Balancing Biodiversity Conservation with Community Livelihoods - A Global Perspective

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Executive Summary
Biosphere reserves, designated within the framework of the UNESCO-MAB Programme and its World Network of Biosphere Reserves, are sites which innovate and demonstrate approaches to conservation and sustainable development. They remain under national sovereign jurisdiction, and share their experience and ideas nationally, regionally and internationally within the World Network of Biosphere Reserves. There are 531 sites worldwide in 105 countries which are formally recognized by UNESCO's 193 Member States. The paper provides a number of examples of biosphere reserves on how biodiversity conservation is practiced for the benefit of enhancing community livelihoods.

One of the main questions that concern both, environmental managers and development aid workers is: how can we balance biodiversity conservation with community livelihoods? An obvious answer to this question is often "sustainable development".

Sustainable development is a pattern of resource use that aims to meet human needs while preserving the environment so that these needs can be met not only in the present, but in the indefinite future. The term was used by the World Commission on Environment and Development (WCED) (informally better known as Brundtland Commission), which coined what has become the most often-quoted definition of sustainable development as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs." At the World Summit on Sustainable Development (Johannesburg, South Africa, 26 August to 4 September 2002), the term "sustainable development" was considered as a collective responsibility that is based on three pillars:

> Accordingly, we assume a collective responsibility to advance and strengthen the interdependent and mutually reinforcing pillars of sustainable development — economic development, social development and environmental protection — at the local, national, regional and global levels
> (see paragraph 5 of *Johannesburg Declaration* on Sustainable Development at http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POI_PD.htm as of 21 October 2008).

While "sustainable development" is a very important notion, its implementation on the ground may not always be easily understood and operationalized. UNESCO, through its Man and the Biosphere (MAB) Programme, believes to have one answer – albeit not the only answer – on how to practise sustainable development in very concrete terms. Our approach is based on the

“biosphere reserve” concept, a site-based concept which combines biodiversity conservation with local and community based sustainable development, and scientific studies on human-environment interactions and ecosystem studies.

What are biosphere reserves? According to a short definition, biosphere reserves are areas of terrestrial ecosystems which are internationally recognized within the framework of UNESCO's Man and the Biosphere (MAB) Programme (UNESCO-MAB 2000: Biosphere Reserve Map, Paris, France). Collectively, they form a World Network. Nominated by national governments, they are required to meet a set of criteria and adhere to a set of conditions before being admitted into the World Network. Each biosphere reserve is intended to fulfill three basic functions, which are complementary and mutually reinforcing:

- a conservation function - to contribute to the conservation of landscapes, ecosystems, species and genetic variation;
- a development function - to foster economic and human development which is socio-culturally and ecologically sustainable;
- a logistic function - to provide support for research, monitoring, education and information exchange related to local, national and global issues of conservation and development.

In order to carry out the complementary activities of nature conservation and natural resources use, biosphere reserves are organized into three distinct yet interrelated zones, known as the core area(s), the buffer zone(s) and the transition area(s):

- The **core area** needs to be legally established and give long-term protection to the landscape, ecosystem and species it contains. It should be sufficiently large to meet conservation objectives. As nature is rarely uniform and as historical land-use constraints exist in many parts of the world, there may be several core areas in a single biosphere reserve to ensure a representative coverage of the mosaic of ecological systems. Normally, the core area is not subject to human activity, except research and monitoring and, as the case may be, to traditional extractive uses by local communities.
- A **buffer zone (or zones)** which is clearly delineated and which surrounds or is contiguous to the core area. Their role is to minimize negative and external effects of human-induced activities on the core areas. In addition to the buffering function related to the core areas, buffer zones can have their own intrinsic, ‘stand alone’ functions for maintaining anthropogenic, biological and cultural diversity. Buffer zones can also have an important connectivity function in a larger spatial context as they connect biodiversity components within core areas with those in transition areas. Buffer zones can be areas for experimental research, for example to discover ways to manage natural vegetation, croplands, forests, fisheries, to enhance high quality production while conserving natural processes and biodiversity, or to rehabilitate degraded areas.
- An **outer transition area**, which may contain a variety of agricultural activities, human settlements and other uses. It is here that the local communities, conservation agencies, scientists, civil associations, cultural groups, private enterprises and other stakeholders must agree to work together to manage and sustainably develop the area's resources for the benefit of the people who live there. Given the role that biosphere reserves should play in promoting the sustainable management of the natural resources of the region in which they lie, the transition area is of great economic and social significance for regional development.

