

POLICY BRIEF

STRENGTHENING COMMUNITY-BASED RESPONSES TO CLIMATE CHANGE

Africa's economic dependence on its natural resource base makes it particularly vulnerable to climate change. The rural poor, whose livelihoods rely on natural resources, have been among the first to face the increased risk and uncertainty that climate change brings. They also face the most urgent need to adapt to change, but have the fewest resources for doing so. Many technologies which could support community-based adaptation strategies already exist or are under development, but they have not been widely adopted. Examining this failure reveals both information gaps and institutional blockages, and offers pathways to strengthening communitybased responses and adaptation to climate change.

Communities and adaptation

Climate change in Africa is causing extreme weather patterns, reducing crop productivity, increasing incidence of livestock diseases and creating more conflicts resulting from scarce water and pastures. Given these challenges, efforts are being made to support people to adapt to climate change with a view to reducing present and future livelihood vulnerability.

Adaptation to climate change is inevitably and unavoidably local

Adaptation to climate change is inevitably and unavoidably local (Blaikie et al. 1994). So, while several approaches to adaptation have been advocated, communitybased strategies are viewed by many as the best option. They enable community members to enhance their own adaptive capacity and to empower them to increase their resilience to the impacts of climate change.

Information and institutions to support community-based adaptation

Community-based climate change adaptation strategies require different information and their promotion depends on different institutions.

- Research institutions are not providing adequate, accessible information to communities.
- Policy makers are not providing adequate institutional mechanisms for technology promotion.
- Research should be reorientated towards the information needs of farmers and communities.
- Institutional infrastructure should be reformed both through cross-sectoral strategic policy development and institutional adaptation.

But communities are not a key feature of ongoing adaptation initiatives. Policy responses to climate change are mostly shaped by international and regional negotiations, far removed from local communities. Current policy narratives about climate change adaptation in developing countries are dominated by the need to reduce emissions and enhance carbon stocks. They have little to say about community members whose livelihoods depend on agriculture and natural resource management (Dazé and Chan 2009).

Despite this absence, adaptation technologies appropriate for communities are being developed by many international and African research institutes. Their uptake would offer enormous potential for effective community-based adaptation, but they are rarely adopted by farmers. Why is this the case, and what is needed to enhance uptake of new technologies and learn lessons from the adaptation strategies of communities?

Existing technologies for community-based adaptation

Agricultural and natural resource management technologies can enhance the adaptive capacity of smallholder farmers, improving the resilience and reducing the vulnerabilities of a range of farming systems. Existing technologies are a good basis for adaptation and could be enhanced and complemented through development and scaling up.

Key areas of technology development include:

Crop development. International, regional and national crop research has become increasingly focused on how to make crops more resilient to environmental stresses. For example, new high-yielding, stress-tolerant maize

Fulani herders, Manigi, Niger (Courtesy N'danikou Sognigbe)



varieties have been developed for 13 countries in East and southern Africa through the Drought Tolerant Maize for Africa initiative, while the West and Central African Council for Agricultural Research and Development is working on DNA extraction of tamarind and baobab trees, aimed at improving their adaptation to drought.

- Resource management in response to insufficient moisture. Whilst a range of proven technologies for water harvesting exist, other recent developments include reduced tillage to prevent water loss and the use of nitrogenfixing trees in improved fallows to retain moisture and restore soil nutrients. Resource management technologies also include the development of reward schemes for environmental services, designed to promote less erosive and more beneficial land use systems, and provide farmers with alternative income streams.
- Water-use efficient trees. The World Agroforestry Centre has synthesized research results and established principles on the water-use efficiency of tree-based systems. Research into the water demands of various trees during different seasons may assist farmers and foresters in selecting species on the grounds of matching their water use to long-term rainfall patterns.
- Flexible livestock production strategies. Mobility, grazing reserves and communal water management are already used by livestock keepers to cope with variable rainfall. Government and NGO programmes have also experimented with emergency livestock off-take during periods of drought to minimize livestock losses and ensure that pastoralists get reasonable prices for their animals, as well as building capacity in re-stocking.

The box below shows some of the many reasons why the majority of these technologies for communitybased adaptation, which have huge potential for climate change adaptation, have not been widely adopted. They are all symptoms either of a lack of linkages between science and practice, or of institutional failures.

Agricultural and natural resource management technologies have the potential to improve the resilience and reduce the vulnerabilities of a range of farming systems.

Information needs for the adoption of community-based adaptation strategies

In the arena of community-based adaptation to climate change, the domain of science is occupied by researchers and scientific institutions, while the domain of practice is occupied both by farmers, and by planners and policy makers. Knowledge produced in the science domain often fails to translate into practice. To bridge the gap between the two, the information needs of those in the domain of practice need to be better understood. Table 1 summarizes the information needs of farmers, planners and policy makers with regard to increasing the adoption of four selected adaptation technologies.

