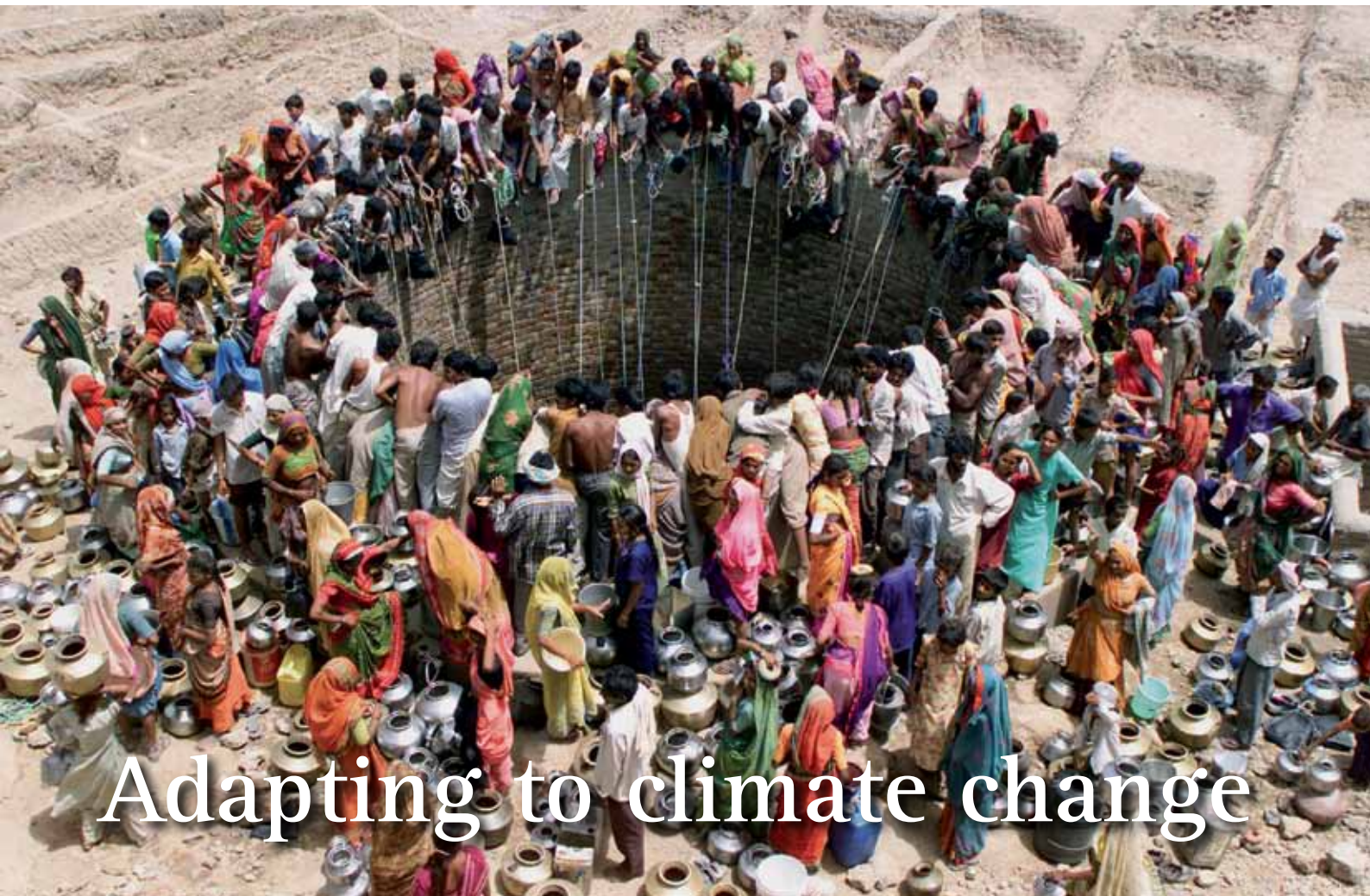


A gateway for capacity development

Capacity.ORG

ISSUE 45 | JUNE 2012



Adapting to climate change

FEATURE

Communities responding to climate change

Lisa Schipper explains why adaptation to climate problems requires transformative thinking and change.

RESEARCH

Enhancing resilience through dialogue

Methods have been developed to bridge the communication gap between scientists and communities, say Samuel Carpenter and colleagues.

GUEST COLUMN

Adaptation programmes flawed

National adaptation programmes need to be geared to local adaptation efforts, argue Jacques Somda and Annita Annies.

POLICY

Receding rains in Rayalaseema

Malla Reddy discusses that changing climate and its devastating impact on the people of the Rayalaseema region in India.

INTERVIEW

The low-carbon development pathway

Capacity.org talked to Angela Churie Kallhauge about climate change adaptation, mitigation and development.

PRACTICE

A first in the field

Ronak Shah, Shaika Rakshi and Peter Goedhart describe a collaborative effort to find out what climate change impacts lie in store for Rajasthan, India.

From islands of success to seas of change

Several successful approaches to inclusive business have been developed in recent decades. What will it take to scale them up? This was the core question discussed at an international workshop held in The Hague in April 2012 as part of the Seas of Change Initiative.

The World Business Council for Sustainable Development refers to 'inclusive business' as business models that 'seek to contribute towards poverty alleviation by including lower-income communities within its value chain while not losing sight of the ultimate goal of business, which is to generate profits.' About 100 senior representatives from the business sector, international governmental organisations, farmers' organisations, NGOs and research institutes discussed how to scale up successful inclusive business models at an international workshop held in The Hague, the Netherlands on 11–13 April. Among the many topics discussed were certification, access to credit, the role of government and partnerships.

Certification

Studies have shown that certification can increase the income of farmers and generate benefits for all stakeholders along the entire chain including traders, agri-business and

A farmers' cooperative at work in San Lucas Toliman, Guatemala



consumers. An estimated 7.5 million farming families worldwide benefit from certification. That is a significant number but still small considering that over half a billion poor people depend on agriculture for their livelihoods.

People's views at the workshop on the potential to scale up certification schemes diverged. The representatives of the various certification schemes – including UTZ and Fairtrade – see a great deal of potential for scaling up certification, and they pointed out that their sales volumes are still growing.

Business representatives were more sceptical. They believe certification will only work for products that consumers can associate with the raw commodity, such as cocoa, tea and coffee. One of their main concerns is that certification is costly in terms of auditing, monitoring and data collection. This is related to the fact that the unit of certification is the individual farm, mill or factory. In addition, the proliferation of logos, each of which has their own standard, confuses producers and drives up costs. The business representatives called for the harmonization of certification initiatives.

Access to credit

All farmers need access to credit, but representatives of commercial banks explained that they face a wide range of problems in reaching out to farmers at the bottom of the pyramid. Transaction costs are high compared to the size of the loans. Many small farmers do not have bank accounts, and they lack the record-keeping and financial management skills needed to successfully secure a loan from a bank. The legal framework is not conducive to taking out loans. For example, small farmers often do not have the land titles they need to serve as collateral.

Workshop participants discussed measures for tackling these stumbling blocks, such as strengthening the capacities of micro-credit schemes, establishing a farmer cooperative or using other intermediaries to liaise between the banks and the farmers. ICT was another area explored at the workshop. ICT has huge potential for improving farmers' access to banking and other services.

M-Pesa, a mobile phone-based money transfer service system, is an example of an innovative solution for giving small farmers access to bank accounts. M-Pesa was developed in Kenya and is widely used in cities and rural areas.

Role of the government

There was general consensus about the important role for governments to promote and scale up inclusive business models. A representative of the International Fund for Agricultural Development pointed out that a government's commitment to inclusiveness and agricultural growth go together. Workshop participants also generally agreed that governments need to assume a leading role and make clear strategic choices that are simultaneously pro-poor and pro-market. Subsequently, governments need to mobilise key stakeholders around these strategic choices and create a conducive investment climate. One area of concern is poorly designed food safety regulations that can put small-scale producers out of business.

Effective partnerships

Scaling up inclusive business models is beyond the capacity of one single party and requires engaging in partnerships that involve farmers' organisations, governments, the private sector, NGOs and research institutes. Some successful partnerships were mentioned, but it was noted that successful partnerships are not as common as one would hope.

For a partnership to work, it needs to be clear what each party can contribute. Roles may change over time. Partnerships that focus on scaling up inclusive business models are generally temporary and have a limited lifecycle. NGOs can play an important part during the pre-commercial stage as capacity builders and trusted brokers between farmers' organisations and business. When the chain matures and farmers' organisations have developed adequate capacity to engage in direct business relationships with traders and processors, the roles of NGOs can shift to other concerns. Ultimately, NGOs that played a facilitating role can exit the scene. <

Adapting to climate change

Humankind will have to learn to live with climate change. Experts argue that even the most effective mitigation measures will no longer be sufficient to avert climate change resulting from past carbon emissions.

