

Reducing Poverty by Using Biodiversity Sustainably¹

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Far more attention must be directed to conserving the world's biodiversity and using it sustainably, particularly in the tropics, the greatest repository of genetic wealth and the locus of the most pervasive human poverty. Successful models of environmental management by local and indigenous communities throughout the Equatorial belt offer promising new approaches to conserving our common heritage and, simultaneously, making significant progress towards the MDGs.

In 1992, 20 years after the United Nations Conference on the Human Environment, growing concern about biodiversity loss and its effects on prospects for sustainable development led to the promulgation of the UN Convention on Biological Diversity (CBD). To date, over 180 countries have ratified this instrument, ostensibly a global commitment to the cause. The Convention sets out a comprehensive series of pragmatic and innovative principles for action (see Box 1), that have been elaborated further by six Conferences of the Parties. Yet operational advances have fallen far short of hopes, a lag with ominous dimensions: biodiversity loss, together with other forms of environmental degradation, poses serious obstacles to reaching the MDGs, notably the first of the Goals, halving hunger and extreme poverty.

Box 1: THE UN CONVENTION ON BIOLOGICAL DIVERSITY

The objectives of the Convention on Biological Diversity are:

- the conservation of biological diversity;
- the sustainable use of its components; and
- the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.

The CBD objectives provide much opportunity for building on the links between livelihood development and the conservation and sustainable use of biodiversity – supported further by the Convention's explicit recognition that *“economic and social development and poverty eradication are the first and overriding priorities of developing countries.”* Unfortunately, little guidance, insufficient models, and a lack of effective tools and mechanisms continue to hinder both conservation and poverty reduction

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processes. Fortunately, 2002 witnessed advances on the international agenda for both biodiversity conservation and poverty reduction. In April, the Parties to CBD established 2010 as the target year for significantly reducing the loss of biodiversity. In May, the UN Secretary-General set out five “WEHAB” priorities (water, energy, health, agriculture, and biodiversity and ecosystem management) for the World Summit on Sustainable Development (WSSD). In July, the United Nations launched a comprehensive strategy on the MDGs based on four pillars, including an important analytical effort, the “Millennium Project” (www.unmillenniumproject.org). And in September, the Johannesburg Summit endorsed the 2010 target for reducing biodiversity loss in its Plan of Implementation.

While both local peoples and the general public continuously interact with the environment, they neither grasp their dependence on natural processes nor recognise that their enjoyment of the natural world often derives from the unusual plants, animals or landscapes whose existence derives from biodiversity. However, both direct and general appreciation of the value of biodiversity tends to emerge only when its manifestations become scarce or disappear. This has happened many times in many places throughout human history. If global appreciation must await global scarcity, we are courting disaster.

Biodiversity and the MDGs

Despite increasing understanding that the “environment”, including biodiversity, offers manifold poverty reduction opportunities, the twin objectives rarely converge in practice. Where they do, successful efforts tend to take place outside the prevailing policy framework. This phenomenon arises in part from habits of conceiving “development” primarily as increasing the consumption of good and services. Far more attention therefore needs to be devoted to the linkages between biodiversity and the MDGs.

For example, it is unlikely that the first MDG: “*eradication of extreme poverty and hunger*” through “*halving, between 1990-2015, the proportion of people whose income is under \$1 day and in hunger*” – can be achieved solely through the adoption of conventional economic approaches to poverty reduction. Even if poverty is successfully halved by 2015, how long will that achievement last? If approaches and technologies have not been environmentally sound, the pressures on the world’s biodiversity will probably threaten the sustainability of the poverty eradication process itself. They are likely to push the *remaining half* into even deeper poverty. Moreover, while a significant proportion of poor people would like to adopt lifestyles similar to those in industrialised countries, others may wish to continue living in close interaction with natural ecosystems, maintaining traditions that do not focus on material accumulation or consumption. Poverty reduction processes

should offer people both choice and security. Closer attention to the links between biodiversity, poverty reduction and achieving sustainable livelihoods is essential to keeping these options open.

