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Springing back: climate resilience at Africa's grassroots

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Climate change is often seen as a global problem demanding global solutions. But for poor people hit hard by the impacts, climate change is a not a boardroom abstraction, but day-to-day reality. Faced with local shifts in weather patterns and natural resources, they are forced to find ways of coping that are locally relevant. This kind of experience, gained at the grassroots, boosts resilience as no top-down initiative can. Three case studies from rural communities in Benin, Kenya and Malawi show how it is done.

Communities that cope

Across Africa, climate change could herald lean and thirsty times. The Intergovernmental Panel on Climate Change predicts that by 2020, yields from rainfed agriculture in some countries could halve, and agricultural production and access to food may be severely compromised. Up to 250 million Africans could face water shortages.

In the face of such shifts, what builds resilience and capacity to cope? Three case studies from rural communities in very different ecological contexts — in Benin, Kenya and Malawi — reveal a range of responses. But generally, all these communities have adjusted to an increasingly volatile environment with a two-pronged approach: using available natural resources more efficiently and raising capacity to cope with unpredictable future changes.

People in the three communities have observed significant changes in their local climates — in particular, more variability in the intensity and seasonality of rainfall. Data from local meteorological offices partially support these observations, but have yet to demonstrate statistically significant trends.

In all the case studies, growing seasons were found to be less predictable and available surface water less abundant than two or three decades ago. These changes are partly due to changing local climates. Meanwhile, growing human populations and large-scale land use change, such as the spread of industrial plantations, add to environmental pressures that could, for instance, affect water availability. People's adaptations to environmental change combine technical fixes (such as faster-maturing crop species and varieties) with institutional support, via social networks and more formal organisations.

Singing the changes: agrobiodiversity in Benin

'For some years, when rains begin and we start cleaning fields and planting seeds, rains suddenly interrupt for more than two weeks; seeds are unearthed by rats, and consumed by bugs. Some years, seeds germinate and with the irregular rains, small plants can't grow.'
Kossou Assogba, farmer and resident, Adjohoun District

Kossou Assogba has lived and farmed in the swamp forests of Adjohoun District, southeast Benin, for 76 years — long enough to see big changes in rainfall patterns. Assogba noted that climate change appeared about 20 years ago, when after three relatively stable decades, weather patterns shifted and the rains began to come later.

In Adjohoun, people's livelihoods depend on careful management of agricultural biodiversity. For many generations people have fished, harvested wild produce from forests and mangroves, kept pigs, and grown crops of maize, cassava, beans, peanuts, leafy vegetables, palm and coconuts.

KEY MESSAGES:

- **Rural Africans are observing clear trends in local climate across a range of environments, from humid to semi-arid.**
- **They are already adapting to climate change with or without external support.**
- **For communities dependent on natural resources, adaptation involves a mix of technical solutions (such as different crops or planting patterns) and institutional solutions (such as new means of sharing information).**
- **Local adaptations include responses to specific trends (such as fishing with finer-meshed nets), but also building of capacity and resilience — say through savings clubs and diversified agriculture — to cope with future uncertainties.**
- **Supporting local initiatives and institutions may be the most effective way to support climate change adaptation.**

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Like Assogba, other local people have observed changes in the seasonality of rainfall over the past 20 years. Some of the swamp forests have dried out. At the same time there have been other major changes in the district, such as significant expansion in large-scale plantations.

How have people been responding to perceived changes in rainfall and natural resources? Fishers reported using finer-meshed nets in the drier rivers, while acknowledging that the practice exacerbates local fish shortages. People have also started to plant fast-growing crops in the dried-out areas of swamp forest to ensure they gain a harvest within the shorter reliable growing season. Many have switched from building with local *afitin* logs to using concrete pylons as a way of cutting down on wood use while simultaneously building flood resistance.

To boost people's environmental capacity and resilience, local organisations have drawn on cultural traditions. They have adopted the local practice of using songs, proverbs and riddles to share knowledge about sustainable management of agrobiodiversity in the face of today's threats.