The mitigation efforts currently agreed on by the international community are insufficient to prevent the world from warming up by less than 2° Celsius, which is broadly recognized as the safety limit. Meanwhile studies anticipate that temperatures may well rise by up to 4° Celsius. As a result, sea levels will rise 110 mm to 770 mm between 1990 and 2100. Glaciers will retreat further, affecting water availability for one sixth of the world's population.

Precipitation patterns will change and become less predictable. The movement of species, including weeds, pests and pathogens, will transform agricultural practices and health. The number of incidences of extreme weather will increase, including heat waves, floods, storms, fires and droughts.

Climate change has already affected the lives and livelihoods of millions of people – especially those whose livelihoods depend on natural resources. Eventually everyone will experience the impact of climate change, and the longer mankind continues depending on an economic system that pumps carbon dioxide into the atmosphere to generate growth, the more severe this impact will be. In an interview with *Capacity.org*, Angela Churie Kallhauge, senior policy advisor at the Swedish Energy Agency, makes it clear that every country on this planet has to commit itself to making the transition towards a climate-resilient, low-carbon economy.

Community capacity

Measures to adapt to climate change have to be developed and will be needed for a long time to come. This issue of *Capacity.org* discusses the capacity of communities to adapt to the effects of climate change. It focuses in particular on those communities considered most vulnerable to climate change impacts, including marginalized smallholders and pastoralists whose livelihoods depend on natural resource bases that are already severely stressed and degraded.

Malla Reddy from India describes what happens to vulnerable groups if little or nothing is done to support them in their efforts to build up resilience against climate change. Thousands of small farmers in the Rayalaseema region are pushed out of agriculture and ultimately slide into extreme poverty as the labour market provides only very limited opportunities for them to engage in wage labour.

Elsewhere, initiatives are being taken to help communities build their resilience to the effects of climate change. Gradually, we are learning

more about the methods to strengthen local adaptation capacity. This issue of *Capacity.org* looks at some of the lessons emerging from these initiatives.

From a community perspective, the use and relevance of scientific insights are still too limited and need to be improved. Ronak Shah, Shaika Rakshi and Peter Goedhart write about the scientific models they worked with in India. These models make projections 30 years into the future, which is a time frame with limited relevance for communities that are facing many other factors with a short-term impact on their resource base, including land rights and increased pressure on that land as a result of population growth.

Community participation

Another problem is that the type of scientific information researchers are interested in differs from what communities need. Samuel Carpenter, Emma Visman, Arame Tall and Dominic Kniveton argue that the most relevant information for farmers is not easily accessible to them, while other information – deemed relevant by researchers – is accessible. What's more, scientific information is difficult to understand for communities and practitioners who do not have the scientific background to interpret the information. Carpenter and colleagues present methods for researchers to engage with communities in a different way

Policies and practices need to differentiate between categories of households within a community depending on how they make a livelihood, and they have to be fine-tuned to the specific needs of these groups. The vulnerability of communities to climate change is not evenly distributed. Lisa Schipper explains that those in a community whose livelihoods depend directly on natural resources are usually more vulnerable than those who make a living in other sectors.

Therefore 'blanket' policies to help communities develop their adaptation capacity may not be equally useful for all members of the community. Different groups need different types of support, tailored to their specific situation. That is why adaptation to climate change cannot be planned entirely by professionals centrally but requires community participation in all stages of the process.

Only through community participation will it be possible to find out who needs what type of support and at which stage. In the guest column, Jacques Somda and Annita Annies argue that the first generation of national adaptation programmes in Africa were largely ineffective because of a lack of community participation.

Heinz Greijn
editor@capacity.org
Editor-in-Chief

CD MONITOR 2
From islands of success to seas of change

EDITORIAL 3
Adapting to climate change
Heinz Greijn

FEATURE 4
Communities responding to climate change
E. Lisa F. Schipper

INTERVIEW 8
The low-carbon development pathway
Angela Churie Kallhauge

POLICY 10
Receding rains in Rayalaseema
Y.V. Malla Reddy

PRACTICE 12
A first in the field
Ronak Shah, Shaika Rakshi and Peter Goedhart

RESEARCH 14
Enhancing resilience through dialogue
Samuel Carpenter, Emma Visman, Arame Tall and Dominic Kniveton

GUEST COLUMN 16
Adaptation programmes flawed
Jacques Somda and Annita Annies

Message from the Editorial Board

Over the last half year the composition of the Editorial Board has changed in many ways. Volker Hauck of ECDPM has left the Board. Volker was one of the founders of *Capacity.org* in April 1999. We thank him for thirteen years of creativity and commitment. Volker has been replaced by Niels Keijzer of ECDPM. Furthermore the Editorial Board was enriched with Kaustuv Bandyopadhyay of the Society for Participatory Research in Asia (PRIA) in India and Sue Soal of the Community Development Resource Association (CDRA) based in South Africa.

Cover photo

People gather to fetch water from a huge well in the village of Natwarghad in Natwarghad in the western Indian state of Gujarat.
Reuters / Amit Dave



E. Lisa F. Schipper
Stockholm Environment Institute, Sweden
Lisa.schipper@sei-international.org

Transformative adaptation

Communities responding to climate change

Most adaptation strategies focus on coping with climate change effects. But adaptation involves much more than simply putting a plaster over a scratch – it requires transformative thinking and change.

The message from scientists is clear: climate change is here and will pose a major challenge in the coming decades. Even substantial measures taken now to reduce greenhouse gas emissions from energy use, industry and other activities cannot reverse the damage from previous years. Indeed, scientists have warned of the dangers that can arise from even a 1° Celsius increase in the average global temperature. Human activity has already irreversibly changed some ecosystems, and further damage is likely. It is not clear exactly what changes the future holds, but predictions generally agree that much of the world will be exposed to higher temperatures, sea-level rise, more frequent and intense natural hazards and changing rainfall patterns. It is therefore necessary to think about how to adjust not only to these specific changes, but to the new uncertainty about our future climate.

The devastating effects of climate change and its estimated costs has pushed climate change adaptation to the forefront as an appealing and tangible way of minimising both the damage and the cost of climate change. Climate change adaptation is the process of adjusting to new conditions, stresses and natural hazards resulting from a changing climate. The main problem is that most of us cannot visualise how to move from adaptation concept to practice, because there are few concrete examples to follow.

We cannot make adjustments and also maintain the lifestyle and behavioural patterns that are contributing to climate change

Many countries are grappling with the question of how to adapt. They are uncertain about what adaptation implies exactly. Does it mean relocating entire communities living along riverbanks, in coastal zones or

mountains? Does it mean building sea-walls as a defence against sea-level rise and storm surges? Or does it mean restructuring national institutions, policies and regulations on disaster risk reduction and natural resource management?

Each of these approaches has financial, social, environmental and political implications, and following several approaches at once is usually financially and practically impossible. Deciding which strategy to select is a major question; how to actually design and implement it is a second major challenge.

Most attempts by governments, non-governmental organisations and development practitioners to identify adaptation options start with an impact assessment. This followed the realisation that climate change was going to have harmful consequences, and that humans and ecosystems would need to adjust to the changes in order to avoid or minimise these consequences.

It has become clear over the past 30 years, however, that the catalyst and solution are complexly related – that is, we cannot make adjustments and also maintain the lifestyle and behavioural patterns that are contributing to climate change. A far deeper change in society is necessary, as will be discussed in detail at the Rio+20 United Nations Conference on Sustainable Development on 20–22 June 2012. This line of thinking, substantiated by research on the risk and vulnerability associated with hazards and disasters, has revealed that adaptation involves much more than simply putting a plaster over a scratch – it requires transformative thinking and change.

Impacts versus vulnerability approach

There has been an ongoing struggle between at least two perspectives on adaptation since the emergence of the first guidelines on impact, vulnerability and adaptation. The tension is between those who see adaptation to be the suite of actions that fill the gap between life-as-usual and life impacted by climate change (for example, building small irrigation systems for a growing population of farmers in Ethiopia to cope with reduced rainfall and water availability), and those who emphasise

actions that address the reasons why people are affected by climate change (for example, by reallocating people with livelihoods in climate-sensitive sectors, such as agriculture, to sectors that are not as sensitive to climate change, such as education).

These approaches have been described as *impacts versus vulnerability*. Previous analyses suggest that international climate change policy is designed around the impacts approach. But they also suggest that a vulnerability approach is more sustainable for developing countries because it aims to invigorate development processes to deal with present and future climate situations.

The vulnerability approach explicitly acknowledges that the current development paradigm is inequitable, environmentally damaging and overly focused on economic growth and infrastructure expansion – in short, unsustainable and unlikely to ever draw people out of poverty. Focusing solely on the looming impact of climate change is to implicitly accept this paradigm, and it betrays an unwillingness to acknowledge the need for transformative action. But transformative action would force us to question the dominant, institutionally ingrained development paradigm. A small but growing community of scholars is now arguing that adaptation must embody this urgent need to rethink existing development approaches.

