

Technology for adapting to climate change

Climate change is currently threatening the livelihoods of millions of people who are already poor and vulnerable, by altering the natural and physical assets they rely on, particularly for agricultural production. In order to adapt to climate change, they will need access to new and improved technologies, skills and knowledge. The most appropriate technologies can enable people to improve their livelihoods even when there is uncertainty about the future climate. Many such technologies are already in use at the local level. For instance, technologies that reduce vulnerability to climate change, such as early warning systems or improved water management. But these require much wider dissemination if they are to bring benefits to the millions of people affected by climate change.

In Copenhagen this December, the international negotiations for a new post-2012 climate change treaty are expected to agree an international system of support for adaptation, comprising large-scale finance and a mechanism for supporting improved access to technology. This presents an opportunity to scale up the use of technologies that have proved themselves to support appropriate adaptation. However, to date, governments and their negotiators have focused largely on large-scale, defensive technologies such as sea walls or embankment construction. Raising awareness of the threats, linking expert information with local knowledge, enabling people to participate in the development and improvement of existing technologies will be more effective in addressing vulnerability and enabling adaptation to climate change.

Technologies for resilience and adaptive capacity

The challenge for adaptation technologies is to deal with the potential for future changes whilst being resilient to climate variability. Uncertainty about how climate change will manifest in a precise location requires caution when selecting a technological solution, to avoid locking a community into an unsuitable technology. Working with this uncertainty, technologies for adaptation need to boost resilience and increase capacity to adapt to the future. Appropriate technologies for adaptation enable people to make and act on

choices about their livelihoods, and also experiment and innovate with the technologies they are already using. They are often 'soft' technologies that increase people's ability to gain and share knowledge, organise collectively, and make informed decisions.

Access to local, up-to-date weather information helps farmers plan for the growing season and is particularly valuable in reducing vulnerability to extreme weather events such as floods and storms, or slower onset disasters such as drought. Enabling people to have access to such information, and to

be able to broadcast early warnings using relatively simple technologies such as handheld sirens and FM radios, can increase the ability of communities to withstand and recover from shocks.

Scaling up

Most of the evidence for technologies that work for adaptation is based on project level practices and research, and is about resilience rather than adaptive capacity. These experiences need to be disseminated widely and more systematically, in particular, scaling up and linking approaches that successfully deal with climate variability. A starting point is to enhance systems within a country for sharing information between all levels of government and communities, and also horizontally between communities. To join up learning about adaptation around the world there is a need to create inter-country connections based on south-south dispersal of information, particularly across similar ecological zones.

There are no significant technical or legal barriers to increasing the availability and use of technologies for adaptation. Intellectual property rights are rarely an issue, as they are for mitigation technologies, and many relevant technologies are already mature and ready to be shared and adopted more widely. Much of the information used for adaptation is in the public domain and available from the websites of NGOs and organisations such as FAO. Through its Practical Answers service, Practical Action is sharing technical information to a wide range of people engaged in local adaptation to climate change.

The UNFCCC and the future for adaptation technologies

In 2007, the Bali Action Plan adopted a framework for action on technology needs and needs assessments, information, capacity-building, enabling environments and mechanisms for technology transfer. However, most of the effort

has so far focused on technologies for mitigation, with little consideration given to adaptation technologies, and there is still much work to be done to develop effective technology transfer mechanisms. Where transfer of adaptation technologies has been considered, under the Expert Group on Technology Transfer, the emphasis has been on generating a north-to-south transfer of technology and not on research and design for context-appropriate technologies at the local level.

The Nairobi Work Programme (NWP) has achieved some progress in building a database of adaptation experiences, technologies, tools and methodologies, but this information is geared more to governments than to NGOs and communities. Practical Action supports the NWP, and favours agreement to an expanded and better resourced programme from mid-2010 when the current NWP ends. Much more work needs to be carried out on south-south and community-community information sharing on technologies, using new media such as participatory video and podcasts. Practical Action is already using podcasts in Zimbabwe to bring knowledge of appropriate agricultural technologies to communities in the absence of an effective agricultural extension service.

Practical Action believes that enabling wider access to technologies for community-level adaptation will require a variety of media and mechanisms for knowledge sharing and dissemination. An easily navigated web portal is one essential component, which could be part of an extended Nairobi Work Programme. Regional resource centres, proposed by many governments and organisations as a mechanism for capacity building for governments and civil society, could also be a channel for collecting, sharing and developing technology and knowledge for adaptation whilst also dispersing funding for technological implementation to the community level.