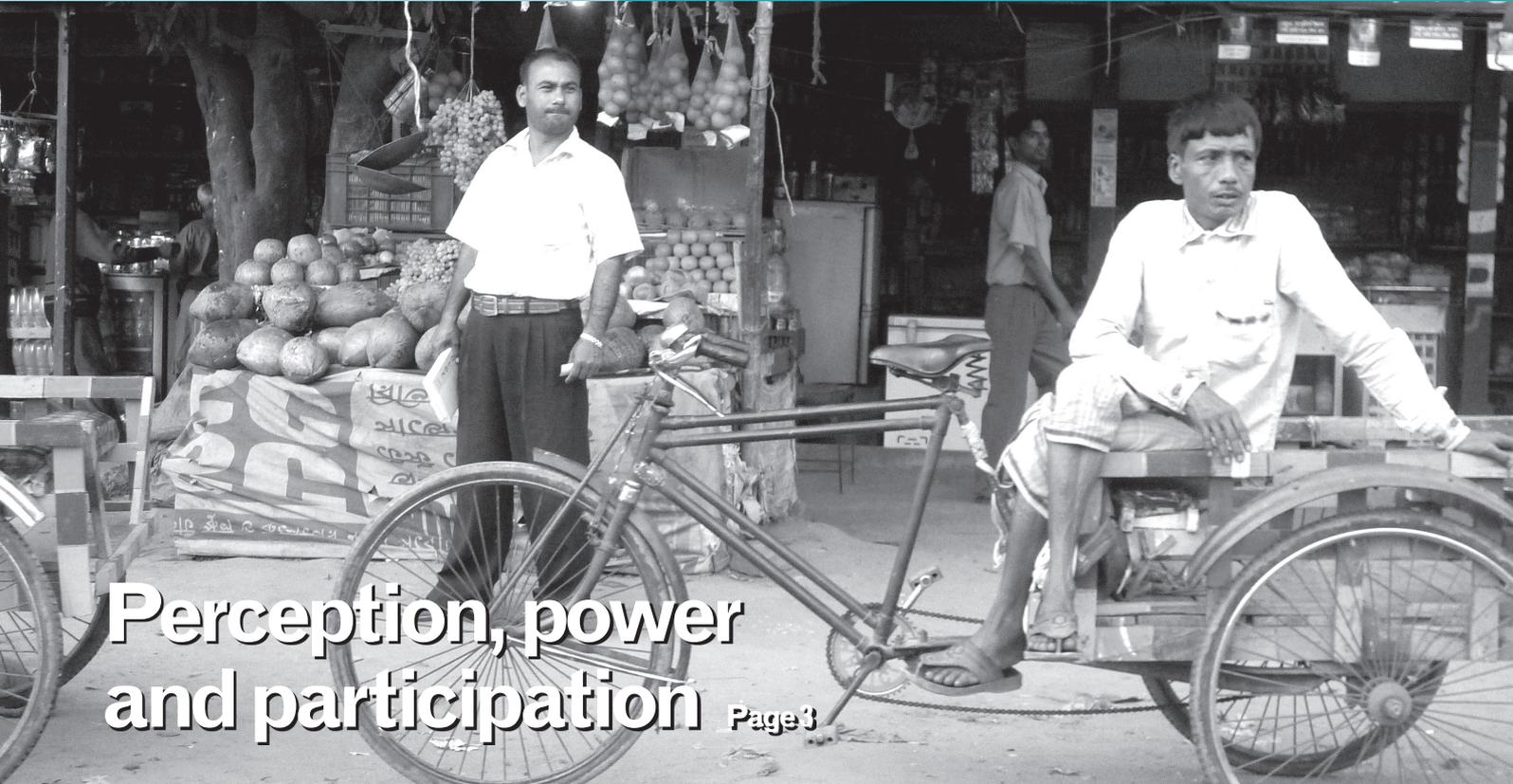


- 07 **ASSESSING VULNERABILITY**
Identifying vulnerable communities
- 10 **ADAPTATION**
Key concepts and terms
- 16 **PACIFIC ISLANDS**
Lessons for community-based adaptation



Perception, power
and participation

03 Perception, power and participation

Chiara Bianchizza describes crucial ingredients for reducing vulnerability in Bangladesh

07 Assessing vulnerability

Wendy Annecke outlines a methodology for identifying vulnerable communities

16 Adaptation on a small island

Leone Limalevu, Bill Aalbersberg, Patrina Dumaru and Tony Weir suggest lessons for community-based adaptation projects

21 Building adaptation capabilities

Elvin Nyukuri and Dan Ong'or explain how climate change adaptation capabilities are being built in two communities in Kenya

10 Adaptation key terms

14 Conferences

20 News

25 Financial affairs

28 Copenhagen's climate finance pledges

Cover photo: Bangladesh - pedal power

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Farmers in Bangladesh

Perception, power, participation

Chiara Bianchizza explains how perception, power and participation are three crucial ingredients for reducing vulnerability to climate change in Bangladesh

Adapting to the changing climate is a priority for the rural poor, who see their traditional livelihood systems increasingly challenged by modified climatic patterns. Bangladesh is particularly vulnerable to climate-related hazards and its rural populations are amongst the poorest in the world. This article focuses on how poor, rural Bangladeshi communities, highly exposed to natural hazards, can increase their resilience and reduce their vulnerability to climate change.

Capacity building is more effective when conducted using bottom-up approaches. This article, therefore, concentrates on the role played by assets already owned by communities. These assets are human (knowledge, perception, awareness of individuals) and social (networks, relations, institutions).

Research methods and results

The article is based on research analysing the agricultural knowledge of, and changes experienced by, six case study communities exposed to different climate change-related hazards in four districts of Bangladesh. Findings are based on qualitative research methods including semi-structured interviews, focus group discussions and direct field observations.

MAIN POINTS

- **The author explains** how social and human resources have increased the resilience to climate change of vulnerable communities in Bangladesh.

- **She describes** how non-government organizations work to build community ca-

capacity, and promotes approaches that give communities tools to identify issues and solutions themselves.

- **She concludes** by underlining the importance of strong social networks and gender equality in building capacity and securing resilience.

Information gathered on agricultural and environmental knowledge, perceptions about climatic change, social organization and non-government organization (NGO) intervention in the communities were summarized in a SWOT analysis. This looks at the internal strengths (S) and weaknesses (W) of a community and the opportunities (O) and threats (T) provided by external interventions.

The table overleaf shows the results of these strengths, weaknesses, opportunities and threats observed in some or all of the six different sites of Dacope, Nowapara, Kundarpara, Bajechitulia, Goripur and Vag Parul.

Perceptions, power and participation

Case study analysis shows that the communities' perception of a threat shapes how they react to it. Some communities have no access to climate change-related information. Climatic variation is attributed to God's will or

AGRICULTURAL AND ENVIRONMENTAL KNOWLEDGE, CLIMATE CHANGE PERCEPTIONS AND LOCAL ORGANIZATION IN SIX COMMUNITIES

Strengths

- ability to diversify income sources
- strong social structures based on cooperative principles
- traditional knowledge on the damage from deforestation
- knowledge about agriculture amongst both men and women
- traditional system for communal pooling of assets (*borga*)
- capacity to adopt new crops more suitable for new weather conditions, learning from experiences in other regions
- very strong social network and cooperation amongst the women (knowledge sharing, assistance)
- good cost effective crop management
- good awareness of issues and possible solutions, with systems to update information
- information sharing between men and women
- women's participation in agricultural activities and decision making
- social cooperation for research and work
- diversified activities (animal rearing) as income sources

Weaknesses

- very low financial capital
- very low education levels
- unawareness about climate change and its impact on crops
- no strategy to overcome threats to agriculture
- no means to create independent knowledge
- fatalistic attitude towards worsened environmental conditions
- very low social position of women; information is gender-locked
- little or partial understanding of the causes of waterlogging
- little understanding and sense of ownership of flood protection strategies (raised households) adopted by NGOs

- very confused interpretation of information on climate change and its impacts
- very marginalized community
- very low awareness about climate change and its relation to crop cultivation
- agricultural knowledge locked in the hands of men

Opportunities

- the need for transport in the area due to a lack of infrastructure provides different employment opportunities
- further training and support on best agricultural practices available
- NGO activities to raise households
- the empowerment of women at decision-making levels, given the migration of men to the mainland
- involvement in research
- learning opportunities from neighbouring communities

Threats

- increased soil salinity
- unpredictability and increased intensity of cyclones and floods
- land erosion by the river
- intense cold spells
- waterlogging
- changing rain patterns and a lack of rain
- increased intensity of droughts
- unpredictability of future changes in climate
- incomprehensible information from the Agriculture Department
- temptation to get microcredit loans
- misleading information from the media or local political leaders
- land is very low and extremely exposed to flooding
- following a poor harvest there is no money to buy new hybrid seeds for higher crop production
- loss of traditional local varieties of crops and vegetables

to mismanagement of resources by decision makers. It is thus perceived as something unchangeable and for which no solution can be found. The fact that farmers cannot access relevant information severely limits the ability of the community to develop its social strength. As a result, people abandon their traditional livelihood systems.

