

## **TROPICAL FORESTS AND POVERTY ALLEVIATION – HOW CAN BENEFITS BE CAPTURED?**

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It is a matter of fact that many countries of the world are relatively wealthy without having significant (tropical) forests. Observation also reveals that there are a number of countries with large tropical forests that have high levels of poverty. Thus, experience indicates that possessing tropical forests is neither necessary nor sufficient to poverty alleviation.

This observation is consistent with the observations of some development economists who have noted that countries rich in natural resources are often not wealthy countries. Plentiful natural resources per se do not guarantee, nor are they even strongly associated with, regional or country wealth, to say nothing of the distribution of that wealth so as to generate substantial poverty alleviation or freedom from poverty. Clearly the precursors for economic wealth involve a number of factors that are different from the simple abundance of natural resources.

Nevertheless, it is important to note that tropical forests, as other types of forest, do provide a host of useful marketed and non-marketed goods and services. These include forest foods and materials, timber, watershed protection and erosion control, recreation, wildlife habitat and biodiversity. An important question is whether these goods and services can, directly or indirectly, readily be harnessed to alleviate poverty. The beneficiaries of these outputs and services vary, and surely are not confined to those residing in or near the forest. Indeed, tropical countries and people residing in tropical forests are often given as examples of poor countries and poor people within those countries.

### **1. SOME PROBLEMS IN CAPTURING BENEFITS**

This section deals with the market and non-market benefits from tropical forests, the opportunities, and some difficulties in capturing compensation for the benefits. Of course, market benefits are easier to value and capture, and these have been utilised directly or traded for millennia. Some estimates suggest that the tropical forests of parts of SE Asia might provide up to as much as \$50 per month per hectare to local people from exploiting forest resources, without considering the commercial timber values (e.g., Caldecott, 1988). In Thailand, I have seen examples of where collected items, mostly foods, are consumed within the family, while that in excess of what is consumed is marketed. This, of course, may be a substantial contribution to the income of a marginal household, but its contribution to household welfare is usually modest. Some studies suggested that forest fruits may generate more revenues to local people than timber harvests. However, some of the early enthusiasm has dimmed as the markets for specific fruits often turn out to be quite limited and localised, therefore offering no opportunity for widespread exploitation. Additionally, more recent studies typically show smaller values, for example Godoy et al. (2000). Furthermore, even reorienting forests to fruit

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production could have profound implications to the forests' ecosystems. For example, major fruit harvests are likely to displace primate populations thereby disturbing the natural processes of the forest ecosystem (Peters, 1994).

While the market benefits that can be captured from the natural forests are modest, the problem of capturing what are traditionally non-market benefits of forests in markets is likely to be difficult. These benefits have flowed for free in the past and trying to require payments for them might not be easy. Charging for traditionally non-marketed environmental services becomes even more difficult where many small ownerships are contributing to a common environmental output such as water quality. Many countries deal with this problem by having critical protective forest areas controlled by the state whereby the environmental services are maintained and provided through a "protected area" status. For example, where watershed protection values are critical, as with a municipal water authority, the land ownership is often transferred to the municipality or easements are purchased. An economic interpretation of this behaviour is that the externalities are internalised and the transactions costs are reduced by the reallocation and rationalisation of ownership. Although this may be an effective means to provide the environmental services, it may not bode well for the poor in the society.

In relation to the interests of the local poor, there are at least three problems. First, property rights are often absent. This would limit poor people's ability to capture the returns to environmental benefits, even if they could be properly accounted for. In concept, as the example above noted, a reallocation of property rights or the creation of easements or some co-operative type of relationship might overcome this limitation. Second, even with property rights present, it would be difficult to single out the respective physical and financial contributions to environmental services of each of the many members. Third, if the values are quite small it may not be worth establishing property rights (Demsetz, 1967). Thus, the ability of the poor to capture the values of environmental services may be limited and the value of these services to the local poor are often likely to be small.

## **2. POTENTIAL FOR BIOPROSPECTING**

Over the past decade, there have been high expectations regarding the supposed potential of bioprospecting, e.g., the collection of samples of plants and organisms with characteristics that would make them useful inputs into the search for new drugs or pharmaceuticals, to generate substantial economic returns. The performance and apparent success of INBio in Costa Rica contributed to these expectations. In the early 1990s a project in Indonesia recommended the establishment of a number of bioprospecting reserves, in which bioprospecting would be undertaken (ADB, 1992). Appropriate controls and monitoring would guarantee the capturing of royalties by Indonesia. One of the major concerns related to these activities was the question of how part of these benefits might be captured by local peoples. While the income distribution issue can probably be addressed, the more important question is whether substantial values can be captured via bioprospecting. Simpson et al. (1996) questioned the likelihood that the forest can be protected from conversion to other uses by sufficiently large values captured through bioprospecting. The argument is essentially that where high levels of potentially useful biodiversity exist, the value of any relatively small part of it (e.g., 1 to 1000 different species) as an input to the development of a drug is likely to have modest economic value.

