

ECOSYSTEM-BASED ADAPTATION THROUGH SOUTH-SOUTH COOPERATION

GOOD PRACTICE CASE STUDY

Cambodia Adaptation Fund Project– Enhancing Climate Change Resilience of Rural Communities living in Protected Areas

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The majority of rural Cambodians are reliant on traditional livelihood practices that include subsistence-based agriculture, fishing and other livelihoods based on ecosystem goods and services. As a result of the limited socio-economic development of Cambodia's rural areas, and the limited financial resources and technical capacity of rural communities, there are very few alternative livelihood options for these communities to adopt. A consequence of the widespread reliance on livelihoods based on ecosystem goods and services is that Cambodia's rural population is likely to experience particularly severe negative impacts as a result of climate change. The effects of climate change in Cambodia are anticipated to include increasingly erratic rainfall, and increased frequency and severity of climate-related hazards such as droughts and floods. The negative effects of climate change have already been experienced by rural Cambodian households, for example the reduced productivity of agriculture as a result of erratic rainfall. As a

result, these communities are increasingly reliant on forest ecosystems to provide supplementary food sources and income from collecting and selling non-timber forest products (NTFPs) and fuelwood. Widespread degradation of forest ecosystems, however, is reducing the efficacy of this adaptation response. The combined effects of climate change and ecosystem degradation will result in multiple negative socio-economic impacts as a result of reduced agricultural yield, complete destruction or failure of crops, and reduced generation of goods and services by degraded ecosystems, thereby undermining the ongoing efforts of the Government of Cambodia to meet national objectives for socio-economic development and poverty alleviation.

To respond to this challenge, an Adaptation Fund (AF) project was developed by UNEP and Cambodia's Ministry of Environment entitled "Enhancing Climate Change Resilience of Rural Communities living in Protected Areas in Cambodia" for the period 2013-2017. This project aims to enhance the climate change resilience of communities living around five community protected area (CPA) intervention sites (as well as downstream communities) through implementation of the ecosystem-based approach to adaptation (EbA). In particular, this AF-funded project promotes the EbA approach through demonstration of eco-agriculture and establishment of homegardens in participation with CPA communities. The project has prioritised the inclusion of local community members in the project's activities, thereby creating short-term work opportunities through employment in nurseries, reforestation and establishment of home gardens. In the long term, the project's investments will generate a diverse range of useful and commercially valuable products to be consumed or marketed by local households as a climate-resilient supplement to traditional livelihoods.

Project outcomes (by 2015)

- Establishment of three community-run nurseries in Beung Per, Phnom Kulen and Phnom Prich wildlife sanctuaries, respectively, employing ~126 community members. Nursery management staff has been provided with training in nursery management and seedling propagation.
- Distribution of various fruit tree species to ~1,900 households.
- Establishment of biodiverse food homegardens for ~250 households.
- Demonstration of various climate-resilient rice varieties in participation with ~65 households.
- Extensive training and capacity building of ~3,500 community members, including through 35 training events on nursery management and seed propagation, climate change, ecoagriculture, sustainable livelihoods, livestock farming, land tenure and financial management.
- Establishment of a knowledge base on EbA through the development of 14 technical assessments and reports, training of government staff at the commune and nature reserve level, and implementation of a long-term research and monitoring programme.

Key lessons

- The involvement of high-level government staff in project activities has ensured that the project enjoys sustained political support. For instance, the Minister of Environment inaugurated the first community-run nursery established.
- Activities which generate immediate tangible benefits for local communities early in the project (e.g. short-term work opportunities, construction of water supply infrastructure) encourage community participation and buy-in.