What does adaptation mean?

Adaptation is a response to past impacts, but it also anticipates future ones. In this sense, adaptation can be a reactive and spontaneous process – a response to past impacts depending on the available capacity (so-called ‘adaptive capacity’). This kind of response is usually considered autonomous because it does not include explicit planning or strategy.

Adaptation can also be strategic and planned – a response to both past and projected impacts. Both autonomous and planned adaptation may require additional outside support. This is why we now talk about adaptation policies, plans and projects, which are supposed to facilitate the move towards adaptation on all levels – from the



Planting trees to prevent sand from drifting in Mauritania

community and regional to the multi-country levels. The goal of the adaptation process itself is to enhance people's resilience to climate change. Resilience is the ability of people to absorb shocks and quickly return to a prior state of well-being after a disturbance.

Originally, theoretical works on adaptation assumed that planned adaptation would be built on pre-existing, autonomous adaptive capacity. But this capacity is not always present. Often it is connected to much broader development questions. For example, it is the difference between improving water storage capacity and access to markets for smallholder farmers in the Himalayas – which could 'buy time' but probably not serve as a permanent solution – versus recognising that the fragile smallholder livelihoods in mountain areas have physical, socio-cultural, economic and political limits to how much climate change they can absorb. They thus need to rethink their livelihood choices rather than simply create additional buffers on their existing strategies.

As a result, decision makers have been unable to assess how much adaptation needs to be planned under given circumstances, nor can they predict to what extent people will be able to adapt on their own. Furthermore, existing capacity is usually only sufficient to enable people to cope with adversity for a limited time. Coping approaches have been shown to undermine opportunities for adaptation in the future, and as such not all coping strategies should

be used as a first step towards adaptation. A typical example is when people sell off assets such as livestock or even portions of their land to overcome a drought that only lasts a season or two, leaving them much worse off and unable to deal with an ongoing or permanent shift towards less precipitation.

Based on the physical impacts research, we now know that not everyone will be affected by climate change at the same rate, frequency or magnitude. Some parts of the world are more likely to be affected than others. Broadly speaking, this includes areas close to the equator, mountainous environments, coastal zones and small islands. This means that not everyone is equally exposed since their geographic locations differ.

Social science research has also taught us that people are not equally sensitive to the impacts of climate change. A wealthy factory owner living in a coastal zone in Thailand is not as likely to experience the impacts of climate change in the same way as a farmer living in the same area. For the factory owner, climate change may mean the end of one business and the need to enter into another type of business, but for an otherwise unskilled farmer, it may mean the end of his livelihood and state of well-being.

Therefore, people are not equally *vulnerable* to climate change, and their adaptive capacity is not equal. Blanket policies designed to help people adapt may assist some but ignore others. Policies that help some might

inadvertently (or even advertently) expose others even more to the impacts of climate change. This adds another dimension of complexity to planning adaptation.

Unplanned adaptation

Autonomous adaptation usually brings to mind adaptation at the village level. People are generally not passive victims without incentive to improve their lives. To the extent that they are able, people take action to reduce their exposure and sensitivity to natural hazards. But faced with increasingly adverse climate conditions, many rural people's livelihoods are being directly threatened, because many rural dwellers depend on agriculture for their immediate survival.

Many creative responses to climate variability and change have been documented around the world, but these responses are rarely designed to have a long-term positive impact. Most of these responses focus on agriculture, which in many places is a sector already experiencing severe climate variability problems, high competition, small plot sizes, degraded soils and polluted water. And climate change projections are only making their future look bleaker.

At the local level, people can be highly sensitive to other changes around them over which they have little or no power, including policies on land tenure, resource access and markets. Responses to climate variability, change and stress often depend on external

opportunities, conditions or institutions that may be highly sensitive or temporary.

One of the alternative options to climate-sensitive traditional crops in El Salvador (maize and beans), for example, is to use locally grown cashew trees to produce jams and package and sell the nuts. But this requires the capacity to generate the products, a permanent link to the market (through middle-men or directly with the right networks), and continuous technical and financial support to the producers to stay abreast of market demand. Without this capacity, cashew becomes a less attractive alternative and eventually will not offer more security than traditional crops, which can at least supply household food needs.

The key to transitioning from a survival mode to adaptation lies in reducing people's vulnerability

Moving from livelihood coping strategies based on risk aversion to actually adjusting to a changed climate requires the right enabling environment to allow responses to take root and develop sustainably. National policies and institutions may have an important impact on livelihood choices at the local level, depending on how these are devolved down from the national level. At the same time, if local needs and concerns are communicated upwards, they can inform national agenda-setting, which can in turn ensure that local priorities are reflected in broader decision making.

If local concerns are ignored, or if no channel is available to enable dissemination to different levels, national-level policies can be inconsistent with local needs, and even drive vulnerability to climate variability. National policies often do not take into account or build on existing capacity to respond. Thus, even if there are responses at a local level, they may

influence the real cause of vulnerability. This consequently traps people in a vicious cycle of having to cope without helping them onto the path of adaptation.

The key to transitioning from a survival mode to adaptation lies in reducing people's vulnerability. Empirical evidence from many places around the world suggests that the underlying causes of vulnerability – such as climate-related stress, hazards and change – need to be addressed in order to expedite an adaptation process. Vulnerability is closely linked with development, and is influenced by many factors, some of which cannot be affected by community-level actions. Nor will all the actions taken on a local level to adjust to new situations necessarily work in existing policy and market contexts.

Crop choice, for example, is closely linked to climatic factors such as precipitation and temperature, but in the case of cash crops the market, which is swayed by people's dietary preferences, plays a key role. Climatic conditions may be a consideration in crop selection, but crops also have to have a market value and be culturally acceptable. The ability to transport crops to the market is key to accessing cash income, but transport depends on the existence and conditions of roads.

The autonomous adaptation process is therefore not entirely unplanned, and certainly not unconscious. People explicitly decide what to prioritise, and this shows that climate change is not necessarily the deciding factor regarding people's well-being. It also shows that development processes which are not sensitive to climate change lie at the heart of both spontaneous and planned adaptation.

Planned adaptation

Planned adaptation is often associated with national-level policy making because adaptation as a policy objective originates in the United Nations Framework Convention on Climate Change. Specifically, planned adaptation is about strategically reducing or avoiding the impact of climate change, either

as a reaction to what is being experienced, or in anticipation of what is expected to come.

Planned adaptation, however, cannot stand apart from other policies, plans, programmes and institutions that deal with climate-relevant issues such as agriculture, human security or environmental protection. If such initiatives are not aligned with climate change adaptation objectives, they instead risk increasing exposure and sensitivity to climate change.

Prioritising intensive agriculture that relies heavily on irrigation, for example, may provide high returns in the short run, even in countries where water resources will be threatened by climate change. But in the medium to long term, when water resources become scarce and unreliable, this choice will have been a wasted investment. It will leave people demanding new alternatives as they will be unable to rely on previous arrangements, and will lack the skills or means to adopt new ways.

Because sectoral policies can influence both vulnerability and vulnerability reduction, it is important to see a country's entire development model from a wider perspective. Aspects likely to make people more vulnerable need to be identified, as do those aspects with the greatest potential to enhance resilience to climate change. And policies need to simultaneously ensure that development objectives aimed at improving well-being, education, health and security are not compromised in the process.

Many people are not well-adjusted to current climate variability, so the adaptation process must not only enable people to absorb shocks (allow people to become resilient) but also move beyond existing states of underdevelopment. The most effective way of meeting development objectives without increasing people's vulnerability or compromising their well-being is by integrating climate change policies into core national development plans. This type of integration is known as mainstreaming.

Focusing on planned adaptation at the national level, however, is insufficient to ensure that people at the community level move towards adaptation. Frequently, national-level attempts to formalise adaptation policy do not integrate parallel local processes for addressing risk and development sufficiently. For instance, most countries have separate government bodies for addressing disasters and climate change.

Reducing the risk of disaster should focus on the same actions as adaptation to climate change, namely preparation and prevention. Yet, disaster units typically concentrate on cleaning up after major floods, droughts or storms. There is evidence in countries such as Nicaragua and Ethiopia that disaster impact measures are making it even more difficult to adapt to climate change because they resettle people to locations that introduce new hazards or complicate life in other ways, or set up food distribution systems that undermine local food markets.

What is community-based adaptation?

Community-based adaptation (CBA) is an approach to adaptation that focuses on the local, 'community' level. Although many communities are used to dealing with climate variability, their capacity to deal with climate change is typically much more limited, and they need to explicitly plan their responses to new or more intense climate conditions. Most of the emphasis of community-based efforts is on building additional adaptive capacity. CBA draws on lessons from years of work on community-based disaster risk management and community-based natural resource management.

But CBA is not only a way to describe adaptation activities that take place in a physical community – it has also become the focus of a virtual community of practice and scholarship. Annual CBA conferences, organised by the Bangladesh Centre for Advanced Studies, International Institute for Environment and Development and other partners gather practitioners, funders, researchers and representatives from international agencies to discuss the rapidly multiplying case studies of CBA.