Other communities, although trained by NGOs about climate change-related hazards and, therefore, with access to more information, still have little understanding of the knowledge they have been exposed to. This is because they lack a basic formal education, which would help them make sense of this information. At the same time, they show a deep understanding of natural phenomena, explanations for which are rooted in tradition knowledge. As the climate changes, this type of knowledge will be lost as it is inadequate for explaining the modified environmental conditions. A community involved in a research project will autonomously gain information about climate change and will thus understand its dynamics and the fact that it creates a trend that will continue to modify and challenge livelihoods. This knowledge has allowed farmers to react to current changes in their environment, but also to prepare and build resilience for the future.

Different communities and different community members have variable levels of empowerment and participation in decision making as a result of the range of



Boys in rural Bangladesh

Photo: © jankie/flickr

perceptions and possibilities for accessing information about climate change. Two village cases illustrate the different conditions that women live under. In one, women are generally kept strictly under men's rule and in ignorance of things that 'women do not need to know'. Information is thus locked

in 'gender-boxes'. Women have different priorities for household organization and activities, so this gender-boxing of information impairs the ability of the community to build its social strength. Gender differentiated approaches to environmental issues become impossible because women cannot

fully participate in society, even though this would increase community resilience to climate-related hazards.

In other communities where women are more independent, where they participate in agricultural activities and contribute actively to increasing household income and investing in their children's education, community resilience is greater. Here, the empowerment and active social participation of women helps build community capacity.

The other socially significant factor that differentiates communities is the level of cohesion and cooperation that operates amongst their members. Where individuals lacked the support of social networks or the capacity to work together to achieve a common interest, access to resources was impaired and a lack of coordination led to the repetition of activities and the wasting of time and assets. The active involvement of all members of society in agricultural activities and decision making was crucial for strengthening the community.

NGOs also play an important role in building rural community capacity in Bangladesh. Villages that have never been involved in any research project or benefited from training face greater difficulties than those that have. NGOs operate in diverse ways. In some cases, communities were given the basic tools for identifying issues and solutions themselves. Farmers pooled their resources together creating knowledge, material solutions and stronger social links. Where NGOs provided

material support more directly instead, communities were less challenged to use their own resources, missed the opportunity to strengthen their own capacities and became dependent on external support.

Conclusions and implications

Whilst the case studies are more complex than the research conducted here suggests, enough data was gathered to draw some general conclusions and recommendations on the role of social and human capital in building the resilience of rural communities. Case studies showed that a marginal or in-existent understanding of the causes of climate-related hazards tended to generate a sense of impotence amongst farmers, either because they could not access relevant information, or because they had little capacity to do anything with this knowledge due to a lack of formal education or a poor ability to understand explanations provided by NGOs. Where traditional beliefs related to the environment were maintained by communities, understanding of the changes characterizing the natural world was sufficient. Unfortunately, with the climate changing at such speed, such local knowledge will soon be inadequate for effectively influencing farmer behaviour. Poor awareness and confusion about the scientific reasons for natural hazards, where traditional views about the natural world no longer apply, lead communities to believe explanations given by the media

or prominent individuals in society too easily. The communities, therefore, lose the capacity for independent and informed reactions.

Where NGOs or government bodies aim to provide scientific training about climate change to the rural population, they should design it using simpler conceptual structures. Alternatively, the community should be enabled to access information independently, thus creating its own local knowledge. Spreading 'user-generated innovation' for the benefit of poor communities is not a new concept and has already been used in rural development planning. The approach is based on the idea that communities already have the solution to their problems. It would be interesting to expand research on this topic further in the context of climate change.

Communities that currently manage to overcome climate change challenges are ones where women as well as men are informed, and participate in social life, agricultural activities and decision making. Furthermore, the existence of functioning social networks, either on a formal (cooperatives) or informal scale contributes to community strength. In conclusion, the three 'Ps' - perception, power and participation - referred to in the title of this article provide the foundations for capacity building but are also a determining factor of community resilience. ■

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FURTHER INFORMATION

● **In the Cyberlibrary:** The Tiempo Climate Cyberlibrary lists adaptation websites at www.tiempocyberclimate.org/portal/t72web.htm.
● **On the Web:** The CapHaz-Net project looks at how to enhance the capacities of European societies to prepare for, cope with and recover from the negative impacts of a natural hazard. See <http://caphaz-net.org/> for more information.

Assessing vulnerability

Wendy Annecke outlines a methodology for identifying communities who are vulnerable to climate change that is being tested in eight African countries

Significant advances have been made recently in understanding the role of non-government organizations (NGOs) and community-based organizations who are partnering with local people on community-based adaptation (CBA) projects. In their report published in *Tiempo* January 2010 on the Fourth International Conference on CBA, which was held in Dar es Salaam, Tanzania, in March 2010, Saleemul Huq and Jessica Ayers explain how these organizations, by using participatory processes, are generating strategies to increase resilience to climate change. Using participatory processes may also help address local development issues that make people vulnerable to the impacts of climate change in the first place. Huq and Ayers point out that there are now several projects in operation in vulnerable communities in both developing and also some developed

countries that are using participatory approaches to build capacity around climate change and adaptation possibilities and strategies. The Community-Based Adaptation in Africa (CBAA) research and capacity development programme funded by the International Development Research Centre, Canada, and the Department for International Development, United Kingdom, is one such endeavour.

MAIN POINTS

- **The author describes** a methodology for identifying vulnerable communities that is being tested under the Climate Change Adaptation in Africa (CBAA) research and capacity development programme.
- **She explains** the importance of participatory monitoring and evaluation.
- **She concludes** by querying the merit of leaving politicians, rather than scientists, to decide which communities are the most vulnerable.

The CBAA programme's primary aim is to develop and test a robust methodology for identifying communities who are most vulnerable to climate change and would benefit from capacity development. The capacity building takes the form of being able to design a project or programme that would be of benefit to the community and to write a proposal that could be used to seek funds for project implementation.

A methodology known as LOCATE (Local Options for Communities to Adapt and Technologies to Enhance capacity) was developed under the SouthSouthNorth Project in collaboration with the Bangladesh Centre for Advanced Studies. This methodology – the basis of which is described in *Tiempo* July 2006 in an article by Mozaharul Alam and Lwandle Mqadi called 'Designing Adaptation Projects' – aims to assist organizations working at the local level to design and implement CBA projects. As part of the CBAA

programme, the LOCATE methodology is being tested in eight African countries: Sudan, Kenya, Tanzania, Uganda, Malawi, Zambia, Zimbabwe and South Africa. In each country, an intermediary NGO that is partnering with at least one community-based organization working at community level is testing the methodology. The methodology has four phases: 1) identification, 2) design, 3) implementation, and 4) monitoring and evaluation. These are described in detail below.

Identification: finding vulnerable 'hot-spots' and a 'project owner' for implementation

The first phase involves both top-down and bottom-up approaches to mapping vulnerability, and an assessment of local organizations in order to identify potentially appropriate communities and project owners. The methods include both a quantitative, technical assessment and a qualitative, socio-economic evaluation of potential communities. Key questions for the technical assessment relate to defining the context of vulnerable and poor communities, and key tasks and tools involve identifying these communities by overlaying spatial mapping and poverty data. Vulnerable communities will be identified where the overlap is strongest.

A qualitative assessment is then done to confirm the technical findings and identify a potential project owner or champion on the ground. Key questions, which should



Farmer, Kenya

Photo: © Charles Tonui and Elvin Nyukuri

also be relevant for the baseline study, relate to sustainable livelihoods: assets, activities, networks and information available to the communities. Observation, meetings and interviews with members of the local community and community organizations provide the NGO with this information.

Project design

During this phase, prioritization of adaptation activities and partners and development of Project Idea Notes occurs. The baseline against which the project will be monitored and evaluated takes its clue from the LOCATE methodology and also the sustainable livelihoods framework, which characterizes the vulnerability and adaptive capacity of the community. This framework takes the fol-

lowing factors into account: household assets and capital; education, information and knowledge; wellbeing in terms of security and health; livelihood activities of the poor; and, formal and informal governance at local and national levels.

Establishing a reliable baseline is considered important since it provides the standard or snapshot against which improvements will be measured. Demographics, household income streams, the impacts of climate change on these income streams, and climate change impacts on livelihoods should be captured for the baseline study and data should be disaggregated by gender and age.

