



USING NATURAL CAPITAL TO MANAGE RISK AND REDUCE POVERTY

by **Arild Angelsen** arild.angelsen@umb.no, **Monica Fisher** monica.fisher@oregonstate.edu, **Charles Jumbe** charlesjumbe@yahoo.com, **Gerald Shively** shivelyg@purdue.edu, **Dick Sserunkuuma** sserunkuuma@agric.mak.ac.ug

Resources against risk

COMMON-POOL RESOURCES, such as forests, contribute to the wellbeing of rural populations throughout the developing world. Field studies reveal that income from resource extraction can account for more than 40% of total income for some rural households. Harvesting natural resources is a common coping mechanism for families that suffer a sudden loss of income or a draining away of productive assets, such as can occur when a family member becomes ill or dies, or when an area is hit by a drought, flood, or other natural disaster.

Other coping mechanisms may be less accessible to poor households, especially those that do not have the collateral to borrow in credit markets, those headed by women (who often possess few liquid assets), and marginal groups with low levels of social capital. Where markets are weak and financial services not available, common property and open-access resources, particularly forests, can provide the rural poor with “natural insurance.” Furthermore, households can convert natural capital into financial, physical, and human capital in order to improve the long-term possibility of escaping poverty.

The effectiveness of relying on natural resources as a risk or poverty-alleviation strategy varies with levels of income or wealth, gender, and market conditions. In some cases, it may even perpetuate household poverty. This BASIS-funded project will examine the role of environmental income in risk management, asset accumulation, and poverty reduction. Importantly, we

will seek to identify conditions whereby reliance on natural resources helps families build income and protect themselves from risk, and where it prevents them from participating fruitfully in other activities and ultimately escaping poverty.

A global view

Using the Poverty Environment Network (PEN) global data set—more than 9,000 households in more than 350 communities in 26 countries—our study will examine two critical themes. First, the extent to which local natural resources, by providing informal insurance and a safety net, help alleviate risk-related hardship among rural households. Second, the potential for poor rural households, especially those headed by women, to use income derived from natural resources to accumulate physical, financial and human capital, and thereby escape poverty by either “stepping up” or “stepping out.” The former involves moving into more remunerative extractive or value-adding activities, while the latter involves shifting effort and resources to other activities.

The Center for International Forestry Research launched the PEN network in September 2004 to coordinate a number of field studies around the world using standard questionnaires and consistent research methods. PEN represents a large and expanding network of 38 field studies and more than 50 research partners, coordinated by one of the PIs of this BASIS project. The goal is to create a detailed picture of the

role played by forests in poverty alleviation in widely different regional contexts, and then to offer recommendations on policy direction and implementation.

PEN data are collected from smallholders, landless farmers, and shifting cultivators living in or near forests. The study sites represent different continents, regions, forest types, and socioeconomic environments. Within each PEN country, villages have been selected to represent the larger region while also accounting for variation in factors such as market access, land tenure, and forest abundance.

Building on studies showing that reliance on local natural resources declines as income or wealth rises, our study will analyze PEN data to try to explain the negative correlation between natural resource dependence and poverty. Resource reliance by households is often viewed as both a consequence and a cause of poverty. At a more aggregate level, the poor are both the agents and the victims of environmental degradation, which shrinks the resource base and deepens poverty.

A plausible alternative to the downward spiral scenarios is a pattern in which poor rural households convert natural capital into physical and human capital, and use these investments to gradually move out of poverty and reduce their reliance on destructive resource extraction. Our analysis will be among the first to investigate whether and under what conditions resource dependence can be a viable strategy for building other forms of capital. We will also examine to what extent opportunities are constrained by market conditions, and under what conditions market improvements improve welfare without further jeopardizing remaining resource stocks.

This BASIS study will focus on Malawi and Uganda, where PEN data collection is complete. The studies in these two countries are unique among the PEN studies in that they build on previous household surveys, thereby providing the opportunity to examine natural resource reliance and how that impacts poverty and risk-coping mechanisms over time. In both Malawi and Uganda, as with many developing countries, natural resources are increasingly viewed as an important vehicle for poverty alleviation. The Government of Malawi states explicitly that forests and trees should be used to fight poverty. Similarly, Uganda's national forest plan seeks to enhance and diversify incomes from forests with a goal of lifting rural households out of poverty. Our analysis will provide critical information for these policies aimed at improving rural welfare.