The focus is on methods and tools for CBA, the limits and opportunities of a community focus, approaches to measuring the impact of projects, among other topics that benefit from the collaboration between professionals in science, policy and practice.

CBA is without question the most advanced knowledge area on adaptation, due to the rich mix of actors and the multiple examples that have been studied.



A community focus can help make a direct connection between addressing development needs and enhancing adaptive capacity. For this reason, the local level should be considered an important entry point for adaptation. Nevertheless, adaptation, disaster risk reduction and development cannot be planned separately as they are inherently connected.

Local-level and community adaptation

Local-level adaptation, and particularly community-based adaptation, is an area of growing interest, in part because the benefits of adaptation will most obviously manifest themselves on the local level. Adaptation at the local level has clear links with development, as many of the actions that are considered necessary for households and individuals to adapt to climate change are also high on the sustainable development agenda.

Community-based adaptation is defined as any adaptation project that takes place in a community, and which is based on its local adaptive capacity. Although many communities are used to dealing with climate variability, their capacity to deal with climate change is typically much more limited, and they need to explicitly plan their responses to new or more intense climate conditions. Most of the emphasis of community-based efforts is on building additional adaptive capacity.

Studies of community-level responses to climate variability have shown that although these responses have taken place within a community, they have not been occurring in isolation from the broader policy context or the community's market environment. Not only do communities depend on the wider political, institutional and financial context, but they are also influenced by other communities and cities. For example, traditional methods of diversifying income and providing insurance for difficult times such as seasonal migration depend on labour demands elsewhere. In this case, the availability of jobs outside the community is the enabling

condition for migration to be a viable response to climate variability and change.

The concept of 'community' is often used to refer to a homogenous collection of people whose shared interests, resources or beliefs create a common identity. In reality, communities can be composed of many different groups, whose interests may conflict when shared resources are under pressure. They may differ ethnically or religiously and call the same place home, but they may also have different functions within that society.

Community-based adaptation, therefore, has to consider two important dimensions: the link between the community and its wider context; and the diversity of the common unit. A successful response to drought by one group in a community may increase another group's vulnerability to it. Take one of the various communities in the Himalayas where water is scarce, for example. One of these communities may decide to favour agricultural water needs over household water needs (such as water storage and water diversion). This decision will benefit some people because it meets their income or subsistence requirements, while others who are not farmers will have less water available for drinking or cooking.

Broader policy and market processes have different implications for different members of a community because everyone's assets are distributed differently. Those with more physical assets may not need a strong social network to fall back on when crops fail. This mosaic of conditions, assets and opportunities determines a community's collective adaptive capacity.

Looking at this collective capacity will not give a good picture of how to build adaptive capacity, however, which comes down to individuals and households. This is why adaptation will vary from household to household and ultimately from community to community. Consequently, strategies that successfully reduce one community's vulnerability to climate variability and change may not work at all in another, even if the

communities appear similar on the surface.

So far, community-based adaptation has been an important platform for explaining the strong links between adaptation and development. But successful 'community-based' adaptation may not function without the internal dynamics and external enabling conditions that are unique to each community. Imposing adaptation plans on the local level that are designed top-down may exclude some or all members of a community, providing little benefit or, worse, engendering conditions that increase vulnerability to climate change. Factors that enable adaptation in one village could be the source of a neighbouring village's vulnerability.

Although community-based adaptation has received a lot of attention, we should not forget the broader context of reducing vulnerability. Adaptation restricted to the community level is unlikely to make significant headway in strengthening people's resilience in the long run as long as the 'right' type of development approaches are not in place.

Adaptation therefore needs to be considered on multiple levels simultaneously: in all sectors, from public works to health, in addition to the more obvious sectors of urban planning, water and agriculture. National adaptation planners must also be aware of the local dynamics at play in order to help align the enabling environment with the capacity that is already available in the communities.

From a practical perspective, this implies enhanced dialogue between actors on different levels. It means recognizing that transformation is necessary, as well as time and effort to rethink development trajectories in order for the transformation to take place. And it also means accepting that patience is needed for learning and shifts in attitudes.

Adaptation can only happen at the local level if people matter to governments, as is the case for many other development priorities. The bottom line is that if we really take the lessons of sustainable development to heart and apply them in our policies, plans and projects as well as our attitudes and education systems, we will make great headway in reducing people's vulnerability to climate change, while also making gains in human well-being and the health of our ecosystems. <

About the author

Lisa Schipper is senior scientist at the Stockholm Environment Institute and leads a research group on vulnerability and adaptation. Her research focuses on the links between adaptation and development, particularly local-level adaptation, methods and tools for adaptation and vulnerability assessment. Her fieldwork has been in Latin America, East Africa, South and Southeast Asia. Schipper is currently lead author in the Intergovernmental Panel on Climate Change's Working Group II.

The low-carbon development pathway



Angela Churie Kallhaug
Senior policy advisor
Swedish Energy Agency

Angela Churie Kallhaug, senior policy advisor at the Swedish Energy Agency represents Sweden at high-level climate change negotiations and has her roots in a pastoralist community in Kenya. *Capacity.org* talked to her about adaptation, mitigation and development.

The Climate Change Summit held in Durban, South Africa in December 2011 did not yield the consensus required for a determined response to the biggest threats to the world's ecological system. It is a dubious comfort that the delegates at least agreed to acknowledge explicitly that the mitigation efforts currently promised are insufficient to prevent the world from warming up by less than 2° Celsius, which is broadly recognized as the safety limit. Angela Churie Kallhaug was a member of the Swedish delegation in Durban. In this interview with *Capacity.org* she reflects on Durban and looks ahead to Rio +20 and beyond.

To many Durban was a disappointment. Are our leaders throwing in the towel, and what can we expect from Rio +20?

Climate change as such is not the agenda at Rio +20, but there are a number of related issues such as green growth, a green economy and the Sustainable Development Goals (SDGs) which mark the end of the MDG cycle.

The SDGs may give us a sense of direction on how to achieve a green economy in the long term, which includes climate change resilience and low-carbon growth. In terms of what came out of Durban, to many people it was a disappointment, but one has to look at where the world is right now in terms of the economic crisis and the changing geopolitical situation, as well as at all the other work that was going on in Durban.

I do not think that Durban was a failure but rather one step forward. We agreed on the continuation of the Kyoto protocol and also to work from the same pallet in the sense that an ad-hoc group was set up in Durban to work towards a new agreement with the involvement of all countries. That's a big step forward compared to the previous situation, which was dominated by a

dichotomy of developed versus developing countries. It has now been acknowledged that all countries need to take concerted action to address climate change.

There was also a lot of progress with regard to the many other issues related to the present implementation of the Convention. For example, on adaptation. We managed to make significant progress on further work relating to the Cancun Adaptation Framework. We defined the modalities for a process to help the least developed countries in their efforts to plan for adaptation and also agreed on further work under the work programme on loss and damage associated with the impacts of climate change. There are many other areas I could mention, and it's important to acknowledge that governments are serious about climate change and are working on all fronts. I therefore don't think that leaders are throwing in the towel. We should nonetheless be cognisant of the fact that the economic crisis and the changing geopolitical situation are evident in the dynamics of the climate change process, which requires that countries start framing and approaching the problem differently and thus may make things a bit more complicated.

This issue of *Capacity.org* focuses on the capacity of communities to adapt to the effects of climate change. If you were to look at a community from the perspective of practitioners working with communities, what would be important for them to consider when helping communities to develop adaptation strategies?

I think the first question that needs to be addressed is what implications climate change has for that community. You also need to understand the community situation in terms of their circumstances and ability to respond. Do they have the necessary information? Do they have the necessary capacities and resources?

And you also need to discuss options with them. If a farmer is unlikely to be able to grow maize 10 years from now, he may think about other viable options, such as growing another, less climate-sensitive crop or

consider another trade. You also have to look at how these alternatives fit into their lifestyles.

What we learned is that the type of scientific information generated on climate change is only marginally relevant to farming communities.

Yes, the other day I was talking to a colleague from the Gambia who said that very often the kind of information reaching farmers is not always in the form that they can use to develop long-term strategies. But you do not necessarily need 100% certainty on potential impacts to start taking measures to build resilience.

We also found that although small farmers experience the effects of climate change, they are more concerned about other issues, including land rights, finding better-paid jobs in cities and increased pressure on the land as a result of population growth. One farmer was quoted as saying 'Climate change stands fifth on our list of priorities.' Do you recognise that sentiment, and what does it mean for national adaptation programmes?

My father came from a community in Kenya that was predominantly pastoral. A pattern of climate variability has emerged there over several recent generations, which has gone hand in hand with changes in farming practices. These days, people combine

'The imperative for Africa is to follow a development pathway that promotes:

- poverty reduction, economic growth and enhancement of human well-being;
- increased resilience to the physical impacts of climate change; and
- mitigation or avoidance of potential increases in greenhouse gas emissions that will arise from future development.

