Oxfam Case Study

COMBATING RURAL POVERTY AND HUNGER THROUGH AGROFORESTRY IN BOLIVIA

This case study introduces agroforestry systems as a form of sustainable agriculture. It demonstrates how agroforestry systems have an important role to play in vulnerable agricultural communities in Bolivia as they struggle to overcome the negative impacts of climate change, intensive agriculture, and deforestation.

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INTRODUCTION

In contrast to intensive agricultural practices that require widespread forest clearing, agroforestry systems combine tree growing with the production of other crops or animals. By promoting tree planting, biodiversity, and long-term resource husbandry, agroforestry can be an economically and environmentally sustainable option for small-scale farmers who are struggling to combat the impacts of climate change. For hungry and food-insecure communities, agroforestry creates more resilient agricultural systems where the risk of crop failure is spread between diverse crops.

This case study describes how agroforestry systems are being promoted as part of Oxfam's programme in Bolivia in response to the multiple threats that climate change poses to vulnerable Bolivian farming communities. It shows how such systems can be economically and socially beneficial as well as more sustainable.

BACKGROUND AND CONTEXT

Bolivia is one of the poorest and most unequal countries in Latin America. Sixty five per cent of its population of about ten million live in poverty (less than US$2 a day), and 40 per cent live in extreme poverty (less than US$1 a day). Poverty is particularly concentrated among indigenous groups, who make up two-thirds of the population, and who are twice as likely to be living in extreme poverty as non-indigenous Bolivians (Oxfam International 2009).

From the *altiplano* (highlands) to the Amazon, Bolivia is characterized by diverse, unique, and fragile ecosystems and is particularly vulnerable to the impacts of climate change. A recent Oxfam report argues that climate change is having five major types of impact for poor Bolivian communities.

1. **More frequent and more intense 'natural' disasters**
   In 2007and 2008 Bolivia experienced some of the worst natural disasters of the past 25 years, including drought in the semi-arid *chaco* region of south-eastern Bolivia; extreme flooding in the Amazon regions; and hailstorms, floods, and landslides in the *altiplano*. The impacts of disasters are concentrated on the poorest women and men living in vulnerable and fragile ecosystems.
2. **Increasing food insecurity and hunger**
   Disasters, extreme weather events, and unpredictable weather patterns are all having an impact on food security in Bolivia. Higher temperatures are changing traditional agricultural patterns and increasing the burden of agricultural diseases and pests. Less rain, and less predictability about when rains are coming, is making the growing season shorter for farmers without irrigation systems. Extreme weather events like floods and hailstorms cause crop destruction and damage. The overall impact is to reduce agricultural productivity, leading to increased food prices. Small-scale farmers face reduced incomes because they have less to sell, while the higher costs of buying food affect poor women and men in both rural and urban areas.
3. **Water scarcity**
   Bolivia is home to around 20 per cent of the world's tropical glaciers. Glacial meltwater is a key source of drinking water and crop irrigation for thousands of poor Andean farmers. Glacial retreat is being accelerated by

climate change. But without the glaciers, farmers in the *altiplano* face drought, and potentially the extinction of their entire way of life.

4. **Diseases**
   Temperature increases are increasing the spread of mosquito-borne diseases such as malaria and dengue.
5. **Forest fires**
   Deforestation and land-clearing in the Bolivian Amazon are reinforcing the changes in local rainfall patterns. Longer dry periods are in turn leading to higher incidences of forest fires.

(Oxfam International 2009)

PROMOTING SUSTAINABLE SMALL-SCALE AGRICULTURE IN BOLIVIA

In response to the challenges of climate change, deforestation, and food insecurity, Oxfam is working with local partners and the wider sustainability movement to promote more sustainable forms of agriculture in Bolivia.

Oxfam's programme promotes the management of natural resources in the Amazon and Chaco regions. These regions are characterized by fragile ecosystems undergoing accelerated processes of environmental degradation as a result of climate change and agricultural intensification. Communities living these regions are traditionally poor and highly vulnerable to climate change. Mainly indigenous peoples and small farmers, they have limited capacity to adapt to its effects, and face critical levels of food insecurity.

Small-scale farming in Bolivia faces other challenges. It has often been criticized as an inefficient form of production – despite extensive global evidence that small-scale farming is in fact highly efficient. Despite its importance as a source of income and employment for women in particular, small-scale agriculture in Bolivia has received little support through public policy. Increasingly, young people from rural areas are migrating to the cities. They no longer see their future in family farming as it becomes an increasingly difficult way of life. Through its agroforestry programmes, Oxfam is trying to promote the idea that there is a future for sustainable small-scale agriculture in rural Bolivia.

What are agroforestry systems?

Agroforestry systems combine the cultivation of trees, bushes and palms with crop growing and animal husbandry in the same area of land. Many agroforestry systems capture aspects of traditional agricultural practices, adapting them using modern technologies and know-how.

By developing positive ecological interactions between species, agroforestry systems aim to provide a range of environmental, economic, and social benefits to farming communities. Increasing the tree cover on farms can help to combat deforestation and the impacts of climate change; it can reduce soil erosion, help to capture water and nutrients, and support greater biodiversity. By increasing the productivity and diversity of their crops, and by optimizing the use of natural resources on their farms, farmers can benefit from a reduced use of agrochemicals. Agroforestry systems typically use accessible and low-cost technologies and generate employment and rural incomes. In the Bolivian Amazon, agroforestry can present a more sustainable alternative to forest clearance for soy and cattle production.

