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Lessons from adaptation in practice
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Improving the evidence for ecosystem-based adaptation

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Ecosystem-based approaches to adaptation (EBA) integrate the use of biodiversity and ecosystem services into an overall strategy for helping people adapt to climate change. The body of scientific evidence that indicates how effective they are is in some cases lacking but in other cases is dispersed across a range of related fields, such as natural resource management, disaster risk reduction and agroecology, from which it needs to be synthesised. Without presenting and strengthening this evidence in a consolidated way, EBA cannot secure the policy traction at local, national and international levels that it merits.

Natural ecosystems benefit people in many ways, from providing clean drinking water or promoting crop pollination to regulating local climates and supporting spiritual beliefs. Collectively, these benefits are known as ecosystem services, and, alongside natural resources, are widely acknowledged to be important in helping the world's poor secure food, water, shelter, energy, a safe environment in which to live and work, and a livelihood.

But these are also increasingly being recognised as key tools for helping people adapt to climate change. Crucially, it is the poorest and most vulnerable communities in developing countries who are likely to be hit worst by the impacts of climate change. These are the same people that rely most on natural resources and ecosystems for their livelihoods. So it seems obvious that any effort to help these people adapt should take into account the importance of ecosystems and their services.

One way of doing that is to use ecosystem-based approaches to adaptation (EBA), which integrate the use of biodiversity and ecosystem services into an overall strategy for helping people adapt to adverse climate change impacts.

EBA includes the sustainable management, conservation and restoration of ecosystems and natural resources to provide services that help people adapt to climate uncertainty, variability and change. For example, preserving wetlands to regulate floods or conserving biodiversity to secure food supplies. In addition, EBA can provide multiple livelihood and societal benefits, such as more sustained access to natural resources and carbon sequestration to help tackle the root causes of climate change. These benefits can sometimes be hard to quantify so are often not considered when comparing EBA with other approaches to adaptation that use hard infrastructure or new technologies.

Many groups are starting to recognise the merits of EBA: conservation organisations increasingly see it as a way to link sustainable ecosystem management to the climate change agenda, and increasingly development agencies see EBA as a good way to acknowledge the role that ecosystems play in poverty reduction.

Ample anecdotes

There are many anecdotal case studies recounting the merits of EBA, particularly in reducing community vulnerability to climate stress. For example, the International Union for Conservation of Nature describes how ecosystem management and restoration across Africa, Asia and Latin America can protect against extreme events such as droughts and floods, secure food supplies and livelihoods, improve water quality and safeguard protected areas.[1]

The Ecosystem, Livelihoods and Adaptation Network (www.elanadapt.net) similarly presents several EBA case studies, showing how tactics such as community-based mangrove restoration or rangeland rehabilitation support adaptation to climate change.

These anecdotes show how many local communities are already practicing EBA, but they are not enough to

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ensure that EBA gets the policy traction and support that its advocates are seeking. Scientific support for such approaches is available from a range of different disciplines, such as natural resource management approaches to climatic variability, disaster risk reduction, and agroecology's approach to resilience. Likewise, making use of ecosystems and their services to adapt to current climate variability and hazards is common practice, for example, restoring rivers to alleviate flooding. Evidence and lessons learnt from these disciplines should be collated to inform EBA and consolidated so that policymakers can compare EBA with other possible adaptation options.

Without such evidence, the temptation to pursue more visible large-scale infrastructure-based solutions such as dykes or dams might be hard to resist — even though such solutions work against nature by constraining regular ecological cycles, and so often lead to 'maladaptation' that may deliver short-term gains but increase social vulnerability in the medium to long term.[2]

Knowledge gaps and stumbling blocks

There have been few scientific studies on EBA effectiveness, and only a limited number of reviews of the existing case studies. In particular there are very few studies providing an analysis of two comparable sites — one with and one without EBA — or a 'before and after' situation in the event of a dramatic climate change impact such as a cyclone.

Similarly, there are few case studies that closely examine who benefits from EBA among vulnerable communities and groups and across broader scales.

And when it comes to evaluating value for money, few case studies provide a quantified economic assessment. Economic data can be difficult to obtain but it is likely to provide the biggest justification to decision makers when it comes to adopting a new approach. The studies that use such data show that EBA projects can be cost effective and, if you consider the full set of ecosystem services they support, tend to provide more benefits than hard infrastructural approaches to adaptation.

For example, it cost the Vietnamese Red Cross approximately US$1.1 million to rehabilitate and protect 12,000 hectares of mangroves in Vietnam, starting in 1994. But the investment has saved donors what could have cost US$7.3 million a year in dyke maintenance. It has had other benefits too. Some 7,750 families benefited from the project, many of whom boosted their incomes by selling the crabs, shrimp, molluscs and seaweed that thrive in the mangroves. By eating these, people also increased the protein in their diets.[3] And during the devastating Typhoon Wukong in 2000, project areas remained relatively unharmed while neighbouring provinces suffered huge losses in lives, property and livelihoods.

Next Steps

Although it is important to assess individual EBA projects, decision makers will not scale up their support for EBA without stronger evidence about its broader effectiveness as an approach.

IIED and partners — BirdLife International, UN Environment Programme-World Conservation Monitoring Centre and the University of Cambridge — are now working to respond to this need. We are reviewing the evidence base that already exists in the scientific and grey literature and developing a framework to help characterise the state of evidence for EBA and identify what additional research or analysis could be done to improve the evidence base.

That includes learning from related fields of study, such as disaster risk reduction and dryland management, which both have many decades of relevant documented experience on sound environmental management. This evidence must be systematically assembled and analysed to identify prevailing EBA-related knowledge gaps.

This assessment will provide a solid platform from which researchers can start filling knowledge gaps for EBA. These gaps will also need to be addressed by policymakers through their recognition of the importance of ecosystems in adaptation policies (including National Adaptation Plans and National Adaptation Programmes of Action) and projects to facilitate 'learning by doing'. Those involved in EBA projects should make a concerted effort to write-up their findings in a reflexive manner to enable the broader dissemination of evidence, particularly on the economic costs and benefits, and the distribution benefits within the social benefits, provided by EBA projects.

The growing interest in measuring and evaluating 'successful' adaptation in general and the frameworks that are starting to emerge for assessing the effectiveness of adaptation activities, will assist in furthering such research.

Moreover, the compilation of information on EBA by the UN Framework Convention on Climate Change for the Nairobi Work Programme will be made available to delegates at the 2011 UN climate talks in Durban, South Africa, further strengthening the knowledge base.

Sources

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[2] BirdLife International. 2009. *Partners with nature: how healthy ecosystems are helping the world's most vulnerable adapt to climate change.* BirdLife International, Cambridge.
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