SUSTAINABLE FINANCE FOR PROTECTED AREAS

By

Jeffrey A. McNeely
Chief Scientist
The World Conservation Union
rue Mauverney, 28
1196 Gland, Switzerland

Presented to
Protected Areas in the 21st Century: From Islands to Networks
Albany, Western Australia
24-28 November 1997

1. INTRODUCTION

Insufficient investment is being made in protected areas, and innovative approaches are required for generating the additional financial support required (Li, 1995; Newcomb, 1995; WRI, 1989). The need for additional resources arises from the imbalance between a country's needs for managing protected areas on the one hand, and the ability of the country to mobilize resources on the other. Resources can be augmented through existing mechanisms such as the fiscal system, user charges, resource rent capture, and privatization, as well as through new mechanisms such as environmental taxes, betterment charges, and so forth. Even so, it appears that domestic resources in most developing countries will continue to be inadequate for financing the conservation of biodiversity due to the limited tax and capital base of many of these countries, their under-developed taxation systems, and the need to direct resources to more urgent development priorities. Figure 1 lists reasons why external financial resources are needed for protected areas.

The financial needs of individual countries for managing protected areas depend critically on what is assumed about national and international policies (Panayotou, 1995). Trying to finance protected areas under current policy conditions, which include market failures and inappropriate incentives, will require unattainable levels of funding. This is the case because the world is currently spending about US$1 trillion in direct and indirect subsidies of energy, water, agrochemicals, marginal agriculture, deforestation, and heavily polluting industries that undermine protected area management. Without correcting these distortions, additional funding for protected areas is likely to be futile.

Correcting these inappropriate policies could reduce the financial needs for protected areas. Further, both the policy reforms and the more appropriate determination of prices are likely to save financial resources and generate new funding, thereby further reducing the need for additional resources.

FIGURE 1: WHY EXTERNAL FINANCIAL RESOURCES ARE NEEDED FOR

PROTECTED AREAS

- *Equity*. Many of the benefits of protected areas flow to all citizens of the world, while the costs tend to fall on the countries with only limited financial resources.

- *Capital constraints*. Due to insufficient capital in at least some developing countries, external financing is needed to bridge the gap between the demand (both private and public) for protected area management and the domestic supply of funding to support that management.

- *Cash flow*. While many investments in protected areas will provide substantial benefits, these are often long-term and the full benefits may not be realized for many years, while the costs need to be paid today, necessitating long-term bridge financing which is difficult to obtain in developing countries.

- *Supporting policy reform*. Financing is often required to cushion the short-term impacts of policy reforms required to move toward sustainable use of biological resources, or to pay compensation to those adversely affected by the new policies, or to build consensus for the reforms.

- *Covering foreign exchange components*. Many investments in protected areas may involve foreign exchange components, to build the confidence of investors and to leverage domestic sources of financing; generating foreign exchange by exploiting biological resources may be contrary to protected area objectives, while external investment may reduce the need for such exploitation.

- *Benefits*. Payment for conservation services provided to the global community by developing countries; or avoiding irreversible losses of biodiversity when countries are poor that may be highly valued after those countries become more wealthy.

This paper surveys the current situation, present trends, and promising innovations in the financing of protected areas, emphasizing innovative tools that are relatively poorly known. This paper seeks to enlist the widest range of investors who could (and should) have a hand in crafting and using these tools. They include the full spectrum of those active, and potentially active, in protected areas.

Once the necessary policies are in place, it is then necessary to understand the motivations of each investor important for conservation of biodiversity; this will allow for more accurate predictions of future income streams and requirements. Future increases in financing will most likely come from broadening the range of investors to include as yet untested partnerships, so an appreciation of each investor's real interest is a prerequisite to growth in financing.

2. SOURCES OF FINANCE AND POLICY LEVERAGE

Financial support for protected areas has increased in recent years primarily through greater cooperation among four principal investors: the international community; governments; the private sector; and NGOs.

Each of the categories of investors wields differential influence through their financial resources and through their role in formulating policies. Governments clearly have the lead role in formulating policies, being sovereign over their own protected areas. The international community has considerable influence through the provision of funds through the Global Environment Facility. The International Monetary Fund can have profound influences on policy through its structural adjustment loans. The private sector has significant influence through its patterns of investment. International NGOs can play an influential role in affecting policy, even though the financial means they are able to generate are relatively limited, while local NGOs are likely to be especially influential at the grassroots level, with their policy influence limited by a lack of resources.

The private sector's potential is the least tapped. Most of the tools that require the private sector are being led by international businesses. But as national companies or subsidiaries of multinationals gain more resources, the potential of their role will grow both in partnership with international companies and on their own. The challenge is how to form partnerships between relevant government agencies and the private sector, drawing on lessons learned from experience with these partnerships in both developed and developing countries (Jennings, 1995).