A low-carbon development pathway offers an alternative route to meeting these objectives.'

Youba Sokona at the First Conference on Climate Change and Development in Africa, October 2011



Images: iStockphoto.com - Impact Photos / Alamy

Climate change has altered farming practices. Masai working in the cornfields in Kenya.

pastoralism with sedentary farming. Frequent droughts and a changing land tenure system made it increasingly difficult to rely on livestock and maintain the old lifestyle. As a result these communities are now diversifying their livelihoods, and even their diet has changed a lot.

Climate change was not the only factor, however. In fact, most people were forced to become sedentary because of changes in land tenure. The changes that have taken place from one generation to the next are even more striking. My father grew up in a traditional environment, whereas I grew up in an urban setting. Now I do not think that it's climate change only that has changed our lifestyle. In my view education has had a bigger impact on changing lifestyles.

Climate change could be a wake-up call for governments. It underlines the urgency of improving prospects for people's development, through the provision of different services – education and health care, for example – which increase people's

options, of improving the infrastructure in communities where people are starting to settle, whether they are planned or unplanned settlements. The important thing is to create an enabling environment for these communities to improve their resilience through poverty alleviation.

From an individual, community and maybe even a country perspective, the most effective way of reducing vulnerability seems to be moving away from economic activities such as agriculture and pastoralism. However, from a global perspective, one wonders how we are going to feed a rapidly growing world population – projected to reach nine billion people in 2050 – if we move away from agriculture. Is there a conflict between the adaptation agenda and the global food security agenda?

Adaptation does not necessarily mean moving out of agriculture. It can also refer to improving agriculture's ability to prevail

in a climate-stressed situation, by introducing new technologies, management practices and seed types, or by equipping farmers with new farming skills.

The idea is not to move poor farmers out of agriculture in my opinion, but to improve the prospects of the agricultural sector to be able to maintain productivity in a sustainable and climate resilient manner, while helping the poor out of poverty. How to feed a growing world population by 2050 is a challenge we are certainly going to face. But policies and measures designed to address this challenge need to take into account that climate change could increase the risks to food security.

How, then, do adaptation policies distinguish themselves from general poverty reduction strategies?

I believe that policies aimed at adaptation in the long term are not necessarily incongruent with poverty reduction policies. In other words, one does not exclude the other.

Policies aimed at adapting to climate change introduce a long-term perspective on poverty reduction. In this context I would like to highlight the work Youba Sokona (see box) has done with his team at the African Climate Policy Centre in Addis Ababa on climate resilient and low-carbon development in Africa. A climate-resilient, low-carbon economy is one that enables people to continue developing while simultaneously keeping emissions in check and managing the risks of climate change. It also enables people to build long-term resilience in order to reduce vulnerability – not only to climate change but also to other risks.

If a country faces decreased rainfall, for example, this will also cause the generation of hydropower to drop. Often a government's immediate reaction is to invest in thermal electricity based on oil or other fossil fuels, which increases emissions. Alternatively it may build a hydro dam, which may make sense from an economic point of view and even a mitigation point of view, but not from a vulnerability perspective.

Once you start looking at climate-related problems from a system perspective, in terms of resilience and low carbon in other words, a third option presents itself in the form of solutions based on solar energy, wind energy, energy from biomass or just increased efficiency of the transmission system. Choosing a low-carbon and climate-resilient development approach to development would thus signify a major shift because now governments tend to focus on the near term, that is on 5, 10 or 15 years into the future instead of 30 to 50 years into the future. <

Resources

- First Conference on Climate Change and Development in Africa www.uneca.org/acpc/ccda/ccda1/documents.html

Interview by Heinz Greijn

Receding rains in Rayalaseema



Y.V. Malla Reddy
Director, AF Ecology Centre, Anantapur, India
ymallareddy@yahoo.co.in

With 13 million inhabitants, the Rayalaseema region in South India has always been a drought-prone area. But the region has experienced an unprecedented frequency of droughts in the last 20 years, which has traumatically affected the lives of millions of people. The intervals between rainfall events have increased, as has rain outside the crop season, whereas the volume of rainfall has not increased.

The number of rainy days per year has decreased from about 35 in the 1980s to about 25 in the 2000s. And yet the intensity of rainfall has increased. The duration of dry spells and their frequency have also increased in the rainy season.

The Regional Agricultural Research Station at Anantapur analysed the rainfall data and traced a clear pattern of less rain in the month of September. September rains, however, are crucial for rainfed crops (groundnut, millets and pulses) as they will be in the grain-forming stage. Farmers are experiencing an increase in temperature variability. They say that the gap between day temperatures and night temperatures is widening. The summer is setting in as early as in February. The temperature fluctuations during the day are on the increase, as are sudden rises in temperature in the evenings.

Impact on livelihoods

These changes in rainfall and temperature have dramatically impacted crop production, cattle, livestock and other rural livelihoods in this already fragile, arid region. The major rainfed crop in the region is groundnut, and other crops are sorghum, pearl millet, pigeon pea, cowpea and chickpea.

The duration of these crops ranges from 100 to 135 days. They need an even distribution of rainfall of about 30 mm at intervals of about 20 days during the crop period. The absence of a single shower from

Over the last three decades, the people of the Rayalaseema region have witnessed a changing climate that has stretched their ability to adapt beyond limits.

the norm can result in a dry spell lasting over 30 days, which can cause the whole crop to wither away. Long dry spells such as these have been on the increase in the past 20 years. An even distribution of rainfall to meet crop moisture needs is essential for these rainfed crops – more so than the volume of the rainfall.

Agricultural scientists are also saying that temperature variability is affecting crop production. In two of the years between 2007 and 2012, unusually high temperatures in September and October ruined crops across the region. They affected pod formation in the groundnut crop, for example, which is grown in 2 million ha in the region.

So whereas farmers used to suffer from droughts as a result of rain failure, they now have the additional burden of droughts caused by fluctuating temperatures. This explains the dismal record of only two good crop years since 1998, as reported by the District Administration of Anantapur District in February 2012.

The aggravated crisis in rainfed farming has caused people – desperate to survive – to over-exploit groundwater resources. This is depleting the groundwater table and drying up the bore wells at an unprecedented rate. As a result, crops – and even fruit trees such as sweet lime, citrus and pomegranate – are wilting. These are high-value crops using

deep bore wells, which farmers had invested heavily in. Now these trees are drying up, plunging farmers into deeper debt.

The increased intervals between rainfall events have affected the collection of surface water in traditional surface water bodies. Surface water bodies used to fill up at least once every three years. Now they are filling up only once every six years or so. This is also why the groundwater is not being adequately replenished. Traditional water bodies used to provide drinking water for cattle and livestock. Now they are often dried up, forcing the cattle to travel as far as 10 km to 15 km to quench their thirst.

Cattle and livestock used to be components of many farming systems in the region. They were once farmers' main coping mechanism against droughts. The crops farmers grow mostly serve dual purposes, as grain and fodder. With crops failing more often, however, fodder has become scarce. The traditional pastures are completely barren now, without a blade of grass. To make matters worse, the severe agricultural crises of recent decades have forced farmers to sell their cattle and livestock to survive or cope with droughts.

Biodiversity has declined in the region. The increased intensity of rainfall has also increased soil erosion, and the biomass in the soil (soil organic carbon) has fallen drastically. This degradation process has been also aided

The Rayalaseema region

The Rayalaseema region is located in the heart of Deccan plateau in South India. It is an arid and semi-arid area that has been chronically drought-prone for centuries. This underdeveloped region has the dubious distinction of suffering from the twin problems of drought and poverty.

The Rayalaseema region is the second driest region in India after Rajasthan. It has four districts: Anantapur, Cuddapah, Chittoor and Kurnool. Its geographical area is approximately 6.729 million ha and is inhabited by 13 million people. The cultivated area is 2.416 million ha, of which only 0.557 million ha, or 23% of the area, is irrigated with underground water and some river water. It has 1.49 million ha. (22%) of forest land mostly without tree cover.

The groundwater and river water irrigation are not reliable in this region. There is very little industry there, and livelihoods depend mostly on rainfed farming, which is prone for frequent drought. The annual average rainfall in this region ranges from about 350 mm to about 650 mm from both the south-west monsoon (from June to September) and north-east monsoon (from October and November). The region consists predominantly (85%) of small and marginal farmers, mostly from poor and marginalized communities.

Sixty-four of the years from 1876 to 1975 received less rainfall than normal and experienced more than 50 drought years, which caused severe famines. In 1876, the region experienced a severe famine that apparently caused almost 40% of the population to die of hunger.



Prices for mulberry silk – the region’s main crop grown with bore well irrigation in the 1990s – also crashed following the import of Chinese silk. The liberalisation of import policies did not take into consideration the adverse impact it would have on Indian farmers.