Once developed, the Project Idea Notes are ranked and shared with potential donors. This is followed by the development of the full project design document, which is also shared with donors.

Implementation

Activities geared towards addressing priority adaptation needs are implemented at this stage, in line with the project design document. Such activities are likely to vary across livelihood groups and ecosystems. In the eight African countries of the CBAA programme, activities are in the following sectors: dryland livestock and agricultural production; water and forest resource management; environmental services provision and protection from desert encroachment; coastal resources; human health (specifically

malaria epidemics); agriculture, early warning, water harvesting and conservation; and, the energy sector.

Monitoring, evaluation and learning

The LOCATE methodology emphasizes the importance of participatory monitoring and evaluation to reflect on the implementation of the project, learn from and revise strategies and provide evidence of changes in climate adaptive capacity and resilience. The CBAA project proposes to develop and test the methods and tools for participatory monitoring and evaluation with communities on the ground when the projects are implemented. The project will also test the use of participatory video for establishing baselines for monitoring and evaluation. Developing a sound participatory baseline is important for assessing shifts and changes. Over time and through comparison, evaluation can provide information on the impacts of the interventions based on effective, robust evidence gathered by participants themselves.

The CBAA project is currently testing and refining the suggested methodology, learning from experiences on the ground. Country teams are, therefore, contributing to the further development of the methodology. A robust and improved version will be finalized at a workshop in Nairobi in late 2010 and presented at the next International Conference on CBA in Bangladesh in March 2011.

Discussion

Having to identify and work with selected vulnerable communities raises ethical issues about why a selection process is necessary and what the justification is for working with some communities rather than others. In his article in *Tiempo* January 2010, Richard Klein argues that defining 'particularly vulnerable' countries is a political task, best left to negotiators. He points out that the vulnerability index proposed by Bangladesh to provide a systematic and transparent way of measuring and comparing the vulnerability of countries to climate change, is technically possible but problematic. He argues that since vulnerability means different things to different people, selection of beneficiaries is a political problem which exists only because there are insufficient resources available to address the adaptation needs of all developing countries.

Whilst it may be true that, as Klein states '[s]cientists cannot provide an objectively 'true' answer to what is essentially a political question', it may be that politicians are not the best people to decide which communities are the most vulnerable. Left to politicians, the selected communities may end up being the ones with the most votes cast for the ruling party. This vexing question, about who should be selected for help and why, is one in which constant robust debate should play its part, and we should not forget to seek equitable solutions and sufficient resources for all. ■

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FURTHER INFORMATION

● **In the Cyberlibrary:** The Tiempo Climate Cyberlibrary lists adaptation websites at www.tiempocyberclimate.org/portal/t72web.htm.
● **On the Web:** For further information about the Climate Change Adaptation in Africa (CBAA) research and capacity development programme see: tinyurl.com/24z56cz.

Adaptation key terms

Anna Taylor, Katie Harris and Charles Ehrhart make sense of key concepts and terms in the field of community-based adaptation

There is a lot of talk, and some early activity, around the ideas and practices of community-based adaptation (CBA) to climate variability and/or climate change. CBA is attracting attention from practitioners, researchers and some policy people, from a range of fields and disciplines including rural development and economics, agriculture, natural resource management and conservation, disaster risk management and humanitarian relief (with a whole lot more besides). This makes for both a very dynamic and contested area of thinking and practice. One of the challenges is communicating across these different 'communities' (of knowledge and practice), each with their own terminologies and conceptual frameworks. This can and does lead to plenty of confusion and misunderstanding on the one hand, but on the other hand it can be the basis of constructive, and even progressive, debate.

This article seeks to make a small contribution to addressing (or redressing) this balance. It does not attempt to nail down singular definitions of key terms used in the emerging field of CBA, to set strict boundaries on concepts, or to develop a typology of CBA approaches (although this may be useful). Rather, it recognizes that there is great variation within and between organizations of

MAIN POINTS

- **The authors highlight** some of the main areas of confusion regarding terminology in the field of community-based adaptation (CBA).
- **They explain how** articulating and addressing 'frequently asked questions' about CBA can help

improve understanding and stimulate discussion.

- **They propose** a broader process of learning and collaborative 'sense-making' to help develop a knowledge structure and a shared vocabulary on CBA.

practitioners and seeks to highlight some of the main areas of confusion and contestation.

Some practitioners have identified definitions they feel best suit the terms and concepts they are referring to, whilst others work on the basis of a shared knowledge and understanding about the terms and concepts employed. This article does not intend to undermine existing organizational definitions or terms. It explores some of the different perspectives on key terms and concepts, and suggests a process by which useful 'working understandings' could develop to meet current needs and later be refined and updated as collective learning improves.

Frequently asked questions

The process of engaging practitioners and researchers in articulating and addressing 'frequently asked questions' (FAQs) about CBA (of which this article is just one part)

can help improve understanding and coherence in communications and stimulate discussion for improved practice of CBA. A number of FAQs on CBA were identified at the Fourth International Conference on Community-Based Adaptation to Climate Change (held in Dar es Salaam, Tanzania, in February 2010). These emerged from formal plenary discussions, informal conversations between sessions, and more in-depth discussions spearheaded by the open-membership ‘working group on FAQs’ (formerly known as the ‘terms and definitions’ working group, first convened at the Third CBA Conference in 2009). Conference participants in Dar es Salaam also shared their FAQs on an open discussion board. The following examples give a good sense of what practitioners perceive as key questions.

- What is CBA, and particularly how is it different from ‘good’ development?
- What is the relationship between ‘community-based’ and ‘ecosystem-based’ adaptation?
- Is any adaptation activity really currently taking place at the community level that specifically addresses climate change?
- Does CBA aim to improve people’s lives, or just keep an inequitable status quo from getting even worse?
- How can we differentiate between sustainable development, disaster risk reduction and CBA projects, and is it necessary to do so?
- The impacts of climate change are not limited to the village level, is CBA? And how can CBA link to larger scales of action, for example, those at national and international levels?

- What do we understand to constitute a ‘community’ in CBA?
- Where does the challenge of mitigating climate change fit in relation to CBA?
- What is the difference between ‘adapting’ and ‘coping’?
- What do people mean by ‘resilience’ in the context of CBA, and what is the difference between ‘vulnerability’ and ‘resilience’?
- What is the difference between ‘climate-proof’, ‘climate-smart’, and ‘climate-resilient’?

One of the most frequently asked - and practical - questions is about the difference between adaptation and coping. But while there is growing consensus around these terms, others remain hotly contested. Perhaps the stickiest is what is meant by ‘resilience’. These two FAQs are explored below as a starting point for the broader process outlined at the close of this article.

Adaptation versus coping

Sometimes, the terms ‘adaptation’ and ‘coping’ are used interchangeably. This has led to a lot of confusion. Comparing and contrasting characteristics is one way to understand their similarities and differences. The table over, presented in CARE’s *Climate Vulnerability and Capacity Analysis Handbook*, was consolidated from brainstorming sessions with groups of development practitioners in Ghana, Niger and Nepal.

The table shows that this is not just the ‘academic’ debate about definitions that



Village, Kenya

Photo: © Charles Tonui and Elvin Nyukuri

CHARACTERISTICS OF 'COPING' AND 'ADAPTATION'

Coping	Adaptation
Short-term and immediate	Oriented towards longer-term livelihood security
Oriented towards survival	A continuous process
Not continuous	Results are sustained
Motivated by crisis; reactive	Uses resources efficiently and sustainably
Often degrades the resource base	Involves planning
Prompted by a lack of alternatives	Combines old and new strategies and knowledge
	Focused on finding alternatives

some people think it is. Our understanding, and lack of understanding, can have real world implications - especially for the poorest individuals, households and communities. In this case, treating the two terms as interchangeable could lead to supporting (or worse still, even promoting) activities or strategies that have worked well enough in the past but, in the context of our changing climate, could be disastrous. Some may even lead to what is sometimes known as 'maladaptation'.

Selling off productive assets (like livestock) and/or boosting incomes through artisanal charcoaling are two examples of 'traditional coping mechanisms' common across much of semi-arid Africa. But while these strategies may work well enough when drought occurs only once every five or so years, they are a dead-end when it comes to dealing with the contemporary reality of accelerating drought cycles. Knowing the difference between 'coping' and 'adaptation' forces us to think 'outside the box' and identify sustainable solutions to long-term climate change.

What is resilience?

In the next example, one term is used regularly but its meaning is far from consistent. Saleemul Huq and Jessica Ayers write, in *Tiempo* January 2010, that community-based adaptation is often referred to as "an approach to increasing the resilience of some of the world's poorest communities to the impacts of climate change." But what exactly does 'resilience' mean in this context?

