases water security by doubling as a reservoir.

c. **Fruit**: Quick growing and early yielding fruit trees such as BauKul and Apple Guava are planted on the mounds for midterm income generation and food production. Improved varieties of vegetables planted for up to 5 years in between the tree seedlings along the top surface of mounds also provide immediate improvements in household consumption. The Fruit Tree Improvement Program of Bangladesh has developed varieties of BauKul and Apple Guava that produce 10–20kg of fruit per tree within 2-3 years of planting. Applied in the FFF model, this can produce an estimated USD700 of income per mound per year.

While only in its early stages, this project has established a 'green shield' surrounding some of Bangladesh's most climate change-vulnerable communities, protecting them against the increased storm surges, high velocity of winds, sea level rise anticipated as a result of climate change. Large scale involvement of communities in the FFF model also provides them with a new option for income generation and livelihood security not previously widely practiced in Bangladesh. As the FFF model can accommodate 8-10 families per hectare, it ensures livelihood security and represents a pioneering rational land use model for a highly land scarce country like Bangladesh, that accounts for and adapts to a changing climate.

The recurrent income generation from continuous flow of resources will increase the adaptive capacity of the coastal people and such recurrent livelihood support might sustain the Fish, Fruit and Forest (FFF) model in any anticipated stressed conditions, induced by climate change.

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Adaptability of Traditional Rice Farming in Sri Lanka to Climate Change

By P.B. Dharmasena

Sri Lanka has observed its climate change during last century with distinct reduction of rainfall over the country and increased air temperature in some locations. Natural vegetation has been converted to other land uses recording a loss of 50% of forest cover during the century. Population has increased by 15 millions over the land area of 6.54 million ha. Occurrence of natural disaster such as drought, flood, cyclone, land slides, epidemics etc. has aggravated their hazardousness due to human activities. Traditional sustainable agriculture is one best example to be blamed for its shift towards modern intensive mode.

Traditional farmers, who gathered experience and skills over centuries, managed to sustain yields under adverse farming conditions using locally available resources. The FIOH Development Fund has been actively engaged in documentation and research on Indigenous Practices in Agriculture and Health Sectors since 1999. The organization conducted studies from 2007 to 2010 in Moneragala district of Sri Lanka to investigate how traditional rice farming and its ecology faced the challenge of drought and possibility of tracing cognizance in addressing emerged issues in modern farming.

Traditional system practiced by farmers includes: i). cultivation of traditional rice varieties; ii). use of organic fertilizers (straw, green manure, cow dung, poultry manure, liquid fertilizer etc.); iii). management of weeds through hand weeding, mechanical weeding and water management; iv). management of pest and diseases by practicing *Kem krama* (rituals), maintaining biodiversity and using bio-pesticides; and v). management of available water without leading to moisture stress. Sixteen farmers from 16 villages, who practiced traditional farming and another sixteen farmers from same locations, who practiced modern farming were selected for the study. These two farming systems were assessed by using various indicators such as productivity of land, labour, capital and seed, input cost and net return per unit weight of grains, the overall performance index developed by FIOH etc.

Results showed that the traditional rice farming when adopted for few seasons could tolerate drought conditions, reduce soil salinity and improve soil P, K and organic matter and some physical properties. Cost of production has decreased consequently while increasing labour and capital productivity. The system has improved its capacity to control pest without any additional measure.

The overall conclusion from the study is that the management of system ecology, adoption of traditional farming practices and integrated water resources management are the best practices to mitigate the drought effect in rice farming. However, attempts are needed to mobilize and strengthen communities and investigate the possibility of incorporating modern farming objectives such as high yield, increased production, profitability **etc**. into traditional farming systems.