Natural insurance

There are several reasons why the poor turn to natural capital in the face of risks. Local natural resources often are freely available, either due to government failure to enforce property rights or weakened traditional systems of resource-use regulation. Many types of natural resource extraction require little financial and physical capital either for production or marketing. Natural resources are diverse, providing a range of products and opportunities for income generation, and these products often are available when other income sources are not, as during slack seasons or when crops fail.

Yet, resource extraction generally offers relatively low returns to effort. Furthermore, household dependence on natural resources can cause environmental degradation and biodiversity loss, which in turn deepens the poverty for people who rely on those eroding resources.

In some settings, therefore, resource extraction represents a low return activity with limited prospects for moving out of poverty. Policies that focus on securing natural resource access by the poor and encouraging resource-derived enterprises may only perpetuate poverty. In these cases, a more effective pro-poor (and pro-environment) strategy would assist families to rely less on natural resources and move into other kinds of employment.

Conversely, where natural resources are crucial to weathering income variability and show potential for assisting households in building up their stocks of physical and human capital, resource-based strategies combined with complementary policies may prove useful for improving household welfare.

Respondents in the PEN household surveys were asked if their household experienced major income shortfalls for any reason in the previous year. If the household suffered from crop failure, illness or death of household member, loss of important assets, or some other hardship, the family was asked to describe how they attempted to cope. For each study area and for each coping mechanism reported, we will identify the most important coping strategies, specifically comparing the effectiveness of using environmental harvesting to other coping strategies.

Income for assets

The second major theme in our study concerns the potential for households to gain income from harvesting natural resources and using this income to accu-

multate physical, financial and human capital. Specifically, we will be able to give a picture of the conditions under which poor people significantly benefit from high-value environmental products and when they are typically denied access to all but the low-return environmental enterprises. We will study seasonal patterns of environmental income and examine how important this income is compared to other income sources. We also will measure how environmental income helps the poor preserve stocks of physical and human capital in the face of risk-related hardships.

Market access is important in evaluating how use of environmental income might be a successful pathway from poverty. Prospects for natural resources to help in poverty alleviation hinge largely on the presence of sound markets for these products. Therefore we will study market conditions in each study area, including prices of environmental products and distance and travel time to markets. We will calculate the extent of household integration into forest product, agricultural, and labor markets.

By classifying environmental activities along a continuum of low-return to high-return through the available markets, we will be able to reveal the likelihood of natural resources contributing to poverty alleviation in a region. At best, reliance on low-return activities helps the poor survive but is unlikely to reduce poverty, whereas high-return activities may hold promise for reducing poverty.

Our study will include measures of asset poverty, including human capital (education, adult labor, health), physical capital (land, livestock, durables, savings, and business assets), and social capital (as measured by trust and village social networks). We will also provide insights into local perceptions of poverty through analysis of survey responses to questions related to how well off a household is relative to other households and whether its food production and income are sufficient to cover basic needs.

Building capacity for effective policy

On a range of economic and social development indicators, Malawi ranks as one of the poorest countries in the world. Estimates show that for years about 65% of Malawians were unable to secure their food and other basic needs. Yet, Malawi has enjoyed political stability recently and shows signs of economic recovery, including a maize surplus and an increase in the economic growth rate.

Though facing development challenges of its own, Uganda is in a period of robust economic growth. FAO regards the country as possessing high potential for effective conservation, sound natural forest management, and sustained economic growth. Although the country continues to draw down its stock of natural capital through fuelwood and charcoal use, it nevertheless maintains a solid ecological base from which sustainable agriculture and forestry might operate. Development of non-timber forest products is one component of a current government strategy to increase economic growth.

Research capacity in both countries is limited and concentrated in a few key institutions. To make meaningful progress toward meeting Malawi's and Uganda's development challenges, it is necessary to strengthen the skill sets of individuals operating at different levels. A fundamental goal of this project is to build the capacity of host-country partners to conduct policy analyses that are relevant, well-reasoned, and timely, so as to benefit smallholder farmers in the region. Each year, alternating between countries, we will conduct a policy training workshop focused on developing the skills of mid-level government, NGO, and university research staff and graduate students to use data and research findings in an effective way, and to adopt recommendations that come out of our research.

We also will draw the countries' graduate students into field work and analysis of the PEN data. Both Makerere University in Uganda and the University of Malawi have established graduate programs in development studies and these provide useful platforms for enhancing the research and analytical skills of selected students. Annual short courses conducted by project PIs will be offered to these students and will cover applied research topics ranging from survey design to data analysis, ethical conduct of research, and writing.

