

Science for Environment Policy

Ecosystem-based adaptation can support food security

Ecosystem-based adaptation (EbA) to climate change could help avoid future food crises in Africa, a new review suggests. By examining United Nations EbA projects implemented across Africa, the authors demonstrate that such approaches help improve the climate change resilience of production systems and the communities dependent upon them.

By 2050, the population of Africa will represent almost a quarter of the world's population: greater than either China or India. Under [climate change](#), efforts to increase food production to meet this rise in numbers are threatened, posing risks of famine and social instability. Indeed, recent droughts around the world, including in the Horn of Africa, have led to increases in food prices and rioting.

This review summarises the food security problems facing Africa, and suggests that EbA will be one of the most effective ways of meeting these challenges. This approach, which makes use of ecosystem services to help people adapt to climate change, also helps tackle issues such as resource scarcity and ecological degradation.

Despite the importance of ecosystem services, such as the provision of [water](#), maintenance of [soil](#) fertility, or the pollination of crops, their value is not built into the costs of food production. As a result, ecological functions are commonly degraded by [agriculture](#), resulting in a loss of these services and an increased vulnerability to climate change impacts such as drought and flood. This review reports on the potential for EbA to reverse this trend of degradation and instead establish agricultural systems resilient to climate change that are able to protect these vital ecosystem services.

The review proposes four kinds of actions to improve agricultural ecosystem services and climate change resilience: 1.) careful soil management (through minimum tillage, permanent cover and crop rotation); 2.) improvement of agricultural biodiversity; 3.) the development of programmes using expert scientific knowledge as well as local knowledge; and 4.) providing farmers with better access to new technologies and establishing 'payment for ecosystem services' schemes to ensure ecosystem services are accounted for and valued within agricultural systems.

The authors examine three United Nations Environment Programme projects as case studies to demonstrate the potential of EbA in helping alleviate food crises. A project in Mozambique worked with families reliant on fishing, and who were experiencing food shortages for several months of every year. This led to overexploitation of coastal resources. The project focused on rehabilitating mangroves as fish breeding grounds and establishing crab-farming and fish ponds to supply food and alleviate pressure on ecosystems. Sufficient food was produced for locals as well as surplus for trade, and ecosystems recovered. In total, 98 local households benefitted from this innovative project.

In Uganda, a project promoting agro-forestry and conservation agriculture resulted in more fertile soils and increased yields. This in turn reduced time and cost in preparing land for farming, leaving more time available for diversification, for instance, into livestock rearing. The project also resulted in less use of agrochemicals and improved biodiversity. In Togo, small dams were restored combining EbA techniques, such as tree planting to reduce evaporation, with 'hard adaptation' approaches, including the digging of dykes and insertion of pipes to channel dam water into fish ponds. The result was improved water security and health, and increased food production through fish production and crop irrigation, as well as generation of hydro-electric energy.

The review concludes that EbA projects are cost-effective, broadly applicable, and their spread would help reduce the occurrence of food crises and face the multiple challenges of climate change.



24 September 2013
Thematic Issue 42
Working with
nature, for people

Subscribe to free
weekly News Alert

Source: Munang, R., Thiaw, I., Alverson, K., et al. (2013). Using Ecosystem-Based Adaptation Actions to Tackle Food Insecurity. *Environment: Science and Policy for Sustainable Development*. 55 (1): 29-35. DOI: 10.1080/00139157.2013.748395

Contact:
Richard.Munang@unep.org

Read more about:
[Biodiversity](#), [Climate change and energy](#)

The contents and views included in Science for Environment Policy are based on independent, peer-reviewed research and do not necessarily reflect the position of the European Commission.

To cite this article/service: "[Science for Environment Policy](#)": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.