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Posters

By Dang Thu Phuong

- Climate change and farmers adaptation in mixed-farming systems in the coastal area: A case study in Trieu Van Commune, Terieu Phong district, Quang tri province, Vietnam
- System of Rice Intensification (SRI) , An Effective measure to respond to Climate Change
- Hazard, Capacity & Vulnerability Assessment
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From Vulnerability Assessment to Adaptation: A Case Study from the Central Ganga Basin

By Sangeeta Agarwal and Divya Mohan

With a large fraction of the Indian population still below the poverty line, its susceptibility to adverse impacts of current climate variability and the uncertainties associated with the impacts of climate change in the longer term are likely to increase. Given such complexities, there is an urgent need to incorporate adaptation strategies in the long term for poverty and development planning processes and policies. One of the important factors of concern in adaptation is choosing the right set of strategies appropriate for a region. Demonstrating pilots are a helpful means for this purpose.

We will present an overview of the approach taken, starting from the macro to a very micro level, by WWF India as part of its Living Ganga Programme to develop its adaptation programme initiated through pilot interventions in the Ganga basin. Successful implementation of these pilots can be helpful in scaling up the adaptation strategies, mainstreaming.

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Disaster Resilience and Adaptation to Climate Change through Livelihood-Centered approach

By Farhana Sharmin

The Hyogo Declaration recognized the relationship between disaster reduction, sustainable development and poverty eradication, and the need for investment at all levels in developing a proactive culture in disaster prevention and increasing resilience. Under its Framework for Action 2005-2015, the strategic goals included "the development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience to hazards". As disaster is a vital part of Climate Change, adaptation to climate change also comes forward along with the disaster management and having a resilience committee. The challenge is to translate this goal into practical and effective action and link community initiatives to national and international resources.

Practical Action based on its experience of poverty reduction work proposed for a livelihood centred approach and initiated, through DFID funding support, an international project in Bangladesh, Peru, Zimbabwe, Nepal and Sri Lanka.

The project sets two purposes – (a) resilience of communities vulnerable to disaster is increased through strengthened livelihoods and increased preparedness and (b) stakeholders at different levels (village level, district level and national level) have adopted livelihood centred approach to disaster risk reduction and 4 outputs to achieve them. First output relates to developing a model for livelihood centred approach to DRR and the other 3 contribute to advocacy for replication of this model.

Intended model included 2 elements, firstly, strengthening livelihood – that means of incomes sustain during disasters and the level of incomes enables households to offset absorb shocks caused hazards, project provided material supports and training inputs. Secondly, disaster preparedness – build communities' capacity to minimise impacts of hazards preparedness actions through raising awareness and providing equipment for warning message dissemination, rescue and evacuation and promoting hazard proof water and sanitation facilities.

Activities to promote the model were documentation, disseminating communication materials, networking, media campaign, meetings and exposure visit for government officials and NGO and media personnel, its targeting was defused.

Activities are in 5 selected Unions under 3 Upazilas and covering targeted 6,000 poor households – scale was determined by the need to build up critical mass of evidences for influencing and advocacy.

The plan optimises resource utilisation by targeting only minimum but necessary numbers of households for livelihood supports while covering the whole community through disaster preparedness activities.

Beneficiary selection criteria were vague and subject to multiple interpretations however the procedures include some involvement of the communities.

Activities for strengthening livelihood (skill development, hazard resistant faming technologies and group based enterprise) helped households increase their incomes as well find income earning opportunities that sustain during floods.

In particular, domestic animals helped families accumulate assets – goat costs about a third of that of cow but took longer time. Cluster housing provided lasting protection against inundation and opportunities to take on economically productive activities.

Establishing CBOs required huge resources and efforts. The project did not explore whether instead of CBOs, DMC could produce similar results more economically.

Networking with stakeholders at local level facilitated project implementation but it did not succeed to influence disaster management policies.

Intervention demonstrated some changes in the communities such as (a) CBOs and volunteers in 5 Unions, (b) strong linkages between communities and departments of agriculture, livestock and fisheries and better access to farming technologies (c) access to vaccination and disease control services for poultry and domestic animals, (d) tubewells on raised platform or raised ground.

