Biodiversity Conservation and the Eradication of Poverty

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It is widely accepted that biodiversity loss and poverty are linked problems and that conservation and poverty reduction should be tackled together. However, success with integrated strategies is elusive. There is sharp debate about the social impacts of conservation programs and the success of community-based approaches to conservation. Clear conceptual frameworks are needed if policies in these two areas are to be combined. We review the links between poverty alleviation and biodiversity conservation and present a conceptual typology of these relationships.

Biodiversity conservation scientists face a dilemma. There is increasing concern that global efforts to maintain biodiversity are in conflict with those to reduce poverty (*1*). The decline of populations, extinction of species, and habitat transformation demand urgent action (*2*). The leading response to these threats since the late 19th century has been the creation of protected areas (*3*). Technical capacity to design effective protected-area systems is increasing (*4*), allowing the identification of coverage and remaining gaps in the international protected-area system (*5*). This, combined with positive assessments of the effectiveness of protected areas is encouraging the consolidation and expansion of the network of protected areas (*6*). The 2004 World Database on Protected Areas includes over 105,000 sites covering an area of 19.7 million km (*2*, *7*). The establishment and effective management of a global series of protected areas was a key element of the 7th Conference of the Parties (COP) to the Convention on Biological Diversity (CBD) in 2004 (*8*).

The problem with this strategy is that its impacts on poverty are often negative. The creation of protected areas causes the foreclosure of future land use options, with potentially significant economic opportunity costs (*9*). The creation of protected areas can have substantial negative impacts on local people. The eviction of former occupiers or right holders in land or resources can cause the exacerbation of poverty, as well as contravention of legal or human rights (*10*–*14*). Globally, it is recognized that the costs of biodiversity conservation are not distributed in proportion to their benefits (*15*). Typically, many of the costs of protected areas in poor biodiverse countries are paid by local people (*16*). The 7th CBD COP called for an assessment of "the economic and sociocultural costs of protected areas (including the cost of livelihood opportunities foregone), and policies to ensure that they are equitably compensated" (*8*). By the start of the 21st century, a remarkable international agreement on the urgency of global poverty elimination had made the relation between biodiversity conservation and poverty reduction an important element of debate about conservation policy (*1*, *13*).

The meaning of poverty may be intuitively obvious, but its measurement is complex. Common definitions are based on monetary (such as per-capita income) or nonmonetary (such as health or mortality) criteria, although broader approaches have been suggested (*17*, *18*). In 1999, 1.2 billion people worldwide had consumption levels below $1 a day and 2.8 billion lived on less than $2 a day (*17*). Poverty is not a static condition, but it is estimated that between 300 and 420 million people live in a state of chronic poverty (always or usually poor) (*19*). The first of the United Nations Millennium Development Goals (MDGs), agreed on in 2000, was to halve, between 1990 and 2015, both the proportion of people whose income is less than $1 a day and the proportion of people who suffer from hunger (*20*).

National poverty reduction strategies are central to attempts to achieve poverty elimination (*21*, *22*). There is a clear need for these to be integrated with national sustainable development strategies (*1*, *23*). The UN MDGs are premised on such integration, with the area of land protected to maintain biological diversity being an indicator of performance against MDG Goal 7 ("to ensure environmental sustainability"). However, the co-listing of poverty elimination and environmental goals does not mean that integrated solutions are possible or that protected areas can contribute to growth and poverty reduction in poor countries. Indeed, the separation by the MDGs of environmental sustainability issues from development goals alarms some observers (*24*). It has even been suggested that the urgent global push for poverty reduction has subsumed or supplanted conservation goals (*1*).

Combining Conservation and Development Goals

The combination of poverty elimination and biodiversity conservation goals has been approached in various ways. The specific problem of the social impacts of protected areas has been recognized by conservation planners for two decades. The principle that the needs of local people should be systematically integrated into protected-area planning was agreed to at the third World Parks Congress in Bali in 1982 (*25*). In 1992, the president of IUCN–The World Conservation Union argued that "if local people do not support protected areas, then protected areas cannot last" (*26*). IUCN's director general now suggests that protected areas should be seen as "islands of biodiversity in an ocean of sustainable human development," with their benefits extending far beyond their boundaries (*27*), but this is still an aspiration. Delegates from the human rights and minority peoples' movements prominently voiced concern at the persistence of such impacts at the fifth World Parks Congress in September 2003 (*28*). There are coherent calls for better understanding of the social impacts of protected areas (*29*, *30*).

Beyond protected areas, the question of whether it is possible to combine poverty elimination and biodiversity conservation relates to the more general debate, familiar

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to conservation scientists, about the environmental dimensions of development. In the 20th century, the dominant approach was to push for economic growth first and assume that environmental problems (and indeed improved social welfare) could be sorted out later. Economists argue that as economies grow, they can invest in cleaner technologies and less resource-depleting processes: Arguably, an ''environmental Kuznets curve'' can be observed in industrialized and newly industrialized countries, with improvements in factors such as air pollution (*31*). In the 1950s and 1960s, development planners paid scant attention to environmental impacts, whether focusing on poverty elimination, the creation of high-productivity agriculture, or physical infrastructure such as dams or industrialization and the associated problems of pollution (*32*, *33*).