By the end of the past decade the enthusiasm for biodiversity as a major input into the development of pharmaceuticals, for which high prices could be obtained, had waned considerably. This is probably due to the absence of significant financial returns from prospecting activities, (e.g., MacIlwain, 1998). The practice of bioprospecting simply has not yet provided evidence that it can generate large financial returns.

### **3. WHO BENEFITS AND WHO PAYS?**

A fundamental problem may be found in the separate benefits and costs derived from tropical forests experienced by different groups. Ecosystem values can be subdivided into local, national and global. Institutions and citizens in developed countries have a strong interest in saving and protecting tropical forests. However, the vast majority of tangible benefits associated with preserving the tropical forests are captured by the region in which the forest is located. Watershed protection, erosion control, wildlife habitat, recreation and so forth are benefits that accrue at the local or regional level. If so, why is the interest found largely in the developed world? An obvious reason is that there are some important “global” benefits, which accrue to the developed countries. Two essential global benefits are biodiversity conservation and carbon sequestration. Others include concepts of wildness and naturalness as intrinsic values of ecosystems. Values placed on naturalness and wildness may be higher in wealthy countries. Economists have argued that demand for certain environmental and amenity goods increases as the society’s income rises. This tendency may be reinforced if environmental quality decreases. Hence, rich societies are able and often willing to pay more than poorer societies for clear air and water.

The same may be true for biodiversity conservation, which is often associated with naturalness and wildness. Also, the developed societies appear to be willing to pay more for controlling human-induced climate change. However, some associated activities need to be undertaken in the developing world, such as preserving tropical forests. In this case one might apply the economic principle of “user pays” whereby those who feel strongly about preservation are willing to provide the financial incentives to those that control the resources, the developing world, but are less willing to incur the costs of protection. There have been some initiatives that have picked up on this theme, for example “debt for nature swaps” and a nascent market in carbon. However, major financial payments are probably necessary to realise protection on a massive scale. Note, however, that even if these payments were forthcoming, they would almost certainly be made to governments and there is no necessary reason to expect that they would find their way to the forest poor.

### **4. CONCLUSIONS**

From the above, the following conclusions are drawn. Tropical forests are important and generate substantial economic and environmental values. They are not, however, an obvious vehicle for addressing poverty alleviation. Capturing these values, particularly values that traditionally are non-market, is inherently difficult. Even if these values can be captured, it appears unlikely that many of them would be captured by the poor. Although bioprospecting as a vehicle for revenue generation and an incentive for habitat protection once appeared promising, the promise is not being realised and the prospects need to be reassessed. A possibility to realise tropical forest protection on a massive scale might occur if developed

countries would provide major financial payments on the basis of their willingness to pay for global benefits from forests, such as carbon sequestration, biodiversity conservation, and intrinsic values of naturalness and wildness of ecosystems. However, even this approach would not guarantee a pass-through of financial transfers to the forest poor. To conclude, the ability to substantially alleviate poverty through forest activities is limited and other approaches to poverty alleviation of the forest poor are probably required.

## 5. REFERENCES

- Asian Development Bank (1992). *Management and conservation of tropical forest ecosystems and biodiversity*. Asian Development Bank, T.A. No. 1430-INFO, Final report, Deutsche Forst Consult, Germany, & PT Hasfarm Dia Konsultan, Jakarta, May.
- Caldecott, J.O. (1988). *Hunting and wildlife management in Sarawak*. World Conservation Union (IUCN) Gland, Switzerland.
- Godoy, R., Wilkie, D., Overman, H., Cubas, A., Cubas, G., Demmer, J., McSweeney, K. and Brokaw, N. (2000). Valuation of consumption and sale of forest goods from a Central American rain forest. *Nature* 406: 62-63.
- Peters, C.M. (1994). *Sustainable harvest of non-timber plant resources in tropical moist forests: an ecological primer*. Corporate Press, Landover, MD.
- MacIlwain, C. (1998). When rhetoric hits reality in debate on bioprospecting. *Nature* 392, 6676: 535-540.
- Sedjo, R.A. (1992). *Economic aspects of management and conservation of tropical Forest ecosystems and biodiversity*. Workshop report presented at Jakarta, Indonesia, December 16, 1991 as part of the ADB report (T.A. No. 1430- IND).
- Simpson, R.D. and Sedjo, R.A. (1994). Commercialization of indigenous genetic resources. *Contemporary Economic Policy* 12 (October): 34-44.
- Simpson, R.D., Sedjo, R.A. and Reid, J. (1996). Valuing biodiversity for pharmaceutical research. *Journal of Political Economy* 104 (February): 163-185.