Biodiversity IN Development

Biodiversity Brief 1

The links between biodiversity and poverty

Poor people, especially those living in areas with low agricultural productivity, depend heavily and directly on genetic, species and ecosystem biodiversity to support their livelihoods. This support takes the shape of contributions to health and nutrition, reduced vulnerability, crop and stock development, and off-farm resource use. However, their livelihood needs are often subordinated to the interests of more powerful groups, so they receive fewer benefits from biodiversity, and bear most of the cost of development actions that reduce biodiversity.

Values of biodiversity goods and services

Biodiversity's role in supporting livelihoods is important at a number of levels.

Genetic diversity confers resilience. A broad genetic base allows crops and livestock to adapt to changing conditions. This is vital for the poor who cannot afford to rely on chemical fertilisers or the pesticides which protect monocultures from disease, pests and soil problems. Genetic information also provides the raw material which breeding programmes use to enhance crop and stock productivity, for example, for higher yield or disease resistance. It further provides information (real and potential) for medical science (see BB7) and biotechnology. This often-hidden value of genetic biodiversity is illustrated by California's barley crop, worth US$160 million a year, which has been protected from yellow dwarf virus by the introduction of a gene from Ethiopian barley.

Species diversity supplies a range of wild plant and animal products on which people rely for subsistence, barter and trade:

- foods, including fruits, nuts, fish, mammals, insects, birds and roots;
- wood for fuel, building, making tools, household implements and furniture;
- grasses, reeds and leaves which are used for thatch, mats, baskets, wrapping and livestock fodder; leaf-litter is used as fertiliser;
- various other products (such as oils, resins, bark, etc) are used as medicines, soap, for ritual purposes, etc.

Estimates show that, in rural Zimbabwe, wild products provide 37% of total household income and are as important as other income sources. Moreover, the poor are more dependent on a variety of natural resources than other segments of society: the poorest 20% of the community receive 40% of their total income from environmental products, whereas it only provides 29% for the richest 10%.

In addition, in times of shortage when staple products (e.g. crops) become unavailable, the poor fall back on a wide range of gathered

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species. In dryland India, for example, whereas wild products normally provide 14–23% of the rural poor's income, in times of drought this rises to 42–57%.

Ecosystem diversity involves interactions between plants, animals and micro-organisms, such as crop pollination and pest control, which are crucial for maintaining wild and agricultural landscapes. The interaction between living and non-living parts of the environment also provide ecosystem services, such as soil formation, water recycling, carbon sequestration, and climate regulation on which productive livelihoods depend. It is rare to see valuations of these services, because they are often invisible and difficult to measure, and are not traded in any market. However, the results of ecosystem destabilisation can be devastating: for example, floods in the Mekong Delta which have forced 1 million people from their homes, and the loss of 50,000 ha of farmland in Laos alone, have been directly linked to deforestation upstream.

Furthermore, many people maintain strong cultural and religious links with natural habitats or species within them: the natural world can provide people with a sense of place and well-being, not only for living populations but also for future generations.

Opportunities for poverty reduction

All these values provide opportunities for supporting or enhancing the livelihoods of poor groups. However, the greatest opportunities are likely to be where:

- biodiversity is of local, national or international significance, as it is more likely to attract funds and policy support;
- communities depend directly on biodiversity, and are more likely to have a commitment to long-term investment in managing the biodiverse resource;
- prevailing policy, institutional and labour constraints can be addressed. By removing these constraints, relatively small investments result in sustainable livelihood gains in areas usually marginalised by conventional development activity.

High biodiversity gives tropical regions a significant comparative advantage in linking livelihoods with biodiversity management. In the first place, investing in the conservation and sustainable use of biodiversity will allow communities to continue to rely on them for their present and future needs.

To date, most activities explicitly targeted at biodiversity in tropical regions have focused on conservation. This has usually been aimed at minimising human use of, or access to, areas containing unique landscapes and/or high levels of endemic, charismatic or rare species. As much of the world's biodiversity is found in tropical countries, this approach has merit. However, some of the needs of poor communities may not be compatible with conservation. In many cases, this has led to the modification of protected area management in favour of sustainable use parks and buffer zone development, which allow local communities access to resources (see BB15).

In addition, there are opportunities for enhancing peoples' livelihoods through establishing and exploiting biodiversity outside protected areas. The marketing of sustainably harvested plants can be geared towards organic or biodiversity-friendly markets in the West, and can be linked with certification and eco-labelling schemes. Sport hunting and fishing can attract tourists who pay high prices to cream-off a controlled quota of trophy animals or fish. The use of traditional knowledge is already gaining prominence in the context of medical science, where local knowledge on traditional medicine is helping guide the pharmaceutical industry in the search for new drugs.

The management of ecosystem or existence values (which are of value to society as a whole, rather than something that can be appropriated for private gain) can also be used to generate income. Ecotourism is an example of managing natural habitats for their beauty and recreational value which has some proven successes (see BB9). A less tested, but topical

The role that mini-fish play in many peoples' diets is crucial: the fish are often eaten whole, providing a number of essential protein, oils and vitamins (Okavango Delta, Botswana).