This article does not seek to settle on a single definition for resilience. Rather, it aims to highlight some of the contrasting interpretations and uses of the term, to enable practitioners to think more clearly about what it is they are referring to and the action that is implied thereafter. There are significant practical and policy implications depending on how the term is understood.

One way to improve clarity is to distinguish between the use of the word resilience as a noun - meaning to return to an original form or recover from adversity - and as a concept. A second way to improve clarity is to acknowledge that while there is no clear way

to distinguish between the many different concepts of resilience, they could usefully be understood as a continuum. For example, on one end of the continuum, resilience is interpreted as a form of coping by merely withstanding shocks and stresses. On the other, resilience is a flexible learning system, within which transformational change is a critical part.

So, why does this matter for CBA? Getting to grips with the many different uses of the term resilience is important for understanding what the concept of resilience can bring to CBA. Many believe that in order to make resilience thinking practical it needs to become linked to action and strategies, and considerations of politics and power. For example, a resilient system for one person or community may cause vulnerabilities for others. The assumption that a common understanding of the term prevails is problematic. The sense that people 'know' what makes a more or less resilient system is false. For CBA, the challenge is unpacking this concept to ask more informed questions such as: whose definition of resilience are we referring to? And, what are the potential trade-offs in increasing the 'resilience' of some communities over others?

Next steps

Having made a first attempt at addressing two of the CBA FAQs in this article, the authors hope to kick start a broader process of learning. This article, therefore, also serves to

issue an open invitation for others to engage in this exercise of collaborative 'sense-making' (via the open working group convened at the Fourth CBA conference, animated by the authors). This will help to move the field of CBA forward in terms of practices supported by a well-developed knowledge structure and a shared vocabulary.

Taking a big picture view, this could lead to all sorts of interesting developments. For example, with more information being shared via the worldwide web, this may form the early stages of developing a 'folksonomy' of CBA - a way of collaboratively classifying and retrieving web content (text, images, video *et cetera*) by way of creating and assigning 'tags' (open-ended labels) to annotate and categorize pieces of information.

For now, however, this information sharing is working towards the next CBA conference to be held in Dhaka, Bangladesh, in March 2011. There, the authors hope to consolidate the FAQ and answers into a discussion article (which could be made available in a variety of formats) for circulation, and to convene a session during the conference in which people can present and review the thinking and content emerging from the rich experiences of this collaborative attempt to tackle the FAQs currently on so many peoples' lips. In doing this, we can iteratively improve our practices, try alternatives, and come to new and better questions as we continue to learn together. ■

ABOUT THE AUTHORS



● **Anna Taylor** is a researcher with Stockholm Environment Institute, working on collaborative approaches to adaptation planning and learning to address climate variability and change in the context of other systemic challenges.



● **Katie Harris** coordinates the Strengthening Climate Resilience programme at the Institute of Development Studies, specializing in climate-smart disaster risk management and the links between climate change and conflict.



● **Charles Ehrhart** coordinates CARE International's global response to climate change, providing strategic direction and technical support to operations in nearly 70 of the world's poorest countries.

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FURTHER INFORMATION

● CARE's *Climate Vulnerability and Capacity Analysis Handbook* can be accessed at tinyurl.com/2bhzcpc. For further information on the Fifth International Conference on Community-Based Adaptation to be held in Dhaka, Bangladesh, 24-31 March 2011, contact the Bangladesh Centre for Advanced Studies at info@bcas.net.

CONFERENCES

Green Summit on Climate Change 2010: Issues and Concerns

**Hyderabad, India:
12-11-2010 to 13-11-2010**

Will look at the complex interactions between climate, environment, economic, political, institutional, social and technological processes. Themes for debate and discussion, in relation to climate change, include: water and land-use; food and energy security; climate justice and equity; loss of biodiversity and extinctions; global warming and changes in weather patterns; green alternatives; and corporate responses.

Details: Green Summit Organizer, Santoshnagar Colony, Stanns College, Mehdiapatnam, Hyderabad 500028, India. Fax: +91-40-23517919

Email: greensummit.stanns@yahoo.com

Web: www.greensummitstanns.com

International Conference on Biodiversity and Climate Change

**Manila, Philippines:
17-11-2010 to 19-11-2010**

Conference intends to act as a forum for the sharing of knowledge and information on the two-way interactions of biodiversity and climate change and for identifying strategies and actions to conserve biodiversity focusing on the Asia-Pacific region. Main themes include climate change mitigation and adaptation, education and advocacy, the status of biodiversity and research and development.

Details: Conference Organizer, OPPRI-

Commission on Higher Education, Higher Education Development Center Building, CP Garcia Avenue, UP Campus, Diliman, Quezon City 1104, Philippines.

Fax: +63-2-4411169

Email: oppriod@gmail.com

Web: www.icbcc.com

Global South-South Development Expo 2010

**Geneva, Switzerland:
22-11-2010 to 26-11-2010**

Organized by the United Nations Development Programme, the United Nations and the International Labour Organization. The Expo has been specifically designed to enable developing countries and their development partners to systematically showcase their evidence-based South-South Development Solutions.

Details: Expo Organizer, UNDP, Special Unit for South-South Cooperation, 304 East 45th Street, 12th Floor, New York, NY 10017, USA.

Fax: +1-212-9066429

Email: info@southsouthexpo.org

Web: www.southsouthexpo.org

16th Conference of the Parties to the UNFCCC

**Cancun, Mexico:
29-11-2010 to 10-12-2010**

COP16 will be a continuation of negotiations, discussion, debate and positioning after the disappointing outcome of last years Copenhagen meeting. Will include MOP6, the 6th

meeting of Parties to the Kyoto Protocol, together with the 33rd sessions of the various subsidiary bodies.

Details: UNFCCC Secretariat, PO Box 260 124, D-53153 Bonn, Germany.

Fax: +49-228-8151999

Email: secretariat@unfccc.int

Web: www.unfccc.int

4th International Conference - Transitions to Sustainability

**Auckland, New Zealand:
30-11-2010 to 03-12-2010**

Organized by the New Zealand Society for Sustainability Engineering and Science, the conference is to be held at Auckland University. Main themes include: evolutions in technology; limits to growth; new economics of sustainability; resilient societies; beyond today's infrastructure; and embedding sustainability. Discussions will centre around potential transition pathways to a more sustainable future and what engineers and scientists can do.

Details: Vicky Adin, NZSSES, PO Box 305270, Triton Plaza, North Shore,

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Sustaining Commons: Sustaining our Future

**Hyderabad, India:
10-01-2011 to 14-01-2011**

13th Biennial conference of the International Association for Study on Commons which is hosted by the Foundation for Ecological Recovery.

Working themes for discussion and debate include: the commons, poverty and social exclusion; globalization, commercialization and the commons; climate change and other challenges; managing complex commons such as protected areas, lagoons, wetlands etc; and theory, analytics and data.

Details: Subrata Singh, Foundation for Ecological Security, PO Box 29, Anand 388001, Gujarat, India.

Fax: +91-2692-262087

Email: subrat@fes.org.in

Web: www.fes.org.in

5th International Conference on Community-Based Adaptation to Climate Change

Dhaka, Bangladesh: 24-03-2011 to 31-03-2011

Conference aims to share the latest developments in adaptation planning and practices, priority sectors and measures at different levels and dissemination of knowledge among stakeholders and communities. Includes three days of field visits.

Details: Bangladesh Centre for Advanced Studies, House 10, Road 16A, Gulshan-1, Dhaka 1212, Bangladesh. Fax: +880-2-8851417

Email: ccadaptationworkshop@bcas.net

Web: www.bcas.net

6th IWA Specialist Conference on Efficient Use & Management of Water

Dead Sea, Jordan:

29-03-2011 to 02-04-2011

Conference will present experiences of different countries in water demand management and accomplishments in improving water use efficiency and dealing with the challenges of drought. Agenda includes discussion on policies, regulations, efficient technologies, alternative water resources, climate change and drought.

Details: International Water Association (IWA), Alliance House, 12 Caxton Street, London SW1H 0QS, UK.

Fax: +44-207-6545555

Email: water@iwahq.org

Web: www.iwahq.org

Greenhouse 2011

Cairns, Australia:

04-04-2011 to 08-04-2011

Conference is the latest in a series organized by CSIRO. Aimed at scientists and representatives from industry and government involved in the research and application of climate change science. Main topics for discussion include: pacific nations and climate change; atmosphere; climate variability; impacts and adaptation; oceans; biodiversity; and communicating climate change, amongst others.

Details: Greenhouse 2011 Secretariat, CSIRO, PMB 1 Aspendale, Victoria 3195, Australia.