Developed countries have a long tradition of corporate and private support for social and community needs. Tax laws were written specifically to encourage corporate charity by enabling corporations and individuals to take tax deductions for contributions of cash, property, and services to non-profit organizations that fit broad criteria for public service. In recent decades, corporations have learned that they can benefit in other ways from being "corporate good citizens." Many corporations engaged in the production of goods and services see their charitable activities as giving them as much public relations value as paid advertising; others will see investments in protected areas as being sound business decisions which yield benefits in terms of ensuring supplies of raw materials, access to markets, and long-term social, political, and economic stability.

Both a medium-term analysis of where growth in economic and political power will come, as well as a long-term analysis of where the conservation challenges will lie, point to the for-profit private sector as key. The analysis of tools that follows seeks to identify several ways to build bridges between those investors currently committed to protected areas and those who could become so within the short to medium term.

3. FINANCING PROTECTED AREAS: TOOLS THE INTERNATIONAL GOVERNING SYSTEM CAN INITIATE

The international governing system -- involving the United Nations system, the World Bank, the regional development banks, the International Monetary Fund, and international conventions -- has the lead responsibility to generate additional funding at the global level. The Global Environment Facility, operated by its own secretariat and implemented by the World Bank, United Nations Development Programme, and the United Nations Environment Programme, is the interim Financial Mechanism of the Convention on Biological Diversity. The GEF allocated over US$300 million to biodiversity in its

pilot phase and has doubled its level of investment in its first three-year implementation phase. These funds are being spent subject to an Operational Strategy developed by the GEF Secretariat, which in turn was based on direction provided by the Conference of the Parties of the CBD. But it is also clear that the funding generated by the GEF will not be sufficient to meet all of the needs for investments in protected areas. Additional funds are required from the international level. At least some of this funding should also serve to stimulate increased investment at the national level (as discussed in more detail in section 4).

The globalization of the marketplace, enabled or facilitated by the international governing system, has led to numerous transnational economic activities that depend on global resources to generate increasingly vast streams of income and other benefits which do not accrue through rents or returns to the appropriate factors of production. Correcting this market failure through tapping a small part of these streams for purposes which provide global benefits could result in a more logical and efficient allocation of global income (though the failure may not be simply that of the market). This section suggests a few possibilities.

3.1. Charging for Use of the Global Commons

The global commons is that part of our planet which belongs to all of humanity. It includes the oceans beyond the exclusive economic zones, the ocean floor, outer space including the geostationary and lower orbits, the electro-magnetic spectrum, and biodiversity (in its general sense); some consider Antarctica and the Southern Oceans to be a global commons as well, but this is disputed by some claimant states. These global commons have considerable economic value. The oceans provide nearly 90 million tons of fish per year, serve as a means of transport, help regulate the climate, and are a major carbon sink. Outer space provides the traffic lanes for satellites which enable global communications to be so efficient, and which provide masses of data on natural resources. The electro-magnetic spectrum serves as a means of international telecommunications, without which the global market would be difficult to imagine.

The global commons continue being misused or over-used, at least partly because they are still perceived as "free" resources. Bezanson and Mendez (1995) point to the need to manage the global commons and to charge for their contributions to the various transnational activities that use them. They call for a system of user rights, regulations, rents, and charges as a way of governing the commons and using them to generate revenues. At least a portion of these revenues should be allocated for conservation purposes, perhaps through payments directly to the Financial Mechanism of the CBD.

Clearly, the use of the global commons is a major political issue, but it already is generating significant economic benefits. The challenge is to find ways to ensure that those realizing benefits also pay at least some of the costs of conservation, including support to protected areas.

3.2. Joint Implementation

As outlined in the UN Framework Convention on Climate Change, the basic premise of Joint Implementation (JI) is to enable voluntary cooperation between two or more countries with the aim of reducing greenhouse gas emissions as cost-effectively as possible. In most cases, JI projects will involve countries where mitigation costs are relatively low in order to maximize the possible global benefits, enabling countries with high marginal costs to invest in countries where greater reduction of

greenhouse gas could be achieved for the same level of funding; JI offers countries with limited or expensive mitigation options the opportunity to pursue more cost-effective mitigation opportunities elsewhere, thereby dramatically reducing the costs of achieving a given net reduction in carbon dioxide emissions. The COP of the Framework Convention on Climate Change has insisted that Joint Implementation financing is to be additional to the financial obligations of industrialized countries and existing official development assistance flows, reinforcing the crucial role of the private sector in any success the Joint Implementation system is to enjoy (Trexler, 1995). The effects of such investments on protected areas could be significant.

On the positive side, any efforts to slow climate change will likely be a net benefit for protected areas. More specifically, the activities being implemented may be managed to provide significant benefits for protected areas; for example, funds invested by an industrial country for carbon sequestration in a tropical country may involve reforestation with native species of trees, thereby expanding the area of habitat and contributing to the maintenance of biodiversity (Figure 2). While it is generally agreed that forestry-based mitigation efforts are only a relatively small part of the climate change mitigation portfolio, they are worth mentioning here because of their potential impact on protected areas.