Farmers have had to invest substantially more in their crops since fertilizer subsidies were cut. Indeed, input costs have quadrupled. There were no remunerative prices for agricultural produce, so farmers experienced ‘price droughts’ even during good crop years. The Green Revolution paradigm of agriculture – also termed High External Input Destructive Agriculture (HEIDA) – has favoured rich farmers with irrigation facilities and rendered the multitude of small and marginal farmers poverty-stricken and their farms non-viable.

Measures that support small farmers against the effects of climate change are urgently required and should:

- Introduce protective irrigation for rainfed crops during dry spells by adopting conjunctive water use to mitigate drought and adapt to climate change.
- Promote rainfed horticulture and agro-forestry in 33% of cultivated areas. For example, tree crops are more drought tolerant, and they improve the environment and mitigate climate change.
- Improve fodder availability through afforestation and common land development. For example, vegetation improves environmental endowment, combats desertification and mitigates climate change.
- Promote an integrated farming system for each farmer. All farmers growing rainfed crops should own at least 100 fruit trees, two or three cows and ten sheep in order to supplement their annual crops and increase livelihood security.
- Promote mixed farming and inter-cropping with millets and pulses, and ensure food and nutritional security.
- Reduce food miles: provide locally grown food in the Integrated Child Development System scheme, the Midday Meals Programme and the Public Distribution System.
- Shift from HEIDA to the more climate-smart LEISA, Low External Input Sustainable Agriculture.
- Provide remunerative prices and promote the processing and value-added agri-produce.
- Provide health security to all villagers.
- Provide educational support to all rural students so that they can seek other employment.

There is an urgent need – better late than never – to stabilize the agricultural system, the ecology, the environment and the rural livelihoods of the people in the Rayalaseema region. These measures for climate adaptation and secure agriculture can reverse the human displacement and suffering that has occurred there since the early 1990s. <

by decades of mono-cropping, particularly of groundnut, which does not leave any crop residue in the soil. Increased soil erosion has also increased the siltation of local surface water bodies. The land is more exposed to sun, while wind and rain affects the flora and fauna as well as the biotic life in the soil.

These changes have severely affected the farming system and pushed farmers into despair. The impact has been even more telling on vulnerable small and marginal farmers. As a result, the region is experiencing stormy social upheaval. The rainfed farmers – the small ones in particular – are giving up farming and resorting to wage employment under the government-run employment programmes. Others are

migrating to cities to work as casual labour in the construction industry or as office gatekeepers or security guards – and their numbers have risen to unprecedented numbers. The upshot is a large-scale occupational swing from farming to labour.

Policy change needed

Little has been done to support farmers in their efforts to adapt to climate change. In fact the liberalisation, privatisation and globalisation policies of the early 1990s in India have led to agricultural crises and deepened rural poverty. The import of palm oil from Malaysia caused the groundnut oil prices to crash, and groundnut was a major crop in the Rayalaseema region.



Ronak Shah

Programme coordinator at Seva Mandir, India

Shaika Rakshi

Programme officer climate change at Delhi office, ICCO, the Interchurch Organization for Development Cooperation, India

Peter Goedhart

Programme specialist adaptation at global office, ICCO, the Interchurch Organization for Development Cooperation, the Netherlands
peter.goedhart@icco.nl

Bringing climate models to Indian communities

A first in the field

Seva Mandir, a non-governmental voluntary organisation working in Rajasthan, India joined hands with ICCO and scientists from the Dutch institute Alterra to find out what climate change impacts lie in store for the region.

Seva Mandir is an experienced voluntary organisation that for 42 years has supported the development of the poor in a tribal and drought-prone area of the state of Rajasthan in western India. Nowadays it reaches out and works closely with 70,000 households in over 600 villages in the Udaipur and Rajsamand districts of South Rajasthan. The organisation's main priorities are livelihood (natural resource management and income generation), capabilities (empowerment of women, early childcare, and health and education) and institutions (village committees and people's management).

The vast majority of this region's households consist of self-employed farmers who run small and fragmented farms. Most of them are producers-consumers with poor access to markets. Women are relatively autonomous in this tribal society, and yet they play a minimal role in the decision-making process. The area is poor in natural resources and the climate is harsh – semi-arid with highly erratic rainfall and a drought cycle of three to four years. People here therefore have a history of mapping variations in weather, withstanding impacts and identifying coping and adaptation strategies.

The inhabitants of this region have responded to the harsh climate conditions by introducing afforestation on common and private lands, integrated watershed treatment and rainwater harvesting. They have also increased water-use efficiency and reduced the risk to their livelihoods by diversifying agriculture and creating community seed banks. When there is abundant rain in a given year, however, farmers prefer to grow high-yielding varieties even though they have knowledge about drought-resistant and low input local varieties.

Farmers have experienced new changes in recent decades, such as warmer and shorter winters, earlier and longer summers, more erratic rainfall patterns and prolonged cloudy

periods. These changes have had a direct impact on agriculture, such as delayed sowing times, less moisture during seed germination, unseasonal flowering of trees, reduction in yield of both rain and winter crops, and regional pest infestation. Moreover, they could potentially increase vulnerability, deepen food and nutrition insecurity, exacerbate an already fragile natural resource basis and cause further marginalisation for these households in the long term.

Seva Mandir is trying to assist these communities to address the challenges and withstand climate change through a process of community-based adaptation. The framework adopted by the organisation is based on a concept that aims to localise climate change, prepare for climate risks, encourage adaptive decision making and address the drivers of vulnerability.

Do these farmers have sufficient experience and knowledge to react effectively to the increasingly pronounced impact of climate change? Can they withstand further climate change? And what adaptive strategy needs to be developed and hence what initiatives need to be taken to make local development climate proof?

Generating climate projections

One of the main priorities was to assess the expected impact of climate change on local weather. Scientific global climate models (GCMs) that provide information for large areas are available for this purpose. ICCO and Seva Mandir decided to use a method that downscaled these GCMs to smaller areas (in this case Seva Mandir's working area) to get more specific and adequate information. This method uses historical data and satellite observation, for example. Reliable meteorological data over a longer period is needed for it to be effective, particularly on precipitation and temperature patterns.

Seva Mandir obtained meteorological data spanning over 25 years from the Maharana Pratap University of Agriculture and Technology in Udaipur. Rainfall data from 20 stations in the area were collected from the state of Rajasthan's irrigation department. All data was provided to the Alterra scientists, who used it as input in the downscaled scientific regional climate models.

The scientists used different emission and development scenarios in their calculations. The outcome was an accurate assessment of weather trends in recent decades and a set of clear graphics indicating the expected changes in annual temperature, annual rainfall and extreme events.

The scientists reached the following overall conclusions regarding climate projections in Seva Mandir's working area:

- A likely rise in temperature of one to two degrees Celsius between 2040 and 2080 (though the magnitude of this increase depends on the emission scenario).
- Continued heavy local showers at prolonged intervals.
- An increase of extreme variations of precipitation until 2040.
- A decrease of extreme events in the long run (after 2040), but a slight increase in annual precipitation levels.
- More rainfall as a result of longer monsoons.

Sharing results, right mindset for the future

The results of the climate projections were shared with the inhabitants during two rounds of meetings in five representative villages. The number of families living in each village ranges from 180–400. All five villages – Gadunia, Dhala, Som, Nichala Talab and Chhali – are rural. The families of the first three depend on agriculture for their livelihoods, while the families of Nichala Talab and Chhali rely more on labour supplied outside their villages.

Alterra

Alterra is a research institute that is part of the Wageningen University and Research Centre in the Netherlands. Alterra focuses on a multitude of disciplines related to the sustainable use of our living environment and the green world around us, such as flora and fauna, soil, water, the environment, geo-information and remote sensing, landscape and spatial planning, and man and society. For more information on Alterra, visit www.alterra.wur.nl/UK/

Seva Mandir

Seva Mandir, an Indian non-profit organisation based in Udaipur, South Rajasthan, was established in 1968 by pioneering educationalist Mohan Singh Mehta. The organisation's mission is to work for development of rural and predominantly tribal communities of the region. Seva Mandir's work aims to bring together and organise fragmented communities by means of a wide variety of interventions across diverse sectors. It not only addresses people's immediate development needs but also empowers them to become conscious agents of their own destiny. Visit www.sevamandir.org/ for more information on Seva Mandir. www.sevanmandir.org

Each village was visited at least twice for this study. During the first round of visits, a comparison was made between what farmers had experienced so far in terms of changing rainfall and temperature patterns and the scientific data obtained from the local university. What proved to be very helpful about the process was that the scientific assessment of past trends confirmed farmers' experiences of the changes in climate.

Overall, the projections for the area did not come as a big surprise for the farmers, even though the projected long-term increase in yearly precipitation contradicted the droughts these farmers had recently experienced. Their experiences did not coincide with the prediction of increased cloud development during the end of monsoon either. The dialogue on the results of the climate models helped to build awareness and create the right mindset among the farmers for the formulation of appropriate community-based adaptation strategies.