Although schematically presented as a series of concentric rings, the three zones are usually defined in many different ways so as to accommodate local geographic conditions and constraints. They may have multiple core areas and buffer zones, which in turn are surrounded by the transition area marking the boundary of the entire management site. This flexibility allows for creativity and adaptability, and is often considered as one of the greatest strengths of the concept.

All biosphere reserves contain at least one or several legally protected areas (e.g. national parks, nature reserves, forest reserves) for long-term nature protection and biodiversity conservation. This paper does not emphasize the biodiversity conservation aspects of biosphere reserve as all biosphere reserves have been designated within the World Network of Biosphere Reserves for their value in biodiversity conservation and environmental protection. This paper rather provides several examples from the world over to illustrate the "sustainable development" aspects which foster community livelihoods in mountain biosphere reserves.

Mountain ranges, and biosphere reserves located therein, provide several important assets that can be utilized for the positive marketing of biodiversity conservation and community livelihoods. The spectacular beauty and scenery of mountains, their clean and largely unpolluted areas, and the occurrence of many rare and endangered plant and animal species favour mountains from a natural point of view as extra-ordinary places. As many mountain ranges are also characterized by a relatively large ethnic and linguistic diversity, the cultural assets of mountains are often quite outstanding, with their specific culturally-based rituals and belief systems, including spirituality, song, poetry, dance as well as local and technological know-how for handicraft production.

These assets make mountain areas key destination sites for tourism. If tourism can be handled in an ethical manner in that local communities benefit from the income generated by tourism, and if tourism is practiced in a manner that is respectful of the environment and leaves only a marginal ecological footprint, then biodiversity conservation and community livelihoods can be mutually reinforcing pillars resulting in win-win situations for the environment and for people. Some of these win-win situations have been implemented with good success in several mountain biosphere reserves.

The Issyk-Kul Biosphere Reserve in Kyrgyzstan was designated as a site within the UNESCO World Network of Biosphere Reserves in 2001. Surrounded by the glaciated Thian-Shan mountain range, the Issyk Kul Biosphere Reserve reaches an altitude of over 7,000 meters above sea level and contains important freshwater resources. The Issyk Kul Lake appears like an oasis in this arid region, covering an area of 623,600 hectares, which makes it the second largest high-altitude lake in the world. Ecotourism activities in the Issyk-Kul Biosphere Reserve include demonstration of eagle hunting as well as the production and marketing of felt carpets using traditional designs by women cooperatives.

The Dana Biosphere Reserve in Jordan (designated in 1998) includes a system of mountains and wadis (riverbeds in desert areas which remain dry unless it rains heavily) extending from the top of the Eastern Rift Valley to the lowlands of Wadi Araba. The representation of different bio-geographical zones and the dramatic changes in elevation results in a very high biodiversity and a complex set of land cover types. The reserve hosts globally and regionally important species, like the cyprus warbler (*Sylvia melanothorax*) and the sand fox (*Vulpes rueppelli*) as well as the endemic syrian serin (*Serinus syriacus*) that live in a Mediterranean Oak forest. Using the slogan "caring for nature, caring for people", the Jordanian Royal Society for the Conservation of Nature, which is in charge of managing the site, has created an inter-related ecotourism approach that provides ecolodges and tents within the reserve for tourists, and has set up farming schemes for the local populations producing organically grown herbs, fruits and olives which are processed on-site and marketed to up-scale hotels in the capital city of Amman. A workshop for jewellery production for a women's cooperative provides income opportunities in particular for women.