Critics of this technocratic top-down development focused on its environmental and social failures (*33*, *34*). The need to improve the environmental record of development gave rise to the second approach to the environmental aspects of development, in the concept of sustainable development, which underpinned the 1980 World Conservation Strategy document (*33*). As developed since, notably at the World Conference on Environment and Development in Rio de Janeiro in 1992 and the World Summit on Sustainable Development in Johannesburg in 2002, the concept of sustainable development was extended to make explicit reference to justice, equity, and the elimination of poverty. World leaders agreed that biodiversity and resource conservation must be fully integrated into strategies for economic development and are essential elements of sustainable livelihoods at local scales (*35*). It is widely argued that biodiversity underpins the livelihood strategies of the rural poor (*16*). These political and policy insights have been accompanied by the emergence of new academic subfields that offer integrative transdisciplinary insights into social-ecological systems (*36*).

Sceptics point to the large element of wish fulfillment in arguments about the possibility of win-win solutions in sustainable development (*1*, *33*, *37*, *38*). A strong body of opinion, however, maintains that poverty elimination and conservation can happen together. The term ''pro-poor conservation'' has been used to identify conservation strategies that are designed to deliver both poverty reduction and biodiversity protection (*39*, *40*). But is this confidence in win-win solutions justified? Lasting positive outcomes of conservation-with-development projects are elusive (*41*, *42*). Projects that seek to integrate conservation and development have tended to be overambitious and underachieving (*41–44*). Although it is desirable to satisfy the goals of biodiversity and poverty reduction simultaneously, it may only be possible under specific institutional, ecological, and developmental conditions [such as in long-lasting field projects in small human communities in fragile ecosystems (*1*)]. The links between biodiversity and livelihoods, and between conservation and poverty reduction, are dynamic and locally specific (*34*, *45*). In most cases, hard choices will be necessary between goals, with significant costs to one goal or the other. The acceptability of these costs will vary for different organizations and actors.

Diverse Relations Between Conservation and Poverty Reduction

Clarity over the choices between biodiversity conservation and poverty elimination goals is essential. The desire to package projects as delivering win-win solutions plays down the incompatibilities between goals. Equally, exclusive conservation or development goals can be blind to alliances that favor both (*1*). We therefore offer a conceptual typology of the relationships between poverty reduction and conservation in order to promote a clearer understanding of them. The typology presents four different ways of looking at the connections and disconnections between poverty reduction and conservation, reflecting positions in the current debate. It includes both the moral and pragmatic dimensions of arguments for the conservation of biodiversity and the reduction of poverty. Disentangling these makes for clarity.

1) *Poverty and conservation are separate policy realms.* This position sees poverty elimination and conservation as quite different problems comprising distinct sectors of policy concern. Thus, conservation is a legitimate objective that can be pursued independently of any benefits in poverty reduction (and vice versa). Under this position, conservation strategies would focus on the establishment of protected areas or approaches such as direct payments (*46*). If poverty is recognized as an important cause of conservation failure, the response is the designation of further critical biodiverse habitat and the stronger defense of protected areas, rather than the dissipation of scarce conservation resources to maintain diversity across landscapes or in poverty alleviation activities (*37*, *38*). This position sees conservation benefiting poverty reduction indirectly where it secures ecosystem services that yield economic benefits to society, such as enhanced water yields from forested catchments (*47*, *48*). There may also be local opportunities for win-win strategies that combine biodiversity and poverty reduction [such as protected-area tourism arrangements (*49*)]. However, this position holds that trying to combine conservation with poverty reduction everywhere risks misallocating limited conservation resources and compromising biodiversity preservation (*37*, *38*). The key to the success of conservation is the establishment and effective management of a complete global network of protected areas selected because of scientific criteria and owned or legally established by the state or legitimate private owners. Success is measured in terms of biodiversity criteria, not of measures of social development (*6*).

2) *Poverty is a critical constraint on conservation.* This position makes the empirical, pragmatic argument that poverty limits conservation success to a sufficient degree that biodiversity conservation will fail if it does not successfully address poverty elimination. Such a position might be expected in a scenario where poor people were overharvesting wild species, poaching critical species, or colonizing and cultivating biodiverse land, and if the political or economic costs of stopping them (such as by a conventional strict protected-area strategy) were prohibitive. Poverty reduction would be undertaken in this instance simply as a means to achieve more effective conservation. This position holds that to achieve its goal, conservation must provide (and be seen to provide) effective contributions to poverty reduction, including both net benefits to the poor and the avoidance of significant local costs to any social group. Conservation organizations will invest in addressing the poverty of critical protected-area neighbors and actors with the power to disrupt conservation programs. Examples of policy action include classic park outreach strategies (such as service provision to neighboring villages, employment for local people, and participation in park planning processes) and income-generating projects (such as sharing revenue from wildlife tourism in protected areas, integrated conservation-development projects, or the provision of locally acceptable alternatives to lost resources) (*41*, *43*).