Similarly, the fourth and fifth MDGs — to “*reduce child mortality*” and to “*improve maternal health*” — have clear linkages to biodiversity, some of which are sketched in the next section of this article. The seventh Goal, “*ensuring environmental sustainability*”, attempts to recognise some of these human development challenges; two of its indicators assess some aspects of biodiversity: “*the proportion of land area covered by forest (indicator #25)*”, and “*the ratio of area protected to maintain biological diversity to surface area*” (indicator #26). Making progress on this last indicator calls for innovative thinking, as pressures on existing protected areas, already enormous, will increase because of the need to eliminate hunger. Fortunately, the 5th World Parks Congress, scheduled to meet in September 2003 in Durban, South Africa, offers an important opportunity for considering options to meet people’s needs in and around protected areas.

Also within the seventh Goal, a third indicator, “*the proportion of population with sustainable access to an improved water source, urban and rural*” relates to the target “*to halve by 2015 the proportion of people without sustainable access to safe drinking water*”. Reaching this target will entail conserving the quality of the ecosystems that biodiversity provides. Fortunately, the UN Millennium Project is prepared to advance these linkages in practical terms.

Several factors explain why biodiversity has not yet made its full contribution to global poverty reduction efforts. First, biodiversity is an abstract concept: defined as the “*variability of all organisms from all sources...and the ecological complexes of which they are part... this includes diversity within species, between species and of ecosystems*” (CBD, 1992). Because this concept does not easily translate into tangible entities, planners, policy and decision-makers have often overlooked it.

Biodiversity and Human Welfare

“Natural resources” falls far short of the concept of biodiversity presented by the Convention’s definition. As we have just seen, it encompasses all living natural resources, and extends to the processes and interactions within and between them, along with the ecosystems within which they function. Thus “biodiversity” compels us to think far more holistically and comprehensively about natural and agricultural systems. Viewed from this perspective, biodiversity contributes to poverty reduction in at least five areas:

- *Food Security:* Human society depends heavily on genetic resources, including those from wild and semi-domesticated sources, for the productivity of its agriculture, livestock, and fisheries. These resources also provide communities with an adaptation capacity so varieties can be created that best cope with changing local conditions. Biodiversity is also a source of alternative food products during periods of scarcity.
- *Health Improvements:* Biodiversity is a source of the invaluable information and raw materials that underpin medicinal and health care systems, both for the “informal” sector that meets local health care needs of some 60% of the world’s people, and the “formal” sector that derives a majority of the world’s pharmaceuticals from the natural world. Poor people also suffer most from water and air pollution, to say nothing of water scarcity, and from diseases associated with disrupted ecosystems. Further, a variety of sources of foods support better nutrition and therefore improved health.
- *Income Generation:* Poor people tend to be those most directly dependent upon the utilisation of biodiversity for their livelihoods, and are therefore the first to suffer when these resources are degraded or lost. Biodiversity also offers potential for marketing unique products, many of which are extremely valuable — but whose sale seldom benefits the people who harvest them.
- *Reduced Vulnerability:* Poor people are most often exposed to, and least prepared to cope with, unpredictable events such as fluctuations in access to food and other resources, and to environmental shocks and risks. Ecosystem degradation exacerbates the frequency and impact of droughts, floods, landslides, forest fires and other natural hazards, and can intensify competition and the potential for conflict over access to shared resources such as food and water.
- *Ecosystem Services:* Forests, wetlands, and coastal ecosystems, among others, provide essential services that contribute in numerous ways to the productive activities of both the rural and urban poor. These services include the generation of water, the cycling of nutrients, the replenishment of soil fertility, and the prevention of erosion. All these functions are public goods, providing both direct and indirect values that are not traded in the marketplace, but are vital to the livelihoods of all people.