Fax: +61-3-92394444

Email: paul.holper@csiro.au

Web: www.greenhouse2011.com

2nd International Eco Forum for Waste & Water Management Recycling

Sofia, Bulgaria:

13-04-2011 to 15-04-2011

The three main themes are water, recycling and waste. Waste will cover such issues as prevention, treatment, waste incineration and gasification, hazardous waste and landfills etc. Water will cover efficiency in agriculture, public supply and energy production, the collection and treatment of sewage etc, innovations in the water and sanitation sectors and managing surface, ground, soil and rain water, amongst others.

Details: Maya Kristeva, Conference Manager, Via Expo Ltd, 4003 Plovdiv, 3 Anton Chehov Square, Sofia, Bulgaria.

Fax: +359-32-945459

Email: office@viaexpo.com

Web: www.viaexpo.com

11th International Coastal Symposium

Szczecin, Poland:

09-05-2011 to 14-05-2011

Organized by the Coastal Education and Research Foundation, the conference also marks the 20th Anniversary of the Institute of Marine and Coastal Sciences at the University of Szczecin. Conference themes will include: beach processes; barrier islands; coastal ecosystems; climate change; coastal geomorphology; impact of extreme storms; human impacts; and coastal dunes.

Details: ICS2011 Conference, Zaklad Teledetekcji i Kartografii Morskiej, Uniwersytet Szczecinski, ul Mickiewicza 18/402, 70-383 Szczecin, Poland.

Fax: +48-914-442451

Email: ics@ics2011.pl

Web: www.ics2011.pl

World Environmental & Water Resources Congress

Palm Springs, USA:

22-05-2011 to 26-05-2011

Co-organized by the Environmental and Water Resources Institute. Will include plenary sessions, technical presentations (focusing on Bearing Knowledge for Sustainability) and various symposia. Session topics will include: urban water resources; watershed management; water and wastewater engineering; and international projects. Symposia to cover arid lands, climate change and sustainability.

Details: American Society of Civil Engineering (ASCE), 1801 Alexander Bell Drive, Reston, VA 20191-4400, USA.

Fax: +1-703-2956333

Email: info@asce.org

Web: www.content.asce.org/conferences.ewri2011/index.html

SER2011 World Conference on Ecological Restoration

Merida, Mexico:

21-08-2011 to 25-08-2011

Theme of the conference is "Re-establishing the Link between Nature and Culture." Scientific sessions will

include: safeguarding biodiversity; local, national and international implications; restoration of coastal and marine ecosystems; restoration of watersheds, rivers and wetlands; restoration of grasslands, forests and arid lands, amongst others. Aimed at professionals, researchers, students and the public.

Details: Society for Ecological Restoration International, 1017 O Street NW, Washington DC 20001, USA. Fax: +1-270-6265485. Email: info@ser2011.org Web: www.ser2011.org

Non-CO₂ Greenhouse Gases (NCGG-6) Science, Policy & Integration

Amsterdam, The Netherlands:

02-11-2011 to 04-11-2011

This Sixth International Symposium is organized by the Air Quality and Climate Change Section of the Netherlands Association of Environmental Professionals (VVM). Aims to address both the role of non-CO₂ greenhouse gases and aerosol in human-induced climate forcing and options for reduction in industry and society. Main themes are: sources, sinks and inventories; atmospheric processes; and policy implementation, mitigation and adaptation.

Details: Symposium Secretariat, VVM, PO Box 2195, NL-5202 CD Den Bosch, The Netherlands.

Fax: +31-073-06216985

Email: office@ncgg.info

Web: www.ncgg.info

Adaptation on a small island

Leone Limalevu , Bill Aalbersberg , Patrina Dumaru and Tony Weir suggest some lessons for community-based adaptation projects in a small developing country

The small island developing countries of the Pacific are recognized as among those most vulnerable to climate change by both the United Nations Framework Convention on Climate Change and by the Intergovernmental Panel on Climate Change. They are already strongly impacted by extreme climatic events such as cyclones, to which the people have developed traditional coping mechanisms. Such mechanisms included preserved foods kept back for emergency use (for example, fermented breadfruit) and light-weight dwellings, which, though easily destroyed, could be quickly rebuilt. But economic development has led to changing lifestyles, urbanization and increased populations, making these mechanisms less relevant than in past centuries, and these countries do not have the human or financial resources to take up technologically sophisticated adaptation measures. There is a strong need, therefore, to

identify, develop and disseminate adaptation strategies that are suitable for use in Pacific communities as they are now.

An article in issue 54 of *Tiempo* (January 2005), 'Vulnerability in Samoa', reported on a vulnerability and adaptation assessment for Saoluaifata village in Samoa, carried out as part of a Pacific regional project sponsored by Canadian aid, called Capacity Building for Development of Adaptation Measures in Pa-

MAIN POINTS

- **The authors' experience** with projects in six Fijian villages suggests many lessons for community-based adaptation projects more generally.
- **Community involvement** is essential, support from outside

groups is important and information about climate change and adaptation needs to be disseminated and shared.

- **They also conclude** that long-term monitoring, maintenance and evaluation is needed.

cific Countries (CBDAMPIC). Although there were three CBDAMPIC project sites in Fiji, the Canadian funding ran out in 2005 before implementation progressed much beyond the planning phase. Consequently, the Fiji Government was keen to have some 'demonstration' adaptation projects actually implemented, as were the communities concerned, their neighbours who might hope to emulate them and other agencies working in the region.

By this time, the University of the South Pacific (USP) had nearly ten years' experience in facilitating community development projects with an environmental focus, particularly in connection with Locally Managed Marine Areas. So the Fiji Department of Environment asked USP to bring this experience to bear on adaptation to two major impacts of climate change in the Pacific Islands: coastal management and water supply. The Australian Government agreed to fund pilot projects at six rural communi-



Brainstorming options during a community meeting

Photo: © University of the South Pacific

ties in Fiji. Provincial Councils within Fiji were asked to suggest communities who had already asked for assistance with one of these issues. A short-list of nine sites was selected, and then the project advisory board members visited the sites and recommended three ‘coastal’ sites and three ‘water’ sites to work with, mainly on the basis of the seriousness of their problem and their demonstrated willingness and ability to mobilize a communal effort.

The key outputs sought at each community were:

- enhanced community awareness about climate change impacts and adaptation;

- increased local capacity to assess and address climate change impacts and adaptation at the community level;
- climate change adaptation mainstreamed and internalized at the community level;
- discrete and sustainable adaptation measures implemented; and,
- continued ‘adaptive monitoring’ beyond 2009.

Strong emphasis was placed on making sure that each community (assisted by USP) got to actually implement measures, not just think about them, and on these measures being sustainable in the sense that they would continue to be effective over time. To be sus-

tainable in that sense requires also that they be environmentally sustainable (for example, won’t lessen coastal erosion at location A by making it worse at neighbouring location B), economically sustainable (for example, not costly engineering works that other communities could not replicate or which would require expensive maintenance) and above all socially sustainable, becoming an integral part of the community’s own routine practices and their internal social structures. Thus, some of the ‘measures’ are simply processes rather than hardware, for example, agreement not to place new buildings close to an eroding riverbank or a procedure for rationing water supply.

In pursuit of these outcomes, it became apparent that rural communities such as these must be provided with a tool for vulnerability and adaptation assessment based on an approach to adaptation planning and implementation that integrates both climatic and non-climatic factors. The methodology developed by the Pacific Centre for Environment and Sustainable Development (PACE-SD) at USP for this purpose, the PACE-SD methodology, is an extension of that developed by the South Pacific Regional Environment Programme for the CBDAMPIC projects, but drawing on our experience with Locally Managed Marine Areas and on the United Nations Development Programme *Adaptation Policy Frameworks for Climate Change* of 2005.

The method assesses vulnerability and adaptation options through both commu-



From top to bottom: villagers planting vetiver grass at Buretu; new roof-fed communal water tanks at Bavu; replanting mangroves at Navukailagi

Photos: © University of the South Pacific

nity-based approaches using participatory tools and facilitator-based approaches using rigorous scientific tools and methods. Critically, the assessment and the plans are based on a firm understanding of the socio-economic, cultural and environmental problems currently faced by the community. They integrate climatic considerations into a broader framework of sustainable development as perceived by the community. Thus, significant problems related to climate extremes presently faced by the community are addressed first, since building resilience to these (as disaster risk management) automatically increases resilience to longer-term climate change.

Each of the three coastal sites chosen already had a community coastal management plan. For these communities, the added process involved making communities aware of the likely impacts of climate change on Fiji and discussing how their management plan priorities might change or new ones emerge with this added knowledge. The impacts of climate change include: more intense rainfall and cyclones, sea-level rise and more frequent drought periods (El Niño-like conditions).

One of the new sites chosen was Buretu, a village in the delta of the Rewa River, which suffers from river bank erosion and from inundation whenever the river floods (which is currently once every two to three years). Actions adopted at Buretu include: infilling of eroded portions along the river bank; construction of bank protection struc-

tures using local materials; construction of walkways; planting of deep-rooted vetiver grass for bank stabilization; and, assessment for drainage improvement works.