Beneficiaries of cluster housing were able to cross over the threshold and to accumulate assets.

The project had a comprehensive awareness raising programme – through 500 volunteers and regular court yard meeting successfully raised communities' awareness on disaster risks.

Communities become better able to cope with the impacts of hazards – they have DMCs, CBOs and volunteers trained on disaster management. During the floods in 2007 and 2008 they disseminated disaster warning, rescued marooned people and repaired embankments.

Through raising incomes, targeted households have been able to improve disaster resilience.

Skilled development, flood resistant farming technologies, group based enterprise and cluster housing have increased people's livelihood opportunities and significantly reduced their vulnerabilities to floods.

Although the project was planned before it made contact with them, communities felt some ownership because they participated in vulnerability and capacity assessment and participatory action plan development.

Awareness raising activities and establishing DMCs, CBOs and volunteers were relevant to their urgent needs during flood whereas training inputs and materials supports helped meeting some long-term

needs of the targeted households. Cluster housing met nearly all needs that arise during flood situation.

Improvement of livelihoods through skill development and new technologies work through local market system, maintenance of tubewell is easy, cluster housing reduces many of the risks associated with flood and enables households to take on economic activities – they are sustainable.

Major impacts that the community perceive are i) cluster housing has brought about a real and lasting change in the lives of some people, ii) veterinary service and vaccination of domestic animals, which did not exist before, become available through linkage with the Department of Livestock and establishing paravets in communities, iii) communities' disaster preparedness through DMCs, CBOs, volunteers and material support such as boat and equipment.

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Community-Driven Disaster Risk Reduction: Practice and theory of Lefebvre's "Production of Space"

By Soo Jin Kim

The research investigates the way in which the urban poor produce, reproduce, sustain and transform the built form (architecture and urban form) on a daily basis, as an alternative to top-down driven disaster risk management (DRM), in order to identify more effective strategies to reduce disaster and climate risk in an era of climate change and rapid urbanization.

This research adopts Lefebvre's theory of "production of space" (Lefebvre, 1991) as an analytical tool to investigate how and why the various interpretations of "Community-Based Disaster Risk Reduction" (CBDRR) (Heijiman, 2009) come out of contentions between the conceived (construction of meanings) and the lived (practice of everyday life) (Jabareen, 2006).

Its purpose is to understand how CBDRR could be interpreted as a "political process" (Heijiman, 2009) challenging the current discourses of CBDRM generating vulnerability, transforming power relations in built form (Dovey, 2008), building networks, and thereby empowering the poor to reclaim (hopely) "the right to the city" of Lefebvre (Lefebvre, 1996; Harvey, 2003).

To this end, the research maps out emerging debates on the overlapping areas between disaster risk reduction (DRR) and climate change adaptation (CCA) at different levels within a development framework, in Metro Manila, Philippines.

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Adaptation to climate variability for sustainable livelihoods by the poor and vulnerable farming communities of Zimbabwe: Experiences from the Protracted Relief Programme

By B. M. Mvumi

In rural Zimbabwe, there has been extensive land degradation, deforestation and diminishing water resources, particularly during the past 10 years, as a result of poverty, displacement, loss of livelihoods and other socio-economic and political impacts on the poorest. Achieving development goals, such as those related to food, health, water and energy, can be seriously impeded by climate impacts; hence it is imperative that climate change effects are factored into programming to minimize hindrance to poverty reduction efforts. The Protracted Relief Programme (PRP), implemented since 2004, is operating countrywide through a consortium of partners which currently stands at more than 30 international and local organizations and another 30 community based organizations together with line government ministries. PRP is focusing on a range of interventions aimed at reducing poverty and vulnerability of communities. One key thrust of the programme is promotion of household food security through own production rather than food aid. This paper critically analyses the interventions related to this thrust including conservation agriculture, agroforestry, and small livestock; with a climate change lens, for environmental impact and mitigation. The analysis provides opportunities for enhancing resilience by poor and vulnerable rural households and for sustainably improving their livelihoods and environment at scale.