Individual graduate student training will take place at Purdue, Oregon State, and the Norwegian University of Life Sciences. All institutions have well-established programs in marketing, agricultural development, and applied economics. We anticipate training students from each country, with thesis work closely tied to a component of the project. Topics may include markets for environmental goods and analysis of value chains associated with sawn wood, charcoal and forest-based crafts.



B A S I S B r i e f s

Authors

Arild Angelsen

Norwegian University of
Life Sciences, Norway

Monica Fisher

Oregon State University,
USA

Charles Jumbe

University of Malawi,
Malawi

Gerald Shively

Purdue University, USA

Dick Sserunkuuma

Makerere University,
Uganda

Publication made possible
by support in part from
the US Agency for
International Development
Cooperative Agreement No.
EDH-A-00-06-0003-00
through the Assets and
Market Access CRSP.



USAID
FROM THE AMERICAN PEOPLE

All views, interpretations,
recommendations, and
conclusions expressed
in this paper are those
of the authors and not
necessarily those of the
supporting or cooperating
organizations.

Edited and layout by
BASIS CRSP

Comments encouraged:
Department of Agricultural
and Applied Economics,
University of Wisconsin,
Madison, WI 53706 USA
basis-me@facstaff.wisc.edu
tel: +608-262-5538
fax: +608-262-4376
<http://www.basis.wisc.edu>

Our existing partnerships with universities, NGOs, USAID, and government ministries will help facilitate widespread dissemination of our findings in the host countries. From the Malawi and Uganda studies we expect to derive lessons that have broader regional and global applicability. To communicate findings globally, we will produce *BASIS Briefs* to document key findings and use the networks of the Center for International Forestry Research and PEN to disseminate findings widely.

Forests and livelihoods

Strategically, the project leverages prior investments in data collection by the Center for International Forestry Research and PEN in order to generate findings on the issue of local forest management and its implications for total forest benefits, distribution of these benefits, and their contribution to improving rural livelihoods. The study addresses strategic goals in Malawi of increasing economic prosperity and security, as well as critical environmental issues. This project also will help in the effort to improve forest product marketing and develops standards in the forestry industry. In Uganda, the project is allied with goals of boosting economic growth, reducing environmental degradation, and enhancing food security for vulnerable populations.

By addressing root causes of environmental degradation, this work speaks directly to biodiversity conservation concerns. It also is closely linked to the Initiative to End Hunger in Africa as it is aligned with several cross-cutting concerns of that program, namely academic and professional training, and information for agricultural strategy formulation.

In addition to generating findings on the role of environmental income in risk management, asset accumulation, and poverty reduction, project activities center on strengthening host-country capacity for

policy analysis and deriving policy lessons regarding the role of natural insurance among the rural poor, including the degree to which environmental income serves as a safety net, and the potential for poor rural households to sustainably use environmental income to accumulate assets needed to move out of poverty.



Further reading

Aryal B. and A. Angelsen. 2007. "Self Selection and Households' Decision on Forest Use: Does the Forest Product Type Matter?" Manuscript. Norwegian University of Life Sciences.

Angelsen, A. and S. Wunder. 2003. "Exploring the Forest-poverty Link: Key Concepts, Issues and Research Implications." CIFOR Occasional Paper no. 40.

Fisher, M., G.E. Shively, and S. Buccola. 2005. "Activity Choice, Labor Allocation, and Forest Use in Malawi." *Land Economics* 81(4): 503-17.

Fisher, M. and G.E. Shively. 2005. "Can Income Programs Reduce Tropical Forest Pressure? Income Shocks and Forest Use in Malawi." *World Development* 37(7): 1115-28.

Jumbe, C. and A. Angelsen. 2006. "Do the Poor Benefit from Devolution Policies? Evidence from Forest Co-management in Malawi." *Land Economics* 82(4): 562-81.

Pattanayak, S.K., E.O. Sills. 1999. "Do Tropical Forests Provide Natural Insurance?" *Land Economics* 77(4): 595-612.

Shively, G.E. 2004. "Introduction to the Special Issue on Poverty and Forest Degradation." *Environment and Development Economics* 9(2): 131-34.

Takasaki, Y., B.L. Barham, and O.T. Coomes. 2004. "Risk Coping Strategies in Tropical Forests: Floods, Illnesses, and Resource Extraction." *Environment and Development Economics* 9(2): 203-24.

Vedeld, P., A. Angelsen, G.K. Berg, and E. Sjaastad. 2004. *Counting on the Environment. Forest Incomes and the Rural Poor.* World Bank paper no. 98. Environment Development Papers. Washington, DC: The World Bank.