Table 1. Summary of information needs for four community-based adaptation technologies

Adaptation technology	Information needs: farmers	Information needs: planners and policy makers
Stress-tolerant crops	Suitable tested germplasm, reliable germplasm suppliers, management and other input needs.	Long-term climate trends, adoption of existing or development of new varieties.
Water harvesting and storage	Individual or group approaches, appropriate harvesting technology, opportunities for public support, licensing requirements.	Appropriate technologies, returns to small or larger-scale water harvesting, climate scenarios for planning storage capacity.
Water-use efficient tree species and cultivars	Market opportunities for products, germplasm suppliers, economic returns, farm and local trade-offs between production and water use.	Trade-offs between production and seasonal water use in watersheds, invasiveness risks, production risks, tree suitability assessments.
Flexible livestock production strategies	Market risks and opportunities, production risks, hardy breeds, reliable sources of parent stocks, husbandry practices.	Trade-offs between investment security and flexibility.

Existing climate change adaptation strategies have not been adopted in communities because of

- high costs of adoption;
- poor information flow from technology developers to farmers;
- poor extension service provision;
- changing commodity prices, trade agreements, resource use rights, government subsidies and support programmes.

Institutional needs for improving the adoption of community-based adaptation strategies

Improved information flows will need to be augmented by institutional change if they are to successfully enhance the uptake of adaptation technologies.

Governance institutions at the national level are organized into vertically structured sectors such as agriculture, forestry and wildlife. But climate change demands cross-sectoral communication and coordination. Climate change adaptation is therefore limited by the vertical nature and lack of cross-sectoral coordination in planning and policy institutions. Table 2 on the next page summarizes some of the institutional changes that would be required to improve the uptake of the selected adaptation strategies.

Recommendations

Poor linkage between climate change research and communities leads to low adoption of technologies developed by the scientific community. It also means that lessons from strategies developed by community members are not being understood or disseminated. The results of this poor linkage are compounded by the structure of climate change policy. National initiatives are driven by collective action at the international level. This means that climate change adaptation strategies are top-down and rarely based on locally relevant evidence.

What is required to promote a better flow of information between researchers and communities, and overcome institutional blockages?

Table 2. Summary of institutional needs for four community-based adaptation technologies

Adaptation technology	Institutional needs	Options for meeting institutional needs
Stress-tolerant crops	Research, extension, output markets and germplasm supply systems that support a range of crops, as well as genetic adaptation of existing crops to harsh conditions.	Public research and extension institutions that give particular attention to crops that are well-adapted to climatic stresses; participatory genetic improvement.
Water harvesting and storage	Appropriate technologies for water harvesting made available and supported for the household, community and regional scales. Better integration of planning for water and agricultural development.	Water harvesting is mainstreamed into agricultural extension; targeted public investment for community and public water infrastructure.
Water-use efficient tree species and cultivars	Cooperation and shared understanding between foresters, hydrologists, ecologists and social scientists; removing blockages on germplasm for indigenous species.	Cross-sectoral promotion of water efficient tree species and working through mandated bodies like national environment management authorities.
Flexible livestock production strategies	Effective mechanisms for group tenure and incentives for maintaining it; technical innovations to add value to grazing reserves; management of conflict between pastoral groups sharing rangelands.	Public research in emerging livestock and fisheries policies; sharing of research results and institutionalizing improvements in livestock systems.

- Re-thinking agricultural research and extension. This requires improving the science policy dialogue by bringing scientists together to examine climate change through a multifaceted development lens; improved provision of information to farmers; participatory action research to build on the existing coping and adaptation strategies of local communities; and platforms for sharing lessons and experiences across countries and regions.
- Strategic policy development. Mainstreaming climate change adaptation is likely to remain a challenge in the face of different mandates across sectors, failure of governments to promote cross-sectoral policy formulation and implementation, and the power relations that shape feedback mechanisms among the different sectors. For purposes of promoting community-based adaptation, strategic policy development should therefore focus on promoting cross-sectoral coordination and decentralisation.

Source

Yatich, T., Swallow, B., Ajayi, OC., Minang, P., Wakhayanga, J., 2011. Community-based adaptation to climate change in Africa: a typology of information and institutional requirements for promoting uptake of existing adaptation technologies. In Chidumayo, E., Okali, D., Kowero, G., Larwanou, M., eds. Climate Change and African Forest and Wildlife Resources. Nairobi: African Forest Forum, p. 161–175.

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Design and editing by Green Ink (www.greenink.co.uk)

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