Key words: Adaptation to climate variability, vulnerable farming communities, conservation agriculture, agroforestry, small livestock.

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Low carbon pathways by Farmers in Bundelkhand

By Arobindo Mahato

In a five year timeframe, it is to develop and demonstrate practical methods by which rural communities with institutionalization and technical interventions are able to optimum utilisation of local resources, to ensure livelihood and minimizing their carbon footprint. To create the low carbon pathway the following mechanisms have been initiated, which basically focussed on carbon emission per unit production of crop produce and track the result:

Farmer club: At each intervention village Farmers interest group are formed and register under society registration act as Green Farmers Adaptation Club.

Technical Option Adopted:

- For enhancing production
  - Improved seed / seed varieties
  - Seed treatment
  - Line sowing
- Increasing resource efficiency
  - Improved irrigation methods
  - Appropriate use of organic and chemical fertilizer
  - Appropriate farming implements (including efficient pumping)
  - Promoting low water requiring crops
  - Water/moisture conservation/harvesting methods
- Improved practices:
  - Alternate crop management practices as suitable for land and soil conditions.

Marketing of agriculture produces:

Farmers are attempting to develop on.

- Value edition
- Storage and handling
- Collective marketing

Advocacy:

The members are interested to develop understanding on public advocacy for influencing implementation of agriculture related Government programs and schemes.

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The Role of Community Radio in Climate Change Adaptation

By Charles Chikapa

Radio continues to be the most accessible medium of communication in Malawi. While new technologies, from wireless devices to blue-tooth to high-speed Internet seem to be everywhere these days, radio is highly regarded as one of the best communication tools for reaching the rural poor. Radio is popular, reaches a wide audience and is affordable and accessible. Farmers listen to local news, stories, and music in their own language without needing to be able to read English or French. In the last decade new techniques such as phone-in shows, live community forums, and radio diaries have made radio an interactive forum.

The Malawi Broadcasting Corporation partnered with Farm Radio International by working in selected areas of the country using radio as a tool for mobilisation. The Project was launched in April, 2007. It is a 42-month action research project supported by the Bill & Melinda Gates Foundation. (WUSC). Its aim is to assess the effectiveness of farm radio on meeting the food security objectives of rural farming households in Africa. The paper is aimed at sharing with participants the major outcomes of the Project in Malawi and how Radio can be used as a mobilisation tool for Community-Based Adaptation to Climate Change.

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Diversifying Livelihood Options: – Scaling Up Adaptation Activities Amid Climate Uncertainty

By Raju Pandit Chhetri

Climate change is posing a great uncertainty among the rural people of Nepal. This is especially true to most of those relying on agriculture for income and daily subsistence. Since most of the people fulfill their basic needs from on-farm activities farmers are particularly vulnerable – small holders, landless, women, poor and marginalized. While the national government has not been able to deliver the basic development needs like food security, education, health and infrastructure tackling climate induced problem is an additional burden.

Lack of climate related information and translating the available into public language is a big obstacle. Amid this farmers are to prioritize their actions and often face challenge of assessing risks. Many development organisations are now helping communities plan differently and diversify their income generation activities and agriculture products to minimize risks. This is gaining success.

United Mission to Nepal (UMN) is one of the organistions which is significantly taking this approach. It works in different part of Nepal – hills and plains, and is upscaling the experiences it generated from some districts to others. It plans and generates livelihood options with the local community to help them better adapt to future uncertainties by raising income and production. Activities such as fisheries, goat raising, mushrooms farming, new variety of vegetables, fruits, skilled and semi skilled based work, etc are promoted with the communities. In many pilot cases communities are gaining encouraging achievement. Now UMN is prioritizing to take this to a new level by upscaling to other parts of the country.