Biodiversity is also valuable for the range of resources it supports, which provide people with choice. Biodiversity provides “replacements” and alternatives, allowing resource users to substitute one resource for another in times of scarcity or changes in market demand. Access to diverse species enables the diversification of livelihood sources, among these the planting of multiple crops, the staggering of food pro-

duction throughout the year and the possibility of engaging in alternative income-generating activities, such as collection of non-timber forest products. The availability of diverse resources also allows different gender, age, and cultural groups to engage in different livelihood activities and benefit from them. This helps reduce competition or conflict that might otherwise occur if each group had to compete for the same resources — as is indeed the case in many parts of the world where diversity and the choices it supports have sharply diminished.

Many other benefits that biodiversity offers are vastly under-appreciated by the public as well as policy-makers. These include not only the ecosystem services that sustain society itself, but the provision of a medium for studying the phenomena that underpin much technological innovation — in short, the research value of the biosphere. The Millennium Ecosystem Assessment (www.millennium-assessment.org) is one international effort aimed at helping policy-makers incorporate the value of these ecosystem services properly into their decisions.

Though we all depend on biodiversity, we differ enormously in the ways we value it and use it. Even where we replace nature's services with artificial inputs — as in the industrial production of wheat — we still depend heavily on maintaining genetic diversity to improve the production of other crops (among them, other basic foods), though we rarely recognise this need. By contrast, those with the least capacity for large-scale regulation of the environment tend to be those that depend on it most directly — and suffer the greatest losses from projects such as the building of dams, road systems and other physical infrastructure or the industrial exploitation of forests or mineral resources. These people, usually the poor, have no other direct source of such essentials as food, medicine or building materials — or vital services, such as soil replenishment and flood control.

The Challenge

The habitats that contain some of the world's most valuable biodiversity are disappearing with increasing rapidity over progressively wider areas (WWF, 2000). It so happens that many of these areas coincide with severe income poverty and social and political marginalisation — a coincidence has led many to assume that financially poor and marginalised peoples are primarily responsible for biodiversity loss. While this may sometimes be the case, deeper understanding has developed of its hows and whys. Where poor people overexploit local resources, they have usually been pushed to the margins of existence as more powerful groups have appropriated the lands or resources that initially sustained them.

This pattern occurs at ever-increasing scales. Fortunately, over-consumption by industrialised countries is increasingly identified as a key driver of biodiversity loss

and rising poverty. Nonetheless, identifying suitable countermeasures presents a formidable challenge to those concerned with poverty reduction, economic development and conserving biodiversity.

Conventional development strategies, those initially set in motion by the global North, tend to favour the generation and accumulation of private goods — food, clothing, buildings and the like — that can be traded. Maintaining public goods — biodiversity, the atmosphere, the oceans — does not yet yield direct economic gains. As indicated above, the fact that these “commons” sustain the continued production of highly valued goods is often overlooked. Their provision of essential services remains largely unrecognised.

Moreover, conventional development approaches fail to take into account the distinct health and ecological challenges confronted by tropical countries. These are usually more severe than those encountered in the temperate zones and relate directly to the MDGs. A high burden of disease from pests and parasites, including malaria, is concentrated in the tropics; other endemic diseases sharply reduce life spans. Fragile soils and inappropriate technologies have brought agricultural production in the tropics 30-50% below that of the temperate zones, leading to poor nutrition, which further undermines health (see the article by Selim Jehan and Alvaro Umana on the environment-poverty nexus). Further, past North-South technological transfers from temperate to tropical environments have often resulted in ineffective and unsustainable practices.

Tropical nations and communities urgently need assistance in identifying, promoting and applying technologies appropriate to their ecosystems — alternative approaches that complement conventional methods to reduce poverty. Providing the poorest and most marginalised rural peoples with greater choice, involving them in decision-making, engaging with them in partnerships, assisting them in learning from each other, has significant potential.