Bavu, a village on the 'dry' (leeward) side of the main island, Viti Levu, has suffered from a shortage of clean fresh water, particularly in drought periods caused by El Niño. Actions adopted at Bavu include: rehabilitation of the borehole (which had been their main source of clean water); improvement of the rain harvesting system; and, setting up of a pressurized reticulation system (using large tanks on higher ground, fed by the new borehole pump). The village plans also to rehabilitate a 40-year old small dam, which was polluted by major road works nearby.

The village of Navukailagi is on the coast of a smaller island in Fiji, Gau, and is suffering from erosion of its coastline and also of the bank of a small stream that runs past the village but swells dramatically in storms. The village is addressing these problems by: planting coastal trees and mangroves (from a nursery they have established) along the coast; planting vetiver grass in appropriate places; and constructing a gabion retaining wall to prevent river bank erosion and, simple perpendicular and vertical groynes to control coastal erosion.

Similar actions have been taken in the other three project villages. From our experience in working with these six villages (and from other community projects known to us), we have drawn lessons in four main areas.

First, community involvement is essential. Success is possible only with communities who recognize their need and are seeking help. Participation of the whole community in planning and implementation, including women and youth (maybe in differentiated roles), should be aimed for. The community should own the process. The planned activities should be in harmony with the community's work programme (timing, priorities, and so on). It is essential to be sensitive to the community structure and always ensure you work through it, not against it or be disruptive in any way. 'Walking the extra mile' is usually required to ensure project success. Finally, patience is rewarded, haste is not.

Second, support from outside groups is important. Analysis and recommendations of experts should be incorporated into the project to avoid technical mistakes. Coordination with such expert organizations as the public works department is needed early on and the project should be mainstreamed into their planning. It is also necessary to coordinate with local government (for example, provincial offices), traditional structures and (where active) non-governmental organizations. Finally, capacity building can work both ways - as facilitators we have learnt a lot from the communities.

Third, information about climate change and adaptation needs to be disseminated and shared. Climate change awareness needs proper planning and should also be strategic in content and focus. Use of vernacular

language and simple terms that people can relate to is critical. Climate change awareness should not be a one-off activity, but should be continued throughout the project so that the whole cross-section of the community have a good understanding of the issues. Information should be shared between similar projects and communities (for example, what worked or didn't). And a caution - information is taken up and acted on only by people who want to use it and have the capacity to do so.

Fourth, long-term monitoring, maintenance and evaluation is needed (over five to ten years). Evaluation should begin as early as possible and not be left to the end of the project. Adaptive monitoring is important: if something is visibly not working, do something about it. This means that some resources are required beyond the 'end' of project.

These lessons can be summarized into an overall guiding rule: Have we done everything possible to make this project a sustainable contribution to community development? We hope that projects in other small developing countries will find the lessons learnt here useful in making their projects more sustainable than might otherwise have been the case. With assistance from AusAID and other donors, USP is currently planning to extend these successful practices to other communities in Fiji and in other Pacific Island countries. ■

ABOUT THE AUTHORS



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INSURANCE

Four insurance initiatives have called on governments to harness risk management techniques and industry expertise to help the developing world adapt to climate change.

"With climatic disasters inflicting more and more damage, the increasing reliance of governments on foreign aid alone is unsustainable," commented Andrew Torrance, chairman of ClimateWise. "As the global climate continues to warm, we have to find new ways to protect people and economies from the impacts of extreme weather, particularly those who are most vulnerable," he continued.

Read more:
tinyurl.com/2ejdwhx

CARBON CUTS

Six countries, amongst those most vulnerable to climate change, plan substantial cuts in their carbon emissions as a sign of their commitment to combat global warming.

"Antigua and Barbuda, Costa Rica, Ethiopia, the Maldives, the Marshall Islands and Samoa all pledged to slash greenhouse gas emissions and pursue green growth and development," according to a statement from the Maldives government. "When those with the least start doing the most, it shows that everyone's ambitions can be raised," said Mohamed Nasheed, president of the Maldives.

Read more:
tinyurl.com/25vcm5k

SOOT POLLUTION

Eliminating soot pollution from sources such as diesel engines and poorly-controlled heat sources could mean that the world has an additional eight years to limit carbon emissions, according to researchers at Princeton University in the United States.

"Unfortunately, most climate change mitigation scenarios used have focused exclusively on heat-trapping gases," commented Denise Mauzerall. "This means those eight years aren't actually eight years we can gain by cutting soot emissions; rather, our results suggest that we need to accelerate carbon dioxide emissions [reductions] by about eight years relative to these scenarios."

Read more:
tinyurl.com/27vsgmn

ICE SHEETS

An international team of scientists has concluded that the estimated rate of ice loss from the Greenland and West Antarctic ice sheets should be halved.

The correction results from a new assessment of the effect of glacial isostatic adjustment, the rebounding of the Earth's crust after the last ice age. "It's like a mattress after someone has been sleeping on it all night," said team leader Bert Vermeersen of Delft Technical University in the Netherlands. The corrected figures means that expansion of the warming oceans must account for around 70 per cent of recent sea-level rise, rather than the 50 per cent that was previously assumed.

Read more:
tinyurl.com/2ejdwhx

RICE PRODUCTION

Even a modest rise in daily minimum temperature could adversely affect Asian rice production, according to an international team of researchers.

"If we cannot change our rice production methods or develop new rice strains that can withstand higher temperatures, there will be a loss in rice production over the next few decades as days and nights get hotter," warned team leader Jarrod Welch of the University of California, San Diego. Rice is the staple food to some 600 million people in Asia.

Read more:
tinyurl.com/24xzc9k

Building adaptation capabilities

Elvin Nyukuri and Dan Ong'or explain how climate change adaptation capabilities are being built in two communities in Western Kenya

Oyola and Wakesi peoples reside on the fringes of Lake Victoria in the Kano Plains of Western Kenya. The two communities are experiencing climate change impacts and other stresses that are contributing to their vulnerability. Research between 2008 and 2009 revealed that the flood- and drought-related stresses faced by communities include human and livestock diseases, lack of pasture and safe drinking water, poor infrastructure and housing, collapse of the Miwani sugar factory and a lack of employment opportunities, and low capacity to solve all these problems. The community is, however, endowed with resources which when properly utilized can help mitigate the impacts of climate change. The research revealed the different challenges the two communities face and what makes them vulnerable, and the different strategies employed by each community to cope. Finally, it

explains how adaptation can be enhanced by emphasizing individual and group capabilities to reduce vulnerability.

Coping with droughts and floods

In 1946, the two communities experienced droughts which led to a famine known as 'Kee Otongl'. People walked long distances in

MAIN POINTS

- **The authors describe** the flood- and drought-related stresses faced by two communities in Western Kenya.
- **They explain** how participatory action research helped researchers and community members learn from each other and build local adap-

tation capabilities.

- **They stress the importance** of strong community groups for reducing vulnerability to climate change, and highlight how participatory processes have revealed the importance of indigenous knowledge.

search of food and some invaded neighbouring sugarcane farms. Livestock was taken to swampy areas for grazing and watering, and people sometimes sold or exchanged livestock for food. Some people diversified their livelihoods and turned to fishing. For many this was a change for the better, but it required them to learn new fishing skills in order to provide for themselves and their families. It is quite evident that people did not perish but instead learnt how to cope with the disaster.

Between 1952 and 1955, during the Mau Mau war, communities experienced heavy floods in addition to the impacts of politics. They fed on surplus food stocks from the previous season, migrated to safer areas and constructed water pans for use as water reservoirs. The silted riverbeds meant that they could not cultivate their crops, which led to hunger known as 'Kee Dhima', and there was an outbreak of a human disease called 'Olima'.



Effects of flooding in Oyola village

Photo: © Charles Tonui and Elvin Nyukuri/ACTS

In 1962, the government provided relief food through the food for work programme following the floods known as 'Koth Othuru'. Kenya gained its independence this same year. The state machinery was used to divert the course of the river and the community constructed drainage canals and moved to organized settlement schemes.

People coped with droughts in 1975 by feeding on 'ogira' because maize was too costly. They grazed their cattle and sought fodder in swampy areas. They reduced the number of meals taken per day and bought food at high prices from land adjacent to Lake Victoria. They fed on wild vegetables and used flour from the unproductive sorghum known as 'ochondo'. During this period, the

country experienced a severe famine known as 'korokoro', meaning people could only afford one two-kilogram tin of maize each day and had to be fed on imported yellow maize branded 'Kenya maize' by Zimbabwean neighbours. More cases of HIV/AIDS were recorded during this period and it was difficult to tell if patients were suffering from HIV/AIDS or hunger. This confusion meant the community did not know what coping measures to take. Famine and HIV/AIDS made the community more vulnerable and the government simultaneously provided drugs and food.