It is also working with other organisations to learn and share the community experiences to better help the communities and avoid duplications. UMN's work is not only helping communities better adapt to climate change but also imparting knowledge and raising awareness. The next step is to lobby the government for appropriate strategy and plans based on the learning.

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Scaling up the capacity of communities on remote low lying islands in the Pacific

By David Ngatae

Cook islands CBA is being implemented for the first time with the MAP-CBA Programme through the GEF-SGP infrastructure in place already for community based grants. The 2010-12 Country Strategy is to SCALE UP the capacity of communities to identify, prepare project proposals and implement and monitor the projects.

In conjunction with USP Cook Islands, a community based education programme will focus on identifying and building outer islands community capacity to plan and monitor adaptation projects. Local consultants familiar with the process of initiating adaptation projects will work alongside these communities to prepare and monitor the projects to completion, using the planning component of the project grants. It is envisioned that this strategy will scale up the number of community led projects to gather data and build adequate resilience.

Experience with the GEF SGP in its inception stage has identified the lack of capacity at the project proposal level with communities, although the will and needs are evident. It has also revealed where efforts have been made in communities but lack the access to adequate resources and capacity. One of these areas is in renewable energy mitigation projects coming from the private sector. Because GEF has primarily focused on climate change mitigation as one of its thematic areas alongside other environmental focal areas, few community groups are aware of or have applied for this funding, There is a growth of funding for adaptation projects in the country and community based adaptation is about to be fully implemented in the Cook Islands. There are opportunities to gain knowledge on remote islands adaptation implementation as well as the appropriate methodologies applied to evaluating the success or otherwise of the projects.

The new strategy now encourages the private sector to apply for these funds to scale up the efforts of mitigation and energy security while the MAP CBA focuses strictly on scaling up adaptation. By also encouraging partnerships within communities, the mitigation elements of adaptation projects can be funded under the GEF SGP mitigation component and thus effectively gearing up the scale of the financing that can be applied to an adaptation project.

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Advancing CBA in Floodplain and Coastal Ecosystems in Bangladesh

By Dr. Dwijen L Mallick

Bangladesh is one of the most vulnerable countries to climate change impacts. All the major ecosystems of the country are affected by climate variability and climatic disasters like devastating floods, riverbank erosion, frequent cyclones, tidal surges, salinity, water logging and drought. Community people, particularly the poor and marginal groups are the most vulnerable to the climate change impacts. They need awareness, information, motivation, institutional support, new knowledge and skill to reduce risks and vulnerability. BCAS and the partners are carrying out an action research project to advance community based adaptation (CBA) to climate change through building local capacity and resilience in the floodplains of Manikganj district (having flood, erosion and drought problems) and Gopalganj district (flood, water logging and salinity) and coastal villages in Bagerhat district (cyclone, tidal surge, salinity and sea level rise).

The project aims to enhance resilience and adaptive capacity of the poor and local actors to reduce risks and vulnerability relating to climate variability and climatic disasters. The action research project undertakes a participatory and multidisciplinary approach to understand the risks and vulnerability in the local climatic contexts as well as identify local adaptation options to be implemented by the communities and local actors. Capacity building of the vulnerable community and actors has been a key focus of the project. The project also promotes 3Ps approach, which include: protection of lives and livelihoods of the poor from climate change impacts; prevention of disaster loss and risk reduction; and promotion of resilience in social, human and natural systems.

The project has conducted participatory vulnerability assessment (PVA) and developed local adaptation action plans in three ecosystems. The project, with community and actors, has demonstrated adaptation actions in agriculture and livelihoods, water and health, and disaster risk reduction. The participatory reflection and action, new knowledge and skills, engagement of actors and stakeholders, awareness and social mobilization, adaptation actions, community linkages etc., have enhanced adaptive capacity of the vulnerable communities, reduced exposure to risks and vulnerability; and built their resilience to address the climate change impacts.

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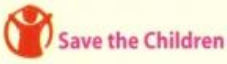

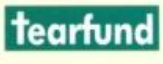

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