The Opportunity

There is increasing evidence of the diverse ways in which financially poor, politically and socially marginalised groups have managed to strengthen the security and sustainability of their livelihoods by realising the value of their biodiversity assets. More than 400 such community initiatives throughout the world were identified through nominations for the 2002 award by the *Equator Initiative*.⁴ Representatives of

⁴ The **Equator Initiative** is a partnership initiative of UNDP with BrasilConnects, the Government of Canada, the International Development Research Centre (IDRC), IUCN — The World Conservation Union, The Nature Conservancy (TNC), Television Trust for the Environment (TVE), and the United Nations Foundation to reduce poverty through the conservation and sustainable use of biodiversity in the Equatorial belt by identifying and strengthening innovative community partnerships. (see www.undp.org/equatorinitiative).

27 communities received the *2002 Equator Prize* during the Johannesburg World Summit, where they had opportunities through workshops and other kinds of activities to share their experiences with one another and with the kinds of national and international organizations well placed for disseminating these successes. The UNDP/Global Environment Facility (GEF) Small Grants Programme (SGP) has also identified hundreds of such local initiatives. These examples include:

- The Makuleke Land Claim in South Africa illustrates how the Makuleke community regained ownership of its land two decades after they had been displaced to make way for the Kruger National Park. After several years of negotiation, the various parties managed to resolve their differences and achieve a classic “win-win” for biodiversity conservation and for livelihood improvement of the Makuleke community. The community was allowed back onto their lands on condition that they manage the land sustainably — engaging in livelihood activities that conserved or sustainably used the local biodiversity, such as eco-tourism. The community found this acceptable and signed the joint management agreement – to the benefit of both parties. (Steenkamp and Uhr, 2000)
- The partnership initiative *AmazonLife* generates sustainable economic development options for traditional populations in the Amazon that are compatible with their culture and that protect the biodiversity of their territories. Through the initiative, local indigenous and rubber tapper families in the Brazilian Amazon produce sheets of rubber vulcanized through an exclusive process for use as a leather substitute in manufacturing shoes, bags, knapsacks, briefcases, clothing and other consumer items. “Niche” markets have been created outside Brazil and these products are now in high demand. Each family involved in the process of collecting the natural rubber and making the sheets of leather-like material is part of an informal network that is safeguarding more than 100,000 hectares in the Amazon.
- Also in the Amazon, the Brazil Nut Programme of the Amazon Conservation Association has been working in partnership with *castaneros* (Brazil nut harvesters) to strengthen the role that this crop plays in sustaining their livelihoods. As the ecosystem that supports Brazil nut production holds immense biodiversity, maintaining the livelihoods that derive from these nuts creates the incentive to conserve this ecosystem, rather than to convert it to other uses.
- Seed fairs are increasingly popular methods of promoting agro-biodiversity while strengthening food security. Farmers are keen to participate, as they provide an opportunity to obtain crop varieties with interesting and valuable qualities and exchange ideas on seed sources. In Maragwa, Kenya seed fairs have been held annually since their inception by an NGO in 1996.

- The decline in fish stocks within the Khong District of southern Lao People's Democratic Republic raised many local concerns. In response, the government collaborated closely with the local communities to establish the Lao Community Fisheries and Dolphin Project, which has developed co-management planning mechanisms and regulations to tap the inland aquatic resource sustainably. Villagers have reported that the monitoring activities practised over a number of years there have significantly increased the stocks of 50 species. (Baird, 2000)

Increasing awareness of the existence of these various initiatives, analysing the factors underlying the success of each, and disseminating positive impacts and lessons learned to sectoral policy and decision-makers must become a priority – especially those that have arisen in the absence of any donor or external support and are entirely self-driven and self-motivated. As indicated earlier in this article, wider uptake of successful initiatives has been hampered by unsupportive or non-existent policy, institutional and legislative frameworks. These are often reinforced by strict loan conditionalities that dictate which policies highly indebted countries can pursue. This has made them difficult to replicate. Hence the need to learn from successful initiatives and transpose this learning into policy development.