Heavy rains known as 'El Nino' were experienced throughout the country in 1997 and affected many homes. People migrated

anywhere they could find shelter. Hunger, waterborne diseases and riverbed siltation increased destitution. Community coping mechanisms were of no use and the government had to come to the rescue with food and drugs, although no alternative measures were taken to minimize the problems. Community members explained to researchers how those who survived the 'El Nino' were considered warriors. They felt the key issue was not the availability of resources but how best people could utilize their own capabilities to overcome the calamities resulting from environmental change.

Participatory research to build adaptation capabilities

The research team employed participatory action research methodologies, which helped bring community members and scientists together through action learning. During this process, community members, especially those who farmed, asked questions about the reasons behind the collapse of the Miwani sugar factory. According to them, this had led to the poor status of local infrastructure. The company used to maintain the roads that fed it, which are now small streams due to the floods. The researchers, on the other hand, wanted to find out the causes of climate change vulnerability. Participatory action research approaches helped bring the two teams together to share information, knowledge and experience through collective discussions. This helped each party make

sense of the information contributed by the other and be understood in the context in which the information was generated. Discussions emphasized how community members could begin finding solutions given the opportunities available to them and the freedom they had to transform their vulnerabilities into adaptive strategies.

Researchers and community members teamed up to identify adaptation-related problems. Through participatory approaches, community base maps, flood hazard maps, historical profiles, historical trend lines and resource analysis, focus group discussions, household histories, key informant interviews and participatory video, the communities identified their physical and economic vulnerabilities. Much information on 'challenges' was revealed, especially during the participatory video exercise. The process of self-reflection, taking ownership of the information and putting effort into identifying vulnerability hot spots and producing community base maps and digitized maps using Global Information System and Global Positioning System readings helped enhance the social learning process. The researchers, for their part, acquired new skills in engaging in partnerships that fostered an open mind.

These approaches brought together community members, parastatals, non-government organizations and community-based organizations to address the challenge of climate change and flooding, and the sub-

sequent need for livelihood diversification. The process attempted to involve the District Development Office in charge of district planning to ensure that climate change was mainstreamed in its plans. The Kenya Agricultural Research Institute (KARI) joined the research team to teach the community about using technologies such as improved varieties of fruits (like mangoes) to diversify livelihoods and improve food security. KARI is also working to develop other livelihood options involving red chillies, maize, cassava, sweet potatoes and sorghum.

Emerging adaptation strategies

The use of the Local Options for Communities to Adapt and Technologies to Enhance

Capacity (LOCATE) methodology helped these two vulnerable communities to design and implement community-based adaptation strategies to climate change. The community identified several local options for enhancing their adaptive capacity using this methodology, including the construction of makeshift bridges and water pans, growing sweet potatoes as an alternative food source and as a way to reinforce the embankments of expanded drainage canals, looking for pasture in the neighbouring community, building pit latrines on termite hills, which are common in the area, making them less vulnerable to flooding, planting red chillies and mangoes for sale or export and early planting of other crops.



A community leader shows the expanded drainage canals

Photo: © Charles Tonui and Elvin Nyukuri/ACTS

Locals are also learning to link climatic catastrophes to their cultural practices. For example, they conduct prayers under a sacred tree, dig trenches around their homesteads to channel water to their farms, construct houses with raised floors and pass on traditional practices to young people through storytelling.

In the future, communities intend to put up billboards on the major roads in the area with the flood hazards maps drawn up during research exercises on them. The women, in particular, also promised to attend 'barazas', or communal meetings, called by the local chief to obtain more information on their changing circumstances.

Forming community groups to raise capabilities

Various avenues to improving capabilities were identified. These included a number of community groups, including women's self-help groups, sugar cane associations created when the sugar factory was in operation, and farmer field schools. Farmer field schools were the preferred avenue, as they accommodated all community members. These schools will be developed in collaboration with KARI to promote popular activities like growing sorghum, cassava and sweet potatoes. The research team and KARI will also use these schools to improve agricultural-related adaptation skills that stabilize water control channels and improve fruit crop production, for example planting mango trees. The abil-

ity of the community to form such groups improves both its general capabilities but also its capability to reduce its vulnerability to climate change.

Learning from participatory processes

Using participatory processes has helped change individual and collective community practices. It was observed that those who planted maize during the normal growing season in 2009 did not harvest good yields compared to those who planted according to predictions from the meteorological department. In 2009, the short rains came much earlier than in previous years and with help from the project team, those who took up the advice available ended up harvesting a good yield.

Participatory processes also revealed the importance of indigenous knowledge used by the community to avert climate change risks. This community traditionally made sacrifices or offerings to gods for rain under trees such as the baobab. Participatory videos revealed the importance of this activity in community member's lives. They associate the trees with rains and the rate at which offerings are made to the gods for rain has increased. The correlation between the number of times people make offerings and the state of the environment is informative. Such activities also provide opportunities for using endogenous approaches to educate the community on climate change adaptation and sustainable development. ■

ABOUT THE AUTHORS



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FURTHER INFORMATION

● **On the Web:** This project was part of the Community-Based Adaptation in Africa (CBAA) project. See www.acts.or.ke for further information.

ACKNOWLEDGEMENTS

● The authors would like to thank Charles Tonui and Judi Wakhungu for help with this research and article.

Financial affairs

TOWARDS THE MEXICO SUMMIT

The pace of the international climate negotiations has speeded up as the Cancún climate summit approaches. Tiempo editors Mick Kelly and Sarah Granich report on the latest developments.

Meeting in Rio de Janeiro, Brazil, in late July, environment ministers from the BASIC countries of Brazil, South Africa, India and China, concluded that achieving a binding agreement at the negotiations in Mexico at the end of the year will be difficult. “The single most important reason why it is going to be difficult is the inability of the developed countries to bring clarity on the financial commitments which they have undertaken in the Copenhagen Accord,” Jairam Ramesh, Indian environment minister, said.

Delays on the part of the United States and Australian governments in implementing climate legislation contributed to the pessimistic assessment. “If by the time we get to Cancún [US senators] still have not completed the legislation then clearly we will get less than a legally binding outcome,” commented South African minister Buyelwa Sonjica. No specific proposal regarding emissions reductions emerged from the meeting.

The BASIC group will meet again in Beijing in October to determine their position at the talks in Cancún. Though not reflected in the official statement, it is reported that the group may, in light of the difficulties in extending the Kyoto Protocol with regard to emissions from the industrialized nations, work towards a single, global agreement.

“Governments have a responsibility this year to take the next essential step in the battle against climate change,” said Christiana Figueres as she opened the August round of climate negotiations in Bonn, Germany. “How governments achieve the next essential step is up to them. But it’s politically possible. In Cancún, the job of governments is to turn the politically possible into the politically irreversible,” she added.

Progress, however, proved slow. “I came to Bonn hopeful of a deal in Cancún, but at this point I am very concerned as I have seen some countries walking back from progress made in Copenhagen,” said United States representative Jonathan Pershing. The draft negotiating text on long-term cooperative action has doubled in length to 34 pages with new proposals added and old ones reinstated. “The mitigation discussion even went backwards and became more polarized,” remarked Gordon Shepherd at the World Wide Fund for nature. There was no



Christiana Figueres, United Nations Framework Convention on Climate Change Executive Secretary

resolution of the contentious issue of limits on emissions growth in the major developing nations. There were also signs of deepening rifts over finance for the poorer developing countries. The Copenhagen Accord pledge that US\$100 billion a year would be raised by 2020 to assist poor countries adapt to climate change is being questioned. “It sounds very large. For the donor countries it is a lot to ask taxpayers to pay. But you must weigh that against the need” of countries at risk, commented Dessima Williams, delegate from Grenada.

As the meeting ended, Figueres said that the draft negotiating text would not be allowed to grow further. She did feel that some progress had been made on the shape of a future deal. "If you see the bigger picture, we have progress here in Bonn. It is hard to cook a meal without a pot, and governments are much closer to actually making the pot," she said.

Growing support for a "Green Fund" to support developing nations respond to climate change was evident at a meeting of environment ministers in Geneva, Switzerland, in early September. "We are hoping that we can make a very formal decision [at the Cancún summit] regarding the establishment of the fund and at the same time decide on how to make this fund be able to channel resources immediately, because there is this sense of urgency," said Patricia Espinosa, Mexican foreign minister. The fund would dispense the support promised by the Copenhagen Accord.