Planting hope: diversified agriculture in Kenya

'These days we do not know what is happening. Either there is too much rain or none at all. This is not useful to us. When there is too much rain, the floods that result cause us harm. When there is not enough rain, the dry conditions do us harm.'

Mama Fatuma, butcher and long-term resident, Njoro Division

The semi-arid forest of Njoro Division lies on the eastern edge of the Mau Complex, Kenya's largest wooded area. Until about 10 years ago, the people of Njoro depended on saw-milling, farming and cattle. Now they have diversified into selling firewood, charcoal and water. The population has grown during this time, and agriculture has expanded into the forest.

Njoro's people observe that rainfall has become much more unpredictable. Water resources have changed dramatically: perennial rivers have become seasonal and boreholes have dried up or become saline. Echoing Mama Fatuma's remarks, university lecturer Geoffrey Tunya, who has lived in Njoro for over 30 years, said, 'Rain does not come regularly and when it does, it comes in torrents. There are extended droughts. Rivers are drying.'

The change in climate is confusing farmers in Njoro, but they have formulated an array of adaptive strategies. They are switching from wheat and potatoes to quick-maturing crops such as beans and maize, and planting any time it rains because there is no longer a regular growing season. People plant fewer live hedges, because they grow too slowly, but are planting more trees on their farms in the hope that these will 'attract rain'. Cattle keepers who used to rely on farm-grown fodder now take their livestock to remote pastures.

Community groups have built rain-harvesting tanks and set up savings clubs. Local government agencies are restricted by their top-down policy remits, but nonetheless have proven helpful to farmers and foresters in recommending new species and new cultivation techniques to cope with the new climate.

Powered up: high-altitude adaptation in Malawi

'From January to June every year, there were heavy rains in Mulanje and the hot dry season lasted from August till October, when the first rains, known as chizimalupsya *[the fire extinguisher], started.* Chizimalupsya *no longer precedes the main rains since the rainy season starts late, sometimes as late as December. June and July were extremely cold months with frequent fogs, but it is now difficult to tell between the cold and hot seasons. Many rivers that rise from Mount Mulanje never dried up, most of them with large pools; they are frequently drying now as early as June.'*

R. Seveni, long-term resident, Mulanje District

Malawi's Mulanje District borders the conservation area of the Mulanje Mountain Forest Reserve. In this region of montane forest, locals make a living from cultivating tiny plots of land, typically smaller than 0.1 hectare. They supplement this by selling forest produce. Local population growth, however, is increasing pressure on the land and natural resources. Fields are encroaching on the forest reserve, and rivers are silting up due to high run-off from the new agricultural plots.

The people of Mulanje have noted major changes in recent decades, particularly in the seasonality of rainfall and temperature, as pointed out by Seveni. Local meteorological data are not sufficiently detailed to back up these observations, but do suggest an upward trend in mean annual temperature in recent decades.

The late rainy season has meant changes in the agricultural calendar. Farmers have switched to fast-maturing cultivars of favoured crops. These are expensive, and also represent a threat to local landraces. But there is a positive side to the adaptations. Farmers are now planting a minimum of two crops in their gardens, mixing cereals with pulses and tubers, often intercropping with nitrogen-fixing pigeon peas. Diverse crops and relay-cropping through the rainy season are effective means of ensuring at least some harvest.

Community organisations have also developed partnerships with the local tea industry and development NGOs to manage wetlands, construct small-scale irrigation and experiment with wood-efficient stoves.

See also:

Community Based Adaptation Exchange (www.cba-exchange.org)
The Coordination Unit for the Rehabilitation of the Environment (Malawi) (www.mca.edu.mw/enviro/ngo/cure/index.html)
Forest Action Network (Kenya) (www.fankenya.org)
Organisation des Femmes pour la gestion de l'Energie, de l'Environnement et la promotion du Développement Intégré (Benin) (www.benin.africa-web.org)

Further reading:

Full country studies at www.iied.org/NR/forestry/forestsandclimatechange.html
IPCC (2007) Fourth Assessment Report (see www.ipcc.ch/ipccreports/ar4-syr.htm).

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