There is a critical need now to build on these success stories by understanding which factors have contributed to their achievements in balancing biodiversity conservation with sustainable livelihoods; what factors constrain their wider adoption; and, most important, what factors can create a more enabling environment – within policy, institutions and legislation – at local, national and international levels.

This opportunity must not be overlooked. The unique nature of tropical biodiversity and its value to all societies must offer comparative advantage through basing livelihood and economic development activities on the maintenance of a set of natural assets — whether in terms of corporate-community partnerships in eco-tourism, the production of “bird-friendly” coffee by smallholders or direct payments to landholders from the marketing of environmental services. (Landell-Mills and Porras, 2002)

This is not a call for sweeping changes towards “biodiversity-friendly” forms of development. It is simply about highlighting alternative and complementary ways of achieving sustainable poverty reduction that build on conserving existing biodiversity assets. Such initiatives have the potential to manage the trade-offs and maximise the “win-win” opportunities between biodiversity conservation and poverty reduction more effectively than the conventional development approaches that have failed so many people throughout the tropics.

We also need to explore the sort of incremental changes within policy, institutions and legislation that could help provide the enabling environment for trying, refining and expanding such activities where appropriate.

Priority areas of work required to move this new agenda forward include the following:

- Stimulate the flow of information on innovative and successful community practices integrating biodiversity and poverty by establishing a “clearinghouse of good practices” along with a deeper analysis of the policy, legal and sociopolitical environment that would allow for their adoption wherever appropriate. Test these various approaches.
- Generate a wider appreciation for the contribution of environmental goods and services to production systems and markets, find ways to incorporate these in accounting procedures, and develop innovative payment systems to communities for providing ecosystem services and other public goods.
- Promote the expansion of worldwide demand and markets for goods produced in “biodiversity friendly” ways and establish certification systems for sustainably produced community goods and services that do not discriminate against small or marginal producers.
- Provide appropriate support to indigenous and other local peoples to address resource access and land ownership issues and facilitate processes that work towards bringing marginalised peoples into decision-making processes concerning land use (through capacity-building, provision of information, and the application of “socially” oriented research activities, etc.).
- In support of the UN Millennium Project, undertake a systematic analysis of the MDGs to identify opportunities in which activities related to biodiversity can and should make a contribution to the achievement of the MDGs (through a careful review of each goal, target and indicator), and address the need to define and formulate new indicators for the MDGs that reflect the comprehensive nature of biodiversity.

Without undertaking these kinds of action, we cannot consider ourselves serious about achieving the first Millennium Development Goal for all.

References

Baird, I. G. 2000. "Co-Management of Mekong River Inland Aquatic Resources, Including Fisheries, in Southern Lao PDR". Evaluating Eden Discussion, Paper No. 15. London, International Institute for Environment and Development.

Landell-Mills, N. and I. Porras. 2002. "Silver Bullets or Fools Gold? A Global Review of Markets for Forest Environmental Services and their Impact on the Poor". London, International Institute for Environment and Development.

Roe, D., J. Mayers, M. Greig-Gran, A. Kothari, C. Fabricuis and R. Hughes. 2000. "Exploring the Myths and Realities of Community-based Wildlife Management". Evaluating Eden Series Overview No.8. London, International Institute for Environment and Development.

Steenkamp, C. and J. Uhr. 2000. "The Makuleke Land Claim: Power Relations and Community-Based Natural Resource Management". Evaluating Eden Discussion Paper No. 18. London, International Institute for Environment and Development.

United Nations. 1992. Convention on Biological Diversity. New York, United Nations.

WWF. 2000. "Living Planet Report". Gland, World Wide Fund for Nature Year 2000 List of Threatened Species. Available online at <http://www.redlist.org>.