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Links between local livelihoods and biodiversity

	Decline in livelihoods	Improvement in livelihoods
Biodiversity loss	**1. Intensive and large-scale resource extraction of valuable resources by private companies** Target species (e.g. timber) are no longer available to local communities. Logging can lead to loss of other biological resources (e.g. non-timber forest products) which may be important for subsistence or income.	**2. Conversion of natural habitats to agriculture** Commercial agricultural systems favour monocultures, which lead to losses in crop genetic diversity, as well as natural habitat. It enables the large-scale supply of food to urban centres, and efficiency gains from economies of scale can bring product prices down thereby benefiting the poor.
Biodiversity maintenance or increase	**3. Strict protected areas** Protected areas yield conservation benefits, but local communities may suffer if their access to resources is restricted, or where crop raiding and livestock predation by protected wild animals increases.	**4. Sustainable management of biodiversity** Poor and indigenous communities in marginal tropical areas depend upon biodiversity, and their management techniques are often designed to maintain biodiversity for the use of future generations.

opportunity is investment in carbon sinks for reducing greenhouse gas emissions into the atmosphere. The conservation of natural forests in developing countries as sinks can provide communities with continued access to forest resources. Opportunities for carbon-trading, whereby rich countries trade their carbon emissions against carbon sinks in poorer, biodiversity-rich countries, may provide poorer countries with an important source of revenue (see BB12).

Constraints to linking biodiversity and poverty reduction

However, despite the opportunities presented, a number of constraints stand in the way. Improved livelihoods and enhanced biodiversity are not necessarily coincidental and the opportunities for a 'win-win' solution are limited. The table above illustrates the complexity of balancing the different values, interests and goals which converge in biodiversity management. In many if not most cases, there will need to be trade-offs between different activities, based on biodiversity and poverty criteria.

A principal constraint is that biodiversity is rarely assigned the same value by all stakeholders. Commercial interests tend to outweigh ecosystem services, socio-cultural values, future generations' needs, and the potential that genetic diversity has for scientific advances. Poor people themselves are often the cause of biodiversity degradation and loss, especially if lack of income alternatives drive them to over-exploit the resources. This overuse of biodiversity will only be reduced when tangible livelihood gains are derived from its sustainable use. However, there are few demonstrable examples of such gains, which tend to be long-term and difficult to measure.

It is important that mechanisms are in place to ensure the rights of poor people are respected, and that benefits accrue to them. Only in certain situations (e.g. low population density) are local populations able to freely reap benefits from biodiversity. Elsewhere, constraints such as lack of respect for local ownership and access rights make the equitable benefit sharing difficult. The equitable sharing of benefits arising from genetic resources is one of the aims of the Convention on Biological Diversity (see BB16). However, the equitable sharing of benefits arising from species and ecosystem values is also crucial for poverty alleviation. To exacerbate such constraints, the poor have little access to information, communication, technology and markets, leaving them at a disadvantage in negotiations and markets which could yield benefits.

Compensation or mitigation should be provided where the disadvantaged, particularly the poor, bear the costs of development activities.

Development cooperation

Development agencies have an opportunity to play an active role in supporting ways of making biodiversity work for the poor. Development cooperation should therefore address policy, institutional and legislative

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constraints at local, national and international levels:

- **Improving poor peoples' access to, and tenure of, biodiverse resources.** Support is necessary for the development of systems that recognise and accommodate the needs, rights, roles and responsibilities of diverse groups.

- **Involving the poor in decision making.** Investment is needed to ensure transparency in the processes of governance, and that policy development incorporates a much wider range of views. This might involve capacity building of representative groups, or the provision of accurate information to poor groups.

- **Better marketing of tropical biodiversity products from sustainable sources.** Much work needs to be done on market reform to make such products competitive, e.g. through the repeal of restrictive licensing rules, creation of incentives etc. (see BB4). Furthermore, participation of poor groups in markets is often hindered by their inability to meet quality and supply requirements. Development cooperation should support improvements in local production skills and technologies, plus capacity building and provision of market information.

- **More investment in research and development allocated to poor people's priorities.** There has been a tendency to invest in improving highly-productive agricultural systems that use only a few food species/varieties. This has undoubtedly yielded important benefits, especially for urban consumers, but smallholder, multi-species and organic production systems have suffered a lack of investment. This imbalance needs redressing to encourage biodiverse production systems, especially with the emergence of new markets that value the organic products of such smallholder systems. There is a need to demonstrate tangible benefits from the conservation and sustainable use of biodiversity.

- **Developing new mechanisms for exploiting the public interest in biodiversity maintaining products and services.** There is much potential for generating significant livelihood benefits from the contribution of biodiversity-rich areas to global public good values (e.g. climate regulation). This potential is likely to increase as biodiversity declines, and as international awareness of the consequences of this decline grows. At present, there exist few suitable transfer mechanisms, either voluntary or compulsory, but this is an opportunity for developing new approaches which should be investigated.

Further information

- Community wildlife management. http://www.biodiv.net
- Financial resources, incentive measures, impact assessment, and economic valuation themes. http://economics.iucn.org
- General information on biodiversity policy. http://iucn.org/themes/biodiversity
- Koziell, I. (2000). *Diversity not adversity: sustaining livelihoods with biodiversity. IIED, London.*
- UNDP *A better life … with nature's help: success stories.* Poverty and Environment Initiative.
- reference to other Biodiversity Briefs is denoted as (see BB#).

Website

All Biodiversity Development Project (BDP) documents can be found on the website: http://europa.eu.int/comm/development/sector/environment