POLICY BRIEF

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Opportunity costs of conservation: The case of protected area management in the Kakamega Forest, Western Kenya

Knowing the local opportunity costs of restricting access to forest land and resources for conservation purposes is an important input to the design of cost-effective conservation schemes that minimize adverse effects on poor forest users.

BY PAUL GUTHIGA - MAY, 2009

The Kakamega Forest is the only remaining tropical rainforest fragment in Western Kenya and hosts large numbers of endemic animal and plant species. Protected areas were established decades ago in order to preserve the forest's unique biodiversity from being converted into agricultural land by the regions large number of small-scale farmers. Nonetheless, recent research shows that degradation continues at alarming rates. Our findings suggest that a more flexible approach to determining the price of recently established forest product extraction permits would greatly enhance management efficiency without significantly compromising local wellbeing.

Conversion of forests to agriculture is one of the prime causes of ecosystem services loss especially in the developing world (Barbier and Burgess, 2001; MEA, 2005). Nevertheless, tropical rainforests provide considerable benefits to both local communities and the global society (Turner et al., 2007). In many developing countries, forests represent a cheap and often important source of basic consumption goods for rural low-income households (Shackleton and Shackleton, 2004). This has contributed to the belief that promoting non-timber forest product (NTFP) extraction and improving related value chains represent an effective means to conserve forest resources and native biodiversity. Arnold and Pérez (2001), however, challenged this viewand showed that NTFP harvesting often involves overuse and severe degradation of forest resources. Forest degradation usually comes with the loss of both locally and globally valued biodiversity services, such as endemic plant and animal species and other environmental services, such as carbonretention in forest biomass

Key Points

- Permits to exploit forest products should be based on willingness to pay
- Opportunity cost varies across households and land uses.
- Conserving Kakamega forest is much more important than opening it up for cultivation.

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In many parts of the world, protected areas have proven to be an effective policy instrument to conserve valuable forest ecosystem services. Protected areas can be designed such that rural dwellers are not deprived of access to specific forest resources. Yet, too often, either local communities or the forest loose out due to inefficiently designed mechanisms to regulate natural resource access in and around protected areas (Naughton-Treves et al., 2005). Atypical way of setting up protected areas in populated landscapes is to allow local dwellers limited access to defined resources. Resource access can be restricted through a variety of mechanisms, such as bans and fines, quotas on extraction quantities, closed seasons or user fee charges. Apart from monitoring and enforcement, which can be important bottlenecks for protected area management, the design of mechanisms to restrict and govern resource access poses major challenges. The main economic challenge is to design a cost-effective mix of conservation incentives with minimum adverse impacts on the poor forest dependent population.

In order to discourage resource overexploitation, fees have to adequately reflect the local value of forest goods and services. A crucial input to designing fair and cost-effective user fee schemes is thus the quantification of the local value of land and forest goods and services, i.e. the opportunity cost of strictly protecting the forest. It evident that forest use and extraction activities are relatively high valued on the model farms. In fact, a ban on forest use and extraction would reduce the value of non-essential consumption on smaller farms by 62–76%. The larger farms would be less affected (13–15%), as their major share of non-essential consumption value is produced on-farm. Thus, land shadow values decrease with the increases in farm size. The opportunity cost is also influenced by the type of crops grown, being high for cash crops and low for subsistence crops.

Policy implications and recommendations

With respect to forest dependence, we find that all farms prefer forest use to buying the respective products on local markets or establish non-forest dependent forms of production, e.g. in the case of livestock keeping. However, depending on a variety of factors, including farm size and distance to forests, the value of some forms of forest use (especially grazing) vary considerably across farm types. Our findings thus indicate that the cost-effectiveness of forest management could be increased by differentiating the price of grazing permits according to individual opportunity costs. If permits for grazing are offered at the basis of willingness to pay instead of a fixed price approach, farms with low opportunity costs tend to switch to other technologies, thus taking some pressure from forest lands. According to the findings, the willingness to pay for grazing is roughly three to five times higher (depending on farm type) than the price actually charged. Techniques, such as permit auctions, where forest users self-reveal their willingness to pay for resource access thus appear as a potential alternative to current ad hoc price determination. If the forest's ecological carrying capacity with respect to the major extraction activities could be reasonably well established, auctions may result in permit prices that more realistically reflect demand and, at the same time, provide incentives based on resource availability.

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ABOUT THIS BRIEF

This brief is based on results from: Jan Börner , John Mburu , Paul Guthiga , Stephen Wambua, 2009, "Assessing opportunity costs of conservation: Ingredients for protected area management in the Kakamega Forest, Western Kenya". Forest Policy and Economics 11 (2009) 459–467.

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