- EbA interventions and selection of sites should directly respond to community requests and knowledge (for example distributing sought-after fruit trees together with indigenous tree species) to promote community ownership and encourage the participation of additional households.
- It is important to include indigenous knowledge in the design and implementation of adaptation interventions. Rural communities have developed coping strategies over time, and often require only additional resources and training to convert these practices into sustainable alternative livelihood strategies.
- The involvement of experienced government staff members, who have worked with target communities for several years and have earned their trust, facilitates the implementation of adaptation interventions.
- Be aware of language barriers. Communities may often understand a concept, but are unaware of the technical language that may be used to describe it. For instance, certain local communities in the target CPAs already practice elements of conservation agriculture, but are completely unaware of the term.
- It is valuable to include local academic institutions in the research, monitoring and evaluation of project activities. In this project, at least ten MSc students will conduct research related to the adaptation interventions.



GOOD PRACTICE DESCRIPTION

LOCATION: Five Community-Protected Areas in the Kingdom of Cambodia

IMPLEMENTATION PERIOD: 2013-2017

OPERATIONAL BUDGET: US\$ 4.95 million (Adaptation Fund)

KEY STAKEHOLDERS: Ministry of Environment (Cambodia), UNEP, Adaptation Fund, Community Protected Area committee members

Background information and climate change vulnerabilities

The AF project “Enhancing Climate Change Resilience of Rural Communities living in Protected Areas in Cambodia” aims to reduce the vulnerability of communities to the specific climate change related hazards which threaten livelihoods in rural Cambodia through demonstration of EbA. In particular, the project’s approach to EbA will target vulnerabilities related to the impacts of climate change on rural smallholder farmers, particularly increased food insecurity and reduced household income. In addition, the project’s EbA interventions aim to increase the generation of ecosystem goods and services, despite the predicted future climate trends, that will support the livelihoods and wellbeing of local communities.

Intervention technologies

The AF project implements several complementary activities that collectively increase the availability of useful or commercially valuable products to benefit local communities while increasing the generation of ecosystem services from restored areas that will safeguard local livelihoods against the impacts of climate change. These activities include *inter alia*:

- Establishment of diverse food homegardens that will generate food and useful products throughout the year;
- Distribution of fruit-producing trees for households to supplement existing annual agricultural production;
- Restoration of bare and/or degraded areas with a diverse selection of climate resilient indigenous tree species to reduce soil erosion and rainwater runoff; and
- Promotion of alternative improved agricultural practices such as use of climate resilient crops and cultivars, planting of nitrogen-fixing trees adjacent to rice paddies, and livestock husbandry.

An innovative aspect of the AF project’s approach to EbA is the promotion of homegardening as a climate change adaptation strategy. Homegardening is an approach to agriculture that has been practiced in various forms in both tropical and temperate climates. In general, homegardens are relatively small-scale (~30m²) and are maintained by individual households. The selection of plant species and methods of cultivation are variable according to the needs and knowledge of the homegardener.

One of the primary social benefits of homegardening is its contribution to household food security. Plant and animal products sourced from these gardens usually complement staple crops, and thereby help families save money that would usually be spent on food. Research has also shown that the provision of vitamin-rich fruit and vegetables, as well as medicinal plants from homegardens, greatly improve household health. An additional benefit is the establishment of new



local livelihoods through cottage industriesⁱ selling surplus homegarden products e.g. fruits and vegetables.

Unlike conventional agricultural practices, homegardens are closely linked to natural ecosystems in that many indigenous local plant species are used by the gardeners. In addition to their many social, economic and biodiversity benefits, homegardens provide a wide array of ecological services, such as maintaining soil fertility and soil structure, minimizing soil moisture loss, providing shade and increasing the pollination of cropsⁱⁱ. The considerable density of plants within homegardens also provides habitat for wildlife species such as birds, small mammals, reptiles, and insects.

Description of the results

The AF project has provided ~3,500 rural community members with diverse training and awareness raising materials related to *inter alia* climate change (and potential strategies to adapt), homegardening, conservation/eco-agriculture, livestock husbandry, entrepreneurship and financial management. As a result, these communities have an increased capacity to respond to climate change, including through adopting improved agricultural practices as well as climate resilient alternative livelihoods.