In between the two visits, discussions were held with scientists, government officials and policy makers. The meetings aimed to obtain views on the results of the models, share farmers' experiences and learn about adaptation initiatives in the region. During the second round of meetings potential adaptation measures were shared and discussed. The following suggestions were put forward by the different villagers:

- **Homeyards:** Introduce biodiversity, select less weather-sensitive varieties of fruit trees and vegetables, keep goats, improve house isolation, harvest water from roofs, and manure collection.
- **Agriculture:** Develop a defensive strategy by means of experiments and innovations such as crop rotation; mixed cropping and resilient crops; shorter duration crops; more reliable winter crops; more organic fertilizer and better pest management; weather predictions and seasonal forecasts; and agro-advisories.
- **Forest and watershed:** Combine conservation and effective use of products;



People caught in a dust storm in India's desert state of Rajasthan

fruit collection and herd management, and efficient use of labour; better protection of wells; more water storage; combine water storage with fishing; forest with drought-resistance trees; vegetation on slope to check erosion.

All the adaptation measures built on the initiatives that farmers had taken previously to cope with the erratic climate and the changes they experienced. In other words, the adaptation strategies involved fine-tuning and adjusting existing community-based adaptation practices rather than developing a set of very new activities.

How important is climate change actually to the communities?

The importance of climate change compared to other drivers of change directly linked to agricultural production was also discussed during the village meetings on climate projections. The villagers clearly indicated that they are more concerned about issues such as land rights, population growth (and the resulting pressure on land), access to markets and changing power relations between the poor and the rich than they are about climate change.

The line of reasoning is that the more vulnerable a community is with respect to food, fodder and water security, education, health and overall dignity, the more difficult it will be to get it to prepare for long-term adaptation to climate change. 'Climate change,' as one of the farmers said, 'is fifth on our list of priorities.'

Incorporating community-based adaptation within development programmes that pay ample attention to other development factors seems to be a much better way to make development climate proof than to set up separate adaptation programmes.

The assessment of weather trends in recent decades and the use of climate models have helped to better understand and raise awareness about the local effects of climate change and about the need for adaptation in the future. The projections from the downscaled models were of limited use for planning, however, mainly because of their time scale of 30 years. Accurate scientific tools that can predict seasonal and yearly weather forecasts and make 10-year projections would clearly have more added value. <

The FairClimateFund

The FairClimateFund, part of ICCO's climate programme, helps individuals, companies and not-for-profit organizations to scan, reduce and compensate their CO₂ emissions. The projects that compensate emissions are sustainable, reliable and benefit poor families in developing countries. FairClimateFund helps you save money, improve the climate and support families in developing countries! That's three birds with one stone! Read more about FairClimateFund at www.fairclimatefund.nl/en/

Enhancing resilience through dialogue

Samuel Carpenter

Programme officer
Humanitarian Futures Programme, King's College
London, United Kingdom
samuel.carpenter@kcl.ac.uk

Emma Visman

Futures group manager
Humanitarian Futures Programme, King's College
London, United Kingdom
emma.l.visman@kcl.ac.uk

Arame Tall

Associate
Red Cross/Red Crescent Climate Centre, Dakar, Senegal
arametall@gmail.com

Dominic Kniveton

Professor of climate science and society
University of Sussex, United Kingdom
d.r.kniveton@sussex.ac.uk

For humanitarian agencies and communities to adapt their behaviour in response to climate change they need to know exactly what they are adapting to. However, sharing knowledge on climate change is hampered by major barriers between weather and climate scientists, on the one hand, and vulnerable communities, policy makers, and humanitarian and development organizations, on the other.

One barrier concerns the type of media used for disseminating climate information. Currently, data from national meteorological agencies is largely disseminated through channels which some rural communities do not have ready access to, such as the internet, TV and newspapers. Information provided through these channels is often compressed into a misleadingly definitive form, masking uncertainties as to the level of rainfall within a seasonal forecast, for example. Even where communities can receive the information, they often do not have access to the expertise necessary to support its appropriate use.

A second barrier concerns the type of information. The objectives, terminology, geographic focus and time frames considered relevant by scientists do not correspond with the information needs of communities. Climate scientists are concerned about the inappropriate use of their research, while users are hindered by the types of scientific information available.

Seasonal forecasts of rainfall totals are available throughout sub-Saharan Africa, for example. But the forecasts often of most use to

Communities and supporting agencies often do not understand 'the language' of weather and climate science. Innovative methods have been developed to overcome this communication gap.

farmers are those that provide information on the start of the rains, dry spells within the rainy season and the length of the rainy season; such information is not routinely produced.

Addressing these concerns and promoting adaptation at the community level requires scientists to better understand users' climate information needs and the formats and channels through which they can best address these needs. It also requires agencies that support communities to be willing to invest in developing the 'scientific literacy' required to understand and apply emerging scientific learning relevant to future vulnerability.

For users to access, understand and act on scientific research pertaining to future vulnerabilities, there is a need for a practical dialogue between scientists and the users of science. Only through such a sustained dialogue will users know what questions to ask of emerging science and scientists be able to understand how the data and knowledge they generate can better inform humanitarian and development decision-making processes. Two ongoing pilot exchanges in Kenya and Senegal serve as a practical example for enhancing resilience through dialogue between the providers and users of science.

Pilot exchanges in Kenya and Senegal

Since 2009, the Humanitarian Futures Programme, based at King's College London, has supported an exchange between climate scientists from the UK Met Office and the universities of London, Liverpool, Oxford and Sussex, and policy makers from international NGOs like CAFOD, Christian Aid and Oxfam GB, as well as the Senegalese Red Cross.

In both Kenya and Senegal over three quarters of the population work in rainfed agriculture and are thus highly vulnerable to climate shocks. In Mbeere District, Kenya, the population has suffered from inadequate rainfall in recent years, leading to a succession of poor harvests and livestock mortality. In Senegal, exchange activities are being piloted in Kaffrine Region, one of the areas most at risk from recurring floods in the country, which affected 400,000–600,000 people a year between 1998 and 2008.

In Kenya, exchange engagement focuses on the impact of climate information and

seasonal forecasts on agriculture within a rural livelihoods setting. The exchange cooperates with the ongoing Christian Community Services Mount Kenya East project that works with farmers groups, their international NGO partner Christian Aid, and brings in expertise from the Kenyan Meteorological Department, the ministries of agriculture, agricultural research, livestock, and development cooperation, Traidcraft and international climate scientists.

In Senegal, exchange activities are coordinated by the Senegalese Red Cross and focus on providing flood alerts to vulnerable communities. The exchange employs Red Cross community volunteers, village and religious leaders, women's groups and community radio as climate information relays, strengthening existing links with the Senegalese national meteorological agency, and bringing in international weather and climate expertise.

The pilot exchanges in both Kenya and Senegal promote improved exchange of weather and climate information to bridge the communication gap and foster enhanced community resilience in the face of future vulnerabilities. The exchanges are timed around the rainy season. Efforts prior to the rains promote access to, understanding and appropriate application of the seasonal forecast. Regularly updated information is provided throughout the season to ensure that community decision-making processes can be appropriately informed by evolving weather information. Community-based evaluations at the end of the rainy season review the process to identify the changes in timing, format, channels and types of information that can further strengthen their community decision making.

The types of information provided in each pilot exchange are determined on the basis of community-based assessments and adapted to best fit local knowledge and contextual conditions. The exchanges include the provision of both weather and climate information as societies that learn to deal effectively with hazards in the present climate are expected to be better equipped to deal with hazards in a changing climate. Using forecasts in the near term can also help to build the confidence of communities



Planning flood responses requires a good understanding of information on weather and other maps

to make greater use of information on longer-term climate change.

Practical dialogue tools

The two exchanges have generated a range of practical dialogue tools, in particular *participatory downscaling* and *early warning-early action clinics*.

Participatory downscaling aims to support communities to translate national and regional climate and weather information into a range of outcomes at the local level useful for both short and long-term decision making. It also aims to develop a shared understanding of the uncertainties of climate and weather data and the impact of these uncertainties on humanitarian and community risk management decision making. The approach follows a simple event history method:

- a sample of years is selected when significant weather events impacted on the community;
- for each event one or two non-climate events of cultural, political or economic importance are selected to provide a mental trigger of the year of the weather event in question;
- Participants are asked to discuss whether the location in which they were in a given year experienced a wet, dry, or average rainy season and whether they experienced the weather-related hazard of interest;
- the national and regional records of the rains and weather-related hazard are then revealed to the participants and the range of experiences collated for years which were similar in terms of rainfall;
- the seasonal rainfall forecast is then revealed for each year; and
- a group discussion is held about the range of local-level humanitarian implications for the same national event, and how participants might be able to appropriately employ future national seasonal forecasts to consider potential impacts.