By creating agricultural systems that are more resilient, farmers will be better able to face the impacts of climate change such as climatic variability, drought, floods, and frost. Crop diversification will reduce the risks of total loss of the harvest, and increase the potential range of products for sale and consumption.

Box 1: Components of agroforestry systems

- Agroforestry systems can use a wide range of strategies to build productive interactions between trees and other crops, for example:
- The promotion of trees that improve the soil, through nitrogen fixation, through combating erosion, or because their leaves act as a natural mulch or fertilizer
- The promotion of shade trees for perennial crops like coffee and cocoa, or for livestock.
- The promotion of trees that can provide fruit and nut crops, firewood, medicines, or which support other crops or animals
- The promotion of trees and shrubs as hedges and windbreaks
- The combination of tree plantations with animal husbandry, for example through grazing in tree plantations, or the use of trees as animal fodder
- The promotion of trees and shrubs within household gardens, for a variety of commercial and household uses

Source: World Agroforestry Centre (2011)

The potential benefits of agroforestry systems for small-scale farmers in Bolivia

Where agroforestry systems are implemented over a medium- to long-term timeframe, Oxfam's research suggests that the benefits for farmers can be significant. Given the extreme poverty of many Bolivian small-scale farmers, income increases could be transformational. Oxfam's experience suggests that agroforestry systems compare very favourably with the other livelihoods options available to these farmers, which are limited, and include conventional agriculture, livestock farming, and chestnut collection.

The early phases of an agroforestry system require relatively high investment of time and resources, while returns from cultivation may take some years to develop. Getting agroforestry systems up and running therefore requires initial financial and technical support, and such systems should be implemented over at least 5–10 years to see satisfactory returns.

As well as enhancing economic returns, agroforestry systems contribute to food security and support a range of positive social and environmental outcomes. They offer a positive alternative to cattle ranching, logging, and intensive agriculture based on forest clearing and monoculture. They have enabled communities in Bolivia to bring degraded and marginal lands into production. They also support communities to build greater resilience to the impacts of climate change.

Box 2: Agroforestry in action in Bolivia

Juan lives in Guayaramerín, a town at the Brazilian border in the northern Amazon region of Bolivia. It is half Brazilian, half Bolivian, as is almost everything in the vicinity: the trade, the food, and the families.

A few years ago he had no land to farm**,** but thanks to pressure from indigenous and peasant groups, he now has seven acres in the community Dos de Octubre. He works the land with his wife Iris and with other neighboring families involved in the Agroforestry Farmers' Association of the Amazon Region of Bolivia (APARAB).

APARAB encourages a mode of production inspired by forest life – mixing plants, restoring native species and diversifying both seeds and harvests. Seven years after it was founded with support from Oxfam, APARAB brings together 300 families and manages a plant for cocoa processing and one for drying fruit. But that is not enough. "Now we need to improve the production process, the quality of our products, and particularly knowledge of the market," says Juan. The proximity of Guayaramerín to Brazil offers both opportunities and challenges for the Bolivian farmers. Whilst a steady flow of customers comes over the border in search of goods at lower prices, fresh food coming from Brazil competes with local production, brings prices down, and reduces the ability of Bolivian farmers to sell their harvests.

"The association is important: it helps us face these obstacles and produce more and better," explains Juan. "Having land was only the first step, now our vision is to develop and have quality of life." That's not an easy task. Seven years after its foundation, APARAB members face not only local challenges, but also global ones such as climate change and deforestation in the Amazon region.

That is why Oxfam and its allies in Bolivia focus on communities such as Dos de Octubre**.** The main programme objectives are supporting access to land, diversifying agricultural production, increasing revenue, improving the marketing of products, the recovery of the forest and above all, rediscovering other ways of seeing and living the world.

The most important thing, says Juan, is to change ideas. "If our parents and grandparents had thought of tomorrow, of producing and improving the quality of life, my life and the life of other people would be different. So in my community we want to teach our children something different, and leave them a patch of forest and food. Our change ensures their future."

LOOKING FORWARD: THE FUTURE FOR FOOD JUSTICE IN BOLIVIA

The ideas that underpin agroforestry systems are reflected in a new development paradigm being promoted in Bolivia, *Vivir bien* (Living Well). *Vivir bien* promotes the sustainable use of natural resources in a resource-constrained world. As Bolivia's increasingly vibrant social and environmental movements unite around the need to combat the impacts of climate change, alternatives to traditional forms of resource exploitation are gaining traction.

Oxfam wants to scale up the impacts of its work to support the implementation of agroforestry systems in Bolivia. Through research into the impacts that agroforestry systems can generate for food security, production, market access, and sustainable economic and environmental development, Oxfam hopes to strengthen the case for agroforestry systems. Through support to farmer movements, and through advocacy and campaigning, Oxfam will promote agroforestry systems as a pro-poor policy option and a core strategy for adaptation to climate change in Bolivia.

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For further information on the issues raised in this paper please e-mail **advocacy@oxfaminternational.org**.

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