The homegardens established by the project are already generating direct benefits such as increased availability of food for ~250 households, with an objective of including an additional 250 households in the future. The increased availability of food and commercially useful products generated by these homegardens increase household food security and cash income. Critically, at least some of these food and income benefits can be realised outside of the conventional agricultural harvest season, when households are traditionally at their most vulnerable and food-insecure.

In addition to the environmental benefits generated by the project's EbA activities, a direct tangible benefit for communities was generated through the creation of employment opportunities. The project prioritised the employment of local community members wherever possible, for example in the establishment of nurseries and preparation of restoration sites, thereby creating additional opportunities for income. At present, the project's three nurseries employ ~160 people.

ⁱ This refers to small-scale industries undertaken at home by family members.

ⁱⁱ Source: Kumar, M & Takeuchi, K. 2009. Agroforestry in the Western Ghats of peninsular India and the satoyama landscapes of Japan: a comparison of two sustainable land use systems. *Sustainability Science* 4, 215-232.



GOOD PRACTICE ANALYSIS*

Knowledge building

How has the project built upon or applied the findings of specific research projects? How has the project actively contributed to international understanding on Ecosystem-based Adaptation?

The project has a strong focus on developing a local evidence-base on the long-term effects and benefits of EbA, both as a means of informing an adaptive management approach to the project's interventions as well as to inform the development of future EbA initiatives. The project has generated a total of 11 assessment reports and studies that have been incorporated into the design of the project's interventions – including *inter alia* identification of appropriate plant species to be prioritised, options for alternative livelihoods, protocols for operation and maintenance of nurseries etc. – and which can be used to replicate and upscale the project's approach. Furthermore, the project has provided grants to five post-graduate students to generate socio-economic and biophysical research on the effects of the project's interventions. The findings of the scientific research undertaken will be published in peer-reviewed scientific journals, thereby ensuring that the project's findings will be permanently available to international researchers.

Building local capacities

How has the project ensured that local capacity was built during implementation phase? Explain how training programmes were integrated into core project activities and the measures taken to assure that built human capacity is maintained beyond the project's lifetime.

The project's approach to implementation strongly emphasises the participation and simultaneous capacity building of local communities as an important means of securing the sustainability of the project's investments. The design of project activities, for example the selection of species to be included in the EbA protocols, was informed by community needs and priorities to ensure that communities would support and maintain the project's investments. To further support the sustained involvement of community members, the project undertook diverse training and awareness raising activities to increase the capacity of communities to respond to climate change. Awareness raising activities included general information on climate change and potential strategies to adapt to the predicted climate changes, including through adoption of EbA. Training activities also included specific technical or vocational topics such as eco-agriculture and conservation agriculture approaches, alternative livelihood activities such as beekeeping and animal husbandry, and skills such as entrepreneurship and business management.

The three nurseries established by the project employ ~160 local people who have been provided with training on nursery management, seed collection and plant propagation. The horticultural skills provided to these community members will support the sustained operation of the nurseries beyond the project implementation period.

* This analysis is based on the "principles of good practice" developed by the EU/FP7-funded project AfriCAN Climate (2011-2014). These principles represent critical cross cutting issues shared by the majority of climate change projects, regardless of focus, scope and scale. They are intended to encourage critical reflection and help project developers and decision-makers draw out relevant lessons.

Source: <http://africanclimate.net/en/good-practice/8-principles-good-practice>



Maximising co-benefits

How have the interventions of the project promoted additional benefits?

The biodiverse homegardens, agroecosystems and restored forest ecosystems in the project intervention sites generate multiple socio-economic and environmental benefits in the short- and long-term. To compensate for the slow rate of generation of ecosystem goods and services, the project has included measures to generate short-term benefits for participating communities – for example, through promotion of improved rice cultivars and creation of paid work opportunities for local communities. The establishment of homegardens and restoration of degraded areas emphasises the generation of multiple products at different times of year from a diverse range of plant species, thereby providing a perennial buffer against severe climate shocks (e.g. crop failure). Another important co-benefit generated by the project's activities is the improved ecotourism potential in the broader Community-Protected Area, as a result of the improved aesthetics and increased availability of habitat for local biodiversity.