The Bia Biosphere Reserve in Ghana (designated in 1983) is situated in south-western Ghana close to the border to the Côte d'Ivoire and covers an area of 7,770 hectares. The biosphere reserve occupies an undulating terrain with an elevation between 170 and 240 meters above sea level. Located in the transition between the moist evergreen and moist semi-deciduous vegetation zone, the area is dominated by Celtis-Triplochiton associations, *Teinghemella heckelii* and *Entadrophragma angolense*. Many of Ghana's major forest animals can be found in Bia, such as the forest elephant (*Loxodonta african cyclotis*), the globally endangered bongo (*Tragelaphus euryceros*) and many primates. Although not a mountain site, the example of Bia Biosphere

Reserve is given here as the management of the site has put into place a rather original scheme to diversify income opportunities for local communities living around the protected core zone of the reserve: The African giant snail (*Acatina acatina*) abounds in the nature reserve and is considered as a meat delicacy among West Africans. As animal species are protected in the reserve, collecting licenses coupled with a fee, have been provided to 3 village communities. Part of the fees are used by the reserve management to enhance the protection of the area, while the other part of the fee is returned to the village communities for community-based projects (e.g. to establish water pumps or to upgrade school buildings). When this scheme proved to be very successful but demand increased on additional collecting licenses, snail farming was introduced in village communities to increase the production and marketing of the African giant snail.

The Entlebuch Biosphere Reserve in Switzerland (designated in 2001) is located at the foot of the Alps in the central part of Switzerland. It covers some 39,000 hectares and reaches an altitude of 2,350 meters above sea level. Few regions in the country have natural and cultural landscapes that are as intact as those in Entlebuch. It includes peat bogs and raised bogs, alluvial and riverine forests, as well as complete cave systems, such as the Schrattenfluh and the Napf area. There are some 17,000 people living in the area (2000) and the populations embarked in a highly participative approach in making the biosphere reserve proposal. The inhabitants in Entlebuch aim at promoting regional “Entlebuch Biosphere Products” such as cheese, ham and spirits, cultivating natural resources (grass, wood, and landscape) and developing ecotourism. Local hotel and gastronomy owners use the “Entlebuch Biosphere” label as a sign for high quality products.

The Mount Arrowsmith Biosphere Reserve (designated in 2000) is located on the east coast of Vancouver Island in British Columbia (Canada). Situated in the Coastal Douglas-fir (*Pseudotsuga menziesii*) biogeoclimatic zone, the forests in the area were logged in the early 1900’s. Today, second-growth trees are reaching harvestable size which leads to pressures from the logging industries. Approximately 38,000 residents live permanently in the area, which can total up to 43,000 people depending on the season (2000). Coastal Salish First Nations live in the biosphere reserve. However, today the population is dominated by descendants of European immigrants. Tourism and service industries but also fishing and forestry provide the main sources of income for people. The Mount Arrowsmith Biosphere Reserve includes the entire watershed draining the area. Management focuses on the maintenance of healthy aquatic, coastal estuarine and intertidal ecosystems. A few years ago, a local currency – the Oceanside Dollar – was introduced in the community, which tourists can buy (at an exchange rate of 1 to 1 with the Canadian Dollar) and which tourists can use for settling their hotel bills and other purchase items. The underlying idea is that the oceanside dollar will become a collector’s item which tourists will take home so that a net inflow of money into the biosphere reserve’s community will be effected.

The example of biosphere reserves from around the world show that biodiversity conservation can go well in line with sustainable development to enhance community livelihoods. It is imperative, however, that holistic and integrated “conservation-cum-community livelihood” packages are developed which highlight the need for both enhanced environmental conservation and community livelihoods. As no “one size fits all” solutions exist, each site needs to work out the specificity and marketing opportunities which can project a positive image for ecotourism and related activities. The drivers for such ecotourism packages must be local communities, whose needs and aspirations must be taken into account and who should be involved in the overall management of a biosphere reserve.

The biosphere reserve concept has been developed in the mid 1970s, i.e. some 30 years ago. While some have criticized the concept as a “soft” conservation approach, others have seen its potential for combining environmental conservation with economic development. With some 30 new biosphere reserve proposals received by the UNESCO MAB Secretariat every year from all world regions, the World Network of Biosphere Reserves has grown into a relatively large undertaking which currently counts 531 sites in 105 countries (October 2008). Internationally speaking, the sites are formally recognized by UNESCO’s 193 Member States and six Associate Members and are considered as a tool for the conservation of biodiversity and the sustainable use of biological resources.

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