3) *Conservation should not compromise poverty reduction.* This position recognizes that conservation agencies have conservation as their primary goal, but it holds that in pursuing that goal they should, at a minimum, not increase poverty or undermine the livelihoods of the poor. This position was adopted at the Fifth World Parks Congress in 2003, but has its critics (*27*). Examples of strategies resulting from this position might include codes of conduct for conservation organizations, social impact assessment of protected areas (*29*, *30*), and the payment of the full local opportunity costs of conservation in protected areas (*50*). Conservation strategies might also seek to generate positive economic benefits for local communities within constraints of biodiversity conservation targets, for example through nonextractive use [such as ecotourism (*49*)] or

harvesting within sustainable limits [such as safari hunting, medicinal products, or biomass products (*51*, *52*)]. This position differs from the empirical claim in position 2 that poor people, if ignored, will undermine conservation. Rather it reflects independent moral and political obligations on conservation agencies to take account of human poverty. It is a claim that recognizes that conservation action can be sustained despite negative social impacts (*53*). It applies even where it is possible to do conservation effectively without benefiting poor people.

4) *Poverty reduction depends on living resource conservation.* This position rests on the empirical claim that financially poor and socially and politically marginalized people depend on living species in biodiverse ecosystems for livelihoods and ecosystem services, and that their livelihoods can be improved through appropriate conservation activities (*33*). Conservation is therefore a tool for achieving poverty reduction, with the sustainable use of natural resources being a foundation of strategies for achieving poverty reduction and social justice. Biodiversity benefits not immediately necessary to this goal are a secondary gain. This position might lead to the rejection of a protected-area strategy because, except under special circumstances (for example, where shares of ecotourism revenues exceeded all other forms of land use), protected areas were unlikely to achieve poverty reduction goals. Alternative approaches would include the sustainable use of living resources to optimize economic return and/or positive impacts on the rural or urban poor (*54*). Examples of policy include conservation programs outside protected areas; for example, to promote the local management of common-pool resources within the constraints of ecological sustainability such as fisheries, wildlife, grazing, or forestry that are targeted at improving the livelihoods of the poor (*54*–*56*). Conservation in response to this position tends toward the maintenance of yields of harvestable species and ecosystems rather than the preservation of biodiversity. Outcomes may deviate to a greater or lesser degree from biodiversity conservation targets. This principle is reflected in the ''ecosystem approach'' adopted by the CBD in 2000 (*57*).

Conclusion

No position outlined here suggests that either the conservation of biodiversity or the elimination of poverty are improper goals. All positions are consistent with the call for conservation organizations to identify and monitor the social impacts of their work, and to take corporate responsibility for operating in a socially accountable manner (*29*). They are also all consistent with the need for poverty alleviation efforts, and wider projects for the development of humankind, to have regard to their demands, or footprint, on the biosphere (*3*, *58*, *59*).

Different agencies (and different individuals) are likely to wish to adopt different positions. For example, differences in thinking about the balance to be struck between poverty reduction and biodiversity conservation underlie different positions in the ''parks versus sustainable use'' debate (*37*, *38*, *54*, *60*). Those advocating strictly enforced protected areas in poor developing countries to guarantee the maintenance of populations of vulnerable species (such as forest primates) are adopting position 1, treating the problems of extinction and poverty as separate. Those advocating programs to tackle the poverty of people living around such parks in order to persuade them not to trespass or hunt are adopting position 2, seeing poverty as a critical constraint on conservation. Those who would seek to increase the flow of revenues from such parks to a level that would fully compensate all stakeholders for associated opportunity costs of the park are adopting position 3, attempting to ensure that conservation does not increase poverty in any way. Those who propose conservation strategies building on the needs of local communities for sustainable harvests of wild species resources, and not necessarily a formally declared protected area at all, are adopting position 4, seeing conservation strategies based on sustainable use primarily as a means to reduce poverty.

Policy that fails to take account of the diverse relationships between conservation needs and the demands of poverty reduction, and the related consumptive demands of the growing world economy, risks failure (*1*). Organizations committed to the preservation of species and those committed to sustainable rural livelihoods based on natural resource use are likely to engage with issues of poverty and biodiversity in very different ways. Their interactions will be facilitated if they can understand their mutual positions. The recognition of different starting points in the way in which biodiversity conservation and poverty elimination goals are prioritized is essential if there is to be success in identifying common ground and differences between biodiversity and development organizations. Such recognition will facilitate the task of those who believe that the goals must be achieved together.

It is premature to abandon attempts to combine conservation and development. The elimination of poverty and the preservation of biodiversity are two distinct objectives. Each may be driven by different moral agendas, but there is considerable overlap in practice.

At the local scale, the policy need is to reconcile the interests of different stakeholders in the management of the natural resources of biodiverse ecosystems (*45*). The larger challenge is to allow human society to meet its potential and share the fruits of economic growth while sustaining a biosphere that not only sustains full ecological functions but retains its living diversity (*3*, *34*).

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