

## Forest environmental income and the rural poor

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*Lead Authors:* Espen Sjaastad and Paul Vedeld

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The Razanamaro family is a poor, female-headed household in Madagascar. Researchers across the world study how policy can most effectively be designed to help poor, rural households who typically depend more on forest environmental incomes than other households. This can be done both through policies facilitating access and sustainable use of natural resources directly, but also through policies improving agricultural productivity and farm incomes as well as options for increased off-farm and non-farm economic activities. (Source: Cornell University)

There has in recent years been a growing recognition of the important role played by environmental goods and services in the livelihoods of poor people. This recognition was, in part, spawned by the rising concern over poverty and environment linkages that emerged in the 1980s. Associated issues have also contributed, including the focus on natural resource scarcity as a cause of violent conflict and the often sharp divide between conservation and development interests. From a more practical perspective, studies of income from natural resources should represent important input into policy making for rural areas. And accurate mapping of poverty, which is emphasized in multilateral initiatives such as poverty reduction strategies and the Millennium Development Goals, requires inclusion of all sources of income, including natural capital such as forests and woodlands. Here, we first discuss methodological issues related to determination of environmental income. We then discuss the significance of such income for the rural poor, before outlining some future challenges in the investigation of these relationships. Our objectives are to illuminate the strengths and weaknesses of different approaches, and to examine the role that forest environmental income may play in the lives of poor people and in policy making around poverty issues.

### **Approaches, measures, and methodological issues**

There are several ways in which to approach the study of forest environmental incomes. The approach will, to some extent, be dictated by the objective of the study. The goal of forest

valuation normally is to establish an objective measure of the total economic value of the resource rather than its significance for marginalized groups. Valuation exercises may, however, also generate useful information about the value of specific ecosystem goods and services, including services such as water conservation and carbon sequestration, that are frequently ignored in other types of studies. Some valuations also explicitly recognize that the value of a resource depends on perspective. In contrast, stakeholder analyses will rarely provide a measure of income derived from specific sources but may reveal relationships and areas of conflict that are equally important for policy formulation.

Both the household economic approach and the broader sustainable livelihoods approach are well-suited to the study of forest environmental income and its importance to poor people. Intrinsic to the latter approach is an emphasis on the multiple and diverse income sources that poor households generally require to survive, the forms of capital that mobilize and constrain each of these sources, the impact of external factors and institutional arrangements on household-specific adaptations, the dependency on a particular income source that may characterize a particular group, and the manner in which livelihood diversification, capital, and dependency are linked with wealth differentiation more generally.

Environmental income is income that can be attributed to natural rather than human-made capital. This “natural bounty” would comprise goods and services provided by all types of natural resources, sinks, and processes, including soils, oils, minerals, trees, fish, game, air, and water bodies. Forest resources include an almost endless array of different goods, but those of greatest direct importance to the poor are typically food and fuel wood. While the commercial value of timber usually exceeds either of these, timber revenues rarely accrue to the poor. Fodder resources may also be important to the poor but are normally even more important for the non-poor. A key feature of environmental income is that it is derived from uncultivated natural resources. There is, therefore, a difference between natural and plantation forests.

Income can be measured in different ways, and each measure possesses advantages and disadvantages. With respect to environmental income, rent and value added are the most appropriate measures. Rent is equal to all income minus all costs, including labor costs and the costs implied by use of capital that could have been employed in other profitable enterprises (normal profits). Value added, on the other hand, is all income minus all costs, except labor costs and normal profits. In rural settings in poor countries, normal profits will usually be low or nonexistent. In practice, one should use rent when markets are generally competitive and labor costs and normal profits can be established. When they cannot, one should use value added.

Natural resources frequently go through several stages of processing and a similar number of transactions before final use. Because of this, distinguishing environmental income from non-environmental income may be complicated. A practical adaptation is to treat as environmental income only those values consumed directly, or realized through exchange, by the first user (or appropriator) of the resource. This assumes that income realized beyond the initial exchange can be attributed to processing or market structure rather than to the resource itself. Exceptions to this may occur, and should be evaluated on a case-by-case basis.

Beyond an operational definition of forest environmental income, and despite the availability of excellent advice, several methodological problems regularly crop up in connection with articles and reports:

- Neglect of the environmental services provided by forest resources is common, despite the crucial role these often play also in the context of individuals and local

communities. A key issue here is a shortage of resources to carry out what is often complex and time-consuming inquiries.

- Flows of income from forest resources are often automatically regarded as sustainable, without any effort to establish whether this is correct. Secondary sources can often shed light on this issue without necessitating much in the way of additional research resources.
- Double counting of benefits is also common. A typical example is when the value of fodder harvested from the forest is included as a benefit, but not subsequently subtracted as an input cost into livestock production.
- Finally, scholars sometimes bring a myopic perspective to the study of forest resources, neglecting the links between rural livelihoods, forest extraction, and the wider economy – both in terms of important constraints posed by policy and institutional frameworks and in terms of the way in which the state and robustness of rural livelihoods feed back into the economy at large through migration and markets for primary goods.

### **Forest resources and poverty alleviation**



The challenge is to support specific changes that will increase the benefits of forest and tree resources for poor people, thus enhancing their contribution to the reduction of poverty, especially in rural areas. (Source: FAO)

At the macro-level, a dynamic relationship has been observed whereby poor countries, initially with abundant forest resources, go through a process of deforestation as they grow steadily richer. When a certain level of development is reached, deforestation peaks, after which resources are invested in conservation and regeneration. From this perspective, conversion of forest capital is an inevitable part of economic progress, and assigning blame for deforestation or degradation to the poor or the rich is meaningless. Thus, despite appeals to the importance of the biodiversity found in the South, it is still a paradox that poor countries protect far more forest than wealthy ones. There is also a strong geographic correlation between populations of chronically poor people and areas of remaining natural forest in the world.