United States negotiator Todd Stern warned that agreement on other developing country issues - notably, curbs on greenhouse gas emissions and monitoring of national pledges - would be a prerequisite. "This has to be part of a package," he said. "That doesn't mean that you can't negotiate quite far down the road on this... [but] all of those key elements have to move, not just one or two." According to a Reuters overview, it is unclear how much of the US\$29.8 billion pledged as climate support for the period 2010-12 to date is "new and additional" money, as specified by the Copenhagen Accord. For example, much

of the substantial Japanese commitment of \$US15 billion represents funding already committed under the Cool Earth Partnership.

The United States is interpreting the Copenhagen Accord, which it takes as the starting point for the next phase of the negotiations, as a move away from the Kyoto Protocol paradigm of mandatory obligations for the industrialized nations and voluntary commitments for the developing world.

At a briefing following a meeting of the Major Economies Forum on Energy and Climate in New York, in September, Stern emphasized that the United States was "perfectly supportive" of discussions stemming from the Copenhagen Accord that were not legally binding. He said, though, that "if we are in a world... where the negotiation on the table is for legally-binding commitments by some, then I would say... if it's going to be legally binding for the United States or Europe or Japan or Australia or whatever, then it would need to be legally binding for China, which at this point is now the world's largest emitter, and India and other major developing countries."

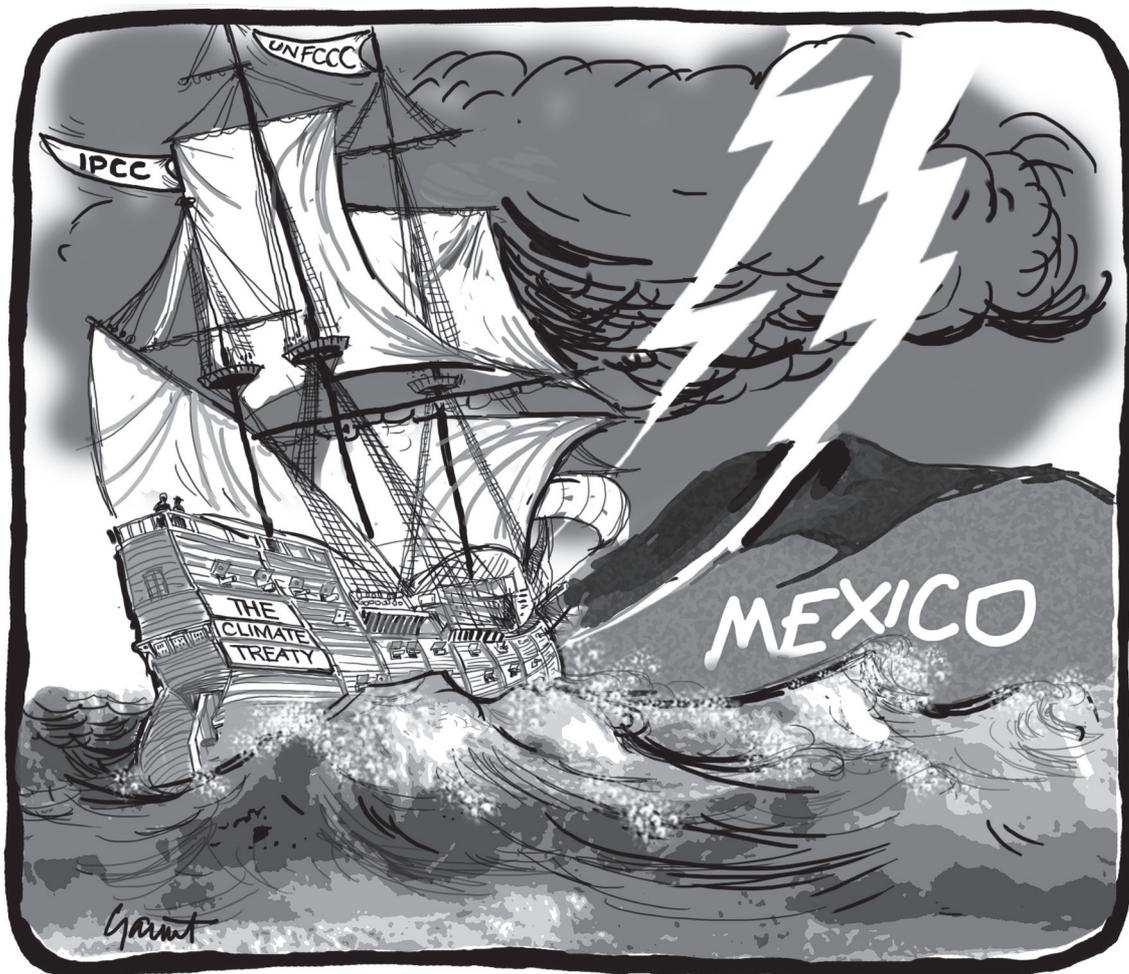
Russia will seek a non-binding agreement in Cancún that will encompass developing nations. "28 per cent of the world cannot change anything," argued climate change adviser, Alexander Bedritsky, noting that the industrialized nations bound by the Kyoto Protocol only account for a limited percentage of global emissions. "We want cooperation in the period after 2012 to be all inclusive," he said.

In contrast, Abubakr al-Qirbi, outgoing G-77 president, has stressed the importance of the continuity of the Kyoto Protocol as an essential element for the future of the climate change regime. "New quantified emission reduction commitments by Annex I parties under the Kyoto Protocol, therefore, must be met to avoid any gap between the first and subsequent commitment periods under the Protocol," he said.

India fears that the richer nations, sceptical of a new global deal being achieved in Cancún, are secretly developing ground rules for the next stage of the negotiations, a Mexico mandate, that could undermine developing country interests and the process established by the Bali Roadmap.

The final negotiating session before the Cancún summit will be held in Tianjin, China, in October, following high-level political meetings in Geneva and New York. All industrialized nations have now submitted pledges under the Copenhagen Accord to reduce emissions by the year 2020 and 38 developing countries have submitted their proposals to limit emissions growth.

● **Further information:** The Tiempo Climate Cyberlibrary provides weekly coverage of news at www.tiempocyberclimate.org/newswatch/. For detailed discussion of all climate negotiating meetings, visit the Earth Negotiations Bulletin at www.iisd.ca/process/climate_atm.htm.



Tiempo

Issue 77 October 2010
ISSN 0962-7030

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Tiempo is published by:

The International Institute for
Environment and Development (IIED)
and the Stockholm Environment Insti-
tute (SEI), with financial support from
the Swedish International Develop-
ment Cooperation Agency (Sida).

Production manager: Erik Willis

Layout: Richard Clay

Programme coordinator:

Johan Kuylensstierna

Design: A4

Printed by: Bracken Hill Design

Printed on paper produced using
sustainable forest management
practices certified by the Forest
Stewardship Council

Copenhagen's climate finance pledges

A number of commentators have rightly blamed the train wreck in Copenhagen on a lack of trust between Parties, especially between the developed and developing worlds. Out of the confusion came one seemingly clear and ambitious promise in the Copenhagen Accord that might support rebuilding that trust: "Scaled up, new and additional, predictable and adequate funding." The funds are to begin with US\$30 billion in 'fast-start finance' for developing countries in 2010 to 2012, ramping up to US\$100 billion a year by 2020.

US\$100 billion a year is a lot of money: all global foreign assistance adds up to just above US\$150 billion a year, so meeting this pledge with official funds could nearly double North-South flows. The number of US\$100 billion was bandied around frequently during 2009 by developing countries as a minimum to show the seriousness of wealthy nations in addressing their needs, and as a down payment for addressing 'climate justice'.

Upon closer examination, however, the climate finance promise rings very empty. That is because the Accord wording makes it nearly impossible to measure whether these promises have been met. The Accord says "this funding will come from a wide variety of sources, public and private..." Unfortunately,

THE FINAL WORD

J Timmons Roberts describes how to ensure that the climate finance pledges made in Copenhagen actually materialize

this means that the word "predictable" should be replaced by "unpredictable," since investments and markets are notoriously unsteady. Of the funds coming from governments, it is not clear how much will be grants and how much will be loans. If there are

loans, then their repayment should count as negative funding in repayment years, but this is nowhere specified.

Some proposed mechanisms to raise "innovative finance" from small levies on international air travel or carbon trading, or tiny currency transaction taxes on speculators, are extremely appealing. They are clearly "new," and they could be designed to be deposited directly into funds governed by the 192 na-

tions which are Parties to the United Nations Framework Convention on Climate Change. (Doing this avoids the national treasuries of developed countries, where funds are often usurped for local needs.) Even so, systems are urgently needed to track these funds from contributor to recipient and implementation.

There will nearly certainly be other funds which contributor nations will wish to count, such as 'climate-related' projects in their portfolio of foreign assistance through national and multilateral agencies (like the Global Environment Facility and World Bank). Independent definitions, verification of projects and evaluation of effectiveness, supervised under the climate treaty, are needed for the Copenhagen pledges to ring true.



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