The approach helps to build community

capacity for translating regional and national information into an understanding of local outcomes, which can in turn enhance resilience through fostering better-informed and increasingly adaptive decision making.

Early warning-early action clinics provide users with climate information relevant to their specific risk management needs as well as an opportunity to clarify uncertainties directly with scientists. It also builds capacity for the appropriate application of climate information through a scenario game. In the *early warning-early action* scenario game:

- participants are divided into mixed scientist-user groups;
- they are presented with a series of forecasts over different time periods and have to write down what they consider the most appropriate action given the forecast time frame and information provided;
- participants take turns to act as the decision maker, who is tasked with deciding between the series of possible preparedness actions proposed by the other participants; and
- the other participants then get the opportunity to challenge the decision maker and discuss their preferred actions.

The exchanges in Kenya and Senegal show that these tools can help strengthen dialogue between climate scientists and humanitarian and development agencies and their community partners. These dialogues are also truly two-way in the sense that they influence the activities of scientists as well as users. For example, the climate information needs of the affected communities in Senegal have fed back into research by climate scientists from the National Meteorological Agency of Senegal undertaking fellowships within the UK Department for International Development-Met Office Climate Science Research Partnership.

For these researchers, the exchange has underlined the importance of strengthening

understanding of the performance – not just the onset and level but the timing and dry periods – of the rains. In Senegal this information is particularly important as women farmers plant for themselves after planting for men, and thus really need to know about dry periods and the cessation of the rains to ensure they plant appropriate crops.

But while fostering dialogue holds value in and of itself, it is important to consider the impact of these approaches on adaptation and community resilience. This issue is currently at the fore of donor and aid agency considerations against a backdrop of austerity and accountability.

Assessing impact

The exchanges have had tangible benefits in terms of enabling climate information to better support specific decision-making contexts. In Senegal, for example, they have created a space for the community to devise innovative climate information dissemination strategies from forecast blackboards to climate radio roadshows.

The exchanges are also showing strong signs of sustainability. A Memorandum of Understanding (MoU) was signed in July 2011 between the national meteorological agency of Senegal and the Senegalese Red Cross. This agreement has facilitated the transmission of flood early warning information at 72, 24 and three hours, as well as seasonal forecasts, to designated community leaders in Kaffrine via Red Cross volunteers.

A similar MoU between the Kenya Meteorological Department (KMD) and Christian Aid and its project partners, providing seasonal, monthly and weekly forecasts to farmers groups in Mbeere, was signed in February 2012, and KMD has expressed a strong interest in scaling up the process in Kenya.

Yet lasting impact in terms of adaptation and behaviour change will take longer to assess. This will require evaluating impact on community livelihoods and capacities against the baseline assessments conducted within the exchanges. However, the exchange in Kenya has already provided an important example of climate change adaptation. Communities have been able to access forecast information through new sources such as SMS messages and meetings in local languages. In part as a result of this, in October–December 2011, based on a seasonal forecast projecting an early start to the rains, farmers in Mbeere either planted early maturing crop varieties or deployed agricultural techniques that could withstand early cessation of the rains.

In Senegal, early actions triggered by flood alerts have included various safety and asset protection activities such as not going out to the fields, using sand to protect houses from flooding, and covering up conductive fixtures and devices. These early examples demonstrate how dialogue between scientists and users can build capacity for adaptation, leading to enhanced community resilience in the face of climate variability and change. <

Adaptation programmes flawed

Jacques Somda

Regional programme officer for planning, monitoring, evaluation and learning
Central and West Africa Programme
International Union for the Conservation of Nature, Burkina Faso

Annita Annies

Programme officer, Ecosystems Management Programme
Nature-based Solutions and Rights Group
Global Programmes Headquarters
International Union for the Conservation of Nature, Switzerland

The International Union for the Conservation of Nature (IUCN) works with 24 rural communities in East and West Africa (Burkina Faso, Ghana, Zambia, Mozambique and Tanzania) to help them adapt to climate change. These communities experience the effects of climate change in many different ways. Depending on their exact location, communities face a mix of inadequate rainfall, prolonged droughts, extreme heat, floods, excessive rain, strong winds and increases in pest species (which damage agricultural crops) and increased disease for livestock and humans.

The affected communities tend to respond with short-term survival measures. Sometimes they are forced to recognise that emergency measures such as burning charcoal actually accelerate resource depletion and land degradation, however, which will only exacerbate problems in the future.

These communities have the will to adopt more sustainable practices, but their capacity to adapt to climate change is very limited and needs to be supported by national adaptation programmes. In the countries where IUCN works, the first generation of national adaptation programmes were developed in 2007–2008. IUCN discovered that they were seriously flawed in three ways and proposed a measure to address these shortcomings.

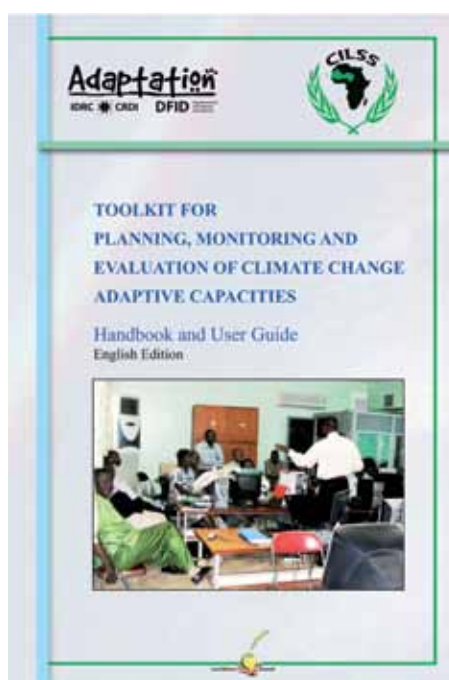
First, the current methods used to assess the effects of climate change are inadequate. They do indicate the hazards communities are facing and also which community members are vulnerable to these hazards, but they fall short of identifying what changes are needed at the community level to address the vulnerability and the hazards.

Second, the first generation of national adaptation programmes of action were only participatory during the process of assessing vulnerability. Planning was left to experts at the central administration levels. But developing a national adaptation programme means identifying measures vulnerable groups

can take themselves, and what kind of support they need. Adaptation programmes require planning at various levels.

Third, national adaptation programmes of action in Africa lack mechanisms for monitoring and evaluation (M&E). M&E is an area that has been largely neglected by scientists and other actors involved in climate change adaptation. Measuring the effectiveness of adaptation measures is particularly complicated in Africa where members of rural communities also face several non-climatic hazards, such as lack of security of tenure, poor access to markets and low human capital investment. However, without M&E mechanisms in place it will be impossible to know whether progress is being made or whether proposed solutions are working. As a result, people will not benefit from their experiences with adaptation mechanisms, and this, in turn, will make it difficult to improve policies and practices.

For national adaptation programmes to succeed, partners of the communities – including non-governmental organizations, governmental rural agencies, and local and central administrations – need to gear their planning methods and approaches to effectively support the community's adaptation efforts. Therefore, IUCN has developed a toolkit outlining participatory approaches and methods covering the entire adaptation cycle including planning, implementation, monitoring and evaluation. The toolkit also provides recommendations for linking up the community planning cycle to higher levels of adaptation planning and programming. <



Capacity.org, issue 45, June 2012

Capacity.org is published in English and French, with an accompanying web magazine (www.capacity.org) and email newsletter. Each issue focuses on a specific theme relevant to capacity development in international cooperation, with articles, interviews and a guest column, and annotated links to related web resources, publications and events.

Editor in chief: Heinz Greijn heinzgreijn@learning4development.org

Web editor: Wangu Mwangi

Editorial board: Kaustuv Bandyopadhyay (PRIA), Niloy Banerjee (UNDP), Niels Keijzer (ECDPM), Sue Soal (CRDA), Jan Ubels (SNV) and Hettie Walters (ICCO)

Contributors to this issue: Annita Annies, Samuel Carpenter, Peter Goedhart, Angela Churie Kalhauge, Dominic Kniveton, Shaika Rakshi, Y.V. Malla Reddy, Jacques Somda, E. Lisa F. Schipper, Ronak Shah, Arame Tall and Emma Visman.

The opinions expressed in *Capacity.org* are those of the authors and do not necessarily reflect those of CRDA, ECDPM, ICCO, PRIA, SNV or UNDP.

Production: Contactivity bv, Stationsweg 28, 2312 AV Leiden, the Netherlands.

Editing: Mark Speer

Translation into French: Michel Coclet

Layout: Anita Toebosch

Publishers: European Centre for Development Policy Management (ECDPM), SNV Netherlands Development Organisation and United Nations Development Programme (UNDP).

Capacity.org was founded by ECDPM in 1999.

ISSN 1571-7496

Readers are welcome to reproduce materials published in *Capacity.org* provided that the source is clearly acknowledged.

Capacity.org is available free of charge for practitioners and policy makers in international cooperation. To subscribe, visit www.capacity.org. Issue 46 will be available in December 2012.