At a micro level, natural forest resources may serve several functions. For some, they may provide an important supplement to everyday consumption. For others, they may serve as a “safety net,” helping to satisfy insurance, gap filling, or coping needs, depending on whether harvesting occurs before or after shocks and whether these are predictable. For yet others, forest resources may even provide a “pathway out of poverty.”

Natural forests of importance to poor people are generally either communal property or de facto open access resources, and typically are found in remote areas with poor infrastructure and difficult market access. Furthermore, a robust empirical finding, reported from a variety of settings, is that the poorest people derive a larger share of their total net income from forest resources than those who are better off within the same community. In general, poor communities are more dependent on forests than wealthier ones, and the poorest within these poor communities are more dependent than the comparatively better off.

This begs a question of causality. Do poor people depend on forest resources because they are poor, or are they poor because they depend on forest resources? By and large, the answer is that they depend on forest resources because they are poor. At the micro-level, using forest resources as a means of becoming wealthy is an avenue open to only a very small and privileged minority. Forest income-earning activities mostly generate very low returns, and a high dependence on such activities is characteristic of households with limited options. Although the dependence of comparatively wealthy households on forest income is lower, absolute forest income for this group is often equal to or higher than that of the poor. Income realized by the wealthy typically involves a different set of goods, especially timber and fodder, that requires a certain level of asset ownership.

A broadly supported conclusion is that forest environmental income tends to be substantial for people living in rural areas. Many studies find that the average share of forest income in total income (cash and kind) is around one fifth. There are, of course, substantial inter-household variations, depending on a number of internal factors such as possession of land, labor, financial capital, and human capital. Contextual factors beyond the immediate control of the household are also important. These include variables related to the physical environment, government policy, law and law enforcement, and the wider economy. It is important to note that even when the contribution of forest income is relatively small, it may still be of crucial importance to households living close to the survival line.

Forest income may also have a strong equalizing effect on local income distribution. Cavendish reported a 30 percent reduction in income inequality due to inclusion of forest-related incomes in household surveys in Zimbabwe. Studies from Ethiopia, Malawi, and Uganda reported a comparable effect on income inequality, as did a meta-study based on cases from Africa, Asia, and Latin America. The equalizing effect of forest environmental income is generally found by comparing income equality when such income is included with income equality when such income is excluded. This method has weaknesses, since it does not consider the alternative livelihood sources, for example wage labor markets, that people would engage with if environmental income sources were unavailable. But the method will generally give a good indication of the equalizing effect when alternative livelihood sources are meager.

Empirical studies reveal that household strategies are complex and are also dynamic in time and space. Typically, wealthier households are able to pursue more profitable activities whereas poor households engage in labor intensive and less profitable activities. But rural households are also often “multi-taskers” who pursue a number of different activities, either out of choice or out of necessity. One typically finds that high total incomes are associated with little income diversification while poor households diversify substantially. In the context of forest income, the indication is that those few households capable of forging a “pathway out of poverty” do so through a degree of specialization. The poorer households, on the other hand, pursue an array of income sources in the forest, more through necessity than choice. That is, since each individual activity on its own is insufficient to guarantee its survival, a household must spread its labor among a host of different tasks. Rather than an insurance

strategy, where a premium (in the form of a reduced average income) is paid in order to stabilize income through time, this represents a coping strategy where household make do as best as they can.

## **Future challenges**

Studies of forest environmental income and poverty have generated results of considerable usefulness in the relatively short period since their inception. A lot remains to be done, however. In particular, there is a need for more livelihood-oriented studies that go beyond the generality of “forest resources” to analyze the significance of particular goods and services, both in terms of their significance for particular social strata and in terms of the sustainability of levels of extraction. Here, research on the livelihoods of the rural poor would do well to incorporate results and methods from, respectively, the extensive bodies of literature on forest valuation and forest ecology. Environmental services are sometimes regarded as primarily regional or global in scope, but services such as soil conservation and water retention are often of critical importance to those living in the immediate vicinity of the forest.

Dynamic studies, employing time series, are few and far between. Such studies are needed in order to thrash out more specifically the functions that forest resources fulfill in the lives of different groups and individuals through time, and how environmental income interacts with changing economies, legal frameworks, and ecosystems.

In most poverty assessments, forest environmental incomes are either omitted or underreported. By focusing on the key resources of food, fuel, and fodder, this problem could be greatly reduced with a minimum of additional effort. Present practices lead to exaggerated estimates of poverty levels, while underplaying the significance of natural resources management policies and interventions.

Because forest environmental incomes are particularly important for poor people, deprivation of access to forest resources may have serious impacts on rural livelihoods, both in terms of consumption and cash income generation. While it may be true that the environment is unlikely to provide a solution to the poverty in which a majority of the world’s population lives, it is also true that reduced access to environmental resources will greatly exacerbate problems of poverty in many rural settings. In the short term, access to key resources may be under threat from conservation interests; in the longer term, use may be threatened by unsustainable extraction and resource destruction. Thus, neither “fortress” conservation nor unrestricted access is likely to be a helpful solution to the problems of the rural poor. The space located in between these two extremes may at times seem small, and the efforts to nurture it have often been unsuccessful. Yet a continued pursuit of solutions that balance the immediate against the long term and the local against the global appears to be the only sensible way forward.

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