FIGURE 2: SUPPORT FROM JOINT IMPLEMENTATION FOR PROTECTED AREAS

While Joint Implementation is designed to help implement the Climate Change Convention, well-designed JI projects can provide significant benefits to protected areas. Examples include:

- rehabilitating and protecting of important watershed areas;
- reducing the extent and frequency of illegal logging in protected areas by increasing the capability and effectiveness of management;
- involving local populations in such activities and provide alternative sources of timber;
- regenerating and rehabilitating forests in biologically valuable habitats;
- purchasing land to add to protected area systems in areas of biologically-rich forest.

Two categories of JI projects may have especially significant impacts on biodiversity: carbon sink enhancement; and changing agricultural practices. Enhancing carbon sinks involves the reduction of net anthropogenic releases of carbon through carbon fixation in biomass or changes in land use and management practices. Such so-called "carbon offsets" have the potential to modify and improve management practices, to the benefit of protected areas. Options for mitigating climate change include slowing deforestation through improved forest protection and slowing of conversion of forest to agricultural land; and increasing forest and tree cover on existing lands, thus enlarging living terrestrial carbon reservoirs. The rate of on-going forest loss suggests that significantly slowing or stopping deforestation in the coming decades would probably have a more sizeable and immediate impact on the accumulation of carbon dioxide in the atmosphere than any conceivable tree-planting effort, with forest conservation plausibly keeping tens of billions of tons of carbon out of the atmosphere over the next several decades (Trexler, 1995).

Despite some of the administrative and practical challenges of Joint Implementation, the sources of funding may be significant and will be largely outside of the usual sources of funding available for

protected areas. Note that this use of financing from carbon offsets will lead to economic development in tropical countries -- a feature bound to make it more attractive politically.

Many international environmental groups and developing country governments continue to express scepticism about allowing carbon dioxide emitters to avoid emissions reductions by relying on carbon offsets and Joint Implementation (Sierra Club, 1995). Others have voiced the fear that pursuit of forestry-based Joint Implementation projects could turn entire countries into forest reserves and national parks (Trexler, 1995). Sceptics question whether individual areas of forest otherwise would have been cleared. Crucial questions which need to be asked include: Can forest areas truly under threat of loss be identified? Once they are identified, can they truly be protected? How does one prove that exploitative pressure has not simply been displaced to another parcel, with no net carbon implications? Clearly, Joint Implementation needs to be seen as just one part of an overall approach to improved forest management, and conservation of biodiversity.

4. FINANCING PROTECTED AREAS: TOOLS GOVERNMENTS CAN INITIATE

The Convention on Biological Diversity recognizes that each government needs to provide financial support and incentives to implement the objectives of the CBD, within the capacity of each government (Article 20). All governments have conflicting demands on the available financial resources, and will need to ensure that expenditures in support of the CBD are able to compete successfully with other demands. Several new approaches to generating funds will serve to support the objectives of the CBD in the field of protected areas, even if the funds generated are not directly provided to the government agencies assigned to implement the Convention. It is clear that governments can use policy instruments to change the ways that funds are being raised and spent in order to make them more consistent with the CBD. Many of these "green funding mechanisms" can both generate funds for protected areas and change behaviour of individuals and institutions to make them more "biodiversity-friendly".

Costa Rica offers a precedent-setting example of the use of one kind of effective charge that serves to benefit protected areas: a water user fee (Repetto, 1986). The idea is to levy a tax on the use of water by utilities and irrigation districts and apply that tax to the maintenance of forested watersheds. The government is considering charging approximately $6 million/year to the national water company and $3 million/year to the national electric power company. These fees would yield an income of approximately $7/hectare/year for management of the 1.3 million hectares of forest land in watersheds.

4.1. Environmental Taxes and Charges

The potential for environmental, or "green" taxes is great in many countries (Broadway and Flatters, 1993; Bruce and Ellis, 1993; OECD, 1993). A carbon tax already has been collected on the use of fossil fuels in Denmark, Finland, the Netherlands, Norway, and Sweden. Other uses of tax policy could also contribute. Governments could decide to provide tax deductions to private landowners trying to preserve biodiversity on their own lands, as is already being done in Australia, Canada, and several African countries (McNeely, 1993). Such a tax deduction would help mitigate costs of habitat conservation, including opportunity costs. It might also be possible to reduce or eliminate taxation on ecologically important land where the owner commits to conserving it in its natural state

(Clark and Downes, 1995). On the other hand, taxes could be increased on activities that threaten protected areas thus helping to ensure that the costs of environmental damage are internalized.

Business is predictably unenthusiastic about proposals to tax the sales of pharmaceuticals, timber, or seeds, contending that as taxes are unhypothecated, there is no guarantee that the revenues will achieve efficient conservation results, and additional revenues would more appropriately be levied from society as a whole. Irrespective of the merits of these arguments, the political reality is that the introduction of such taxes is unlikely under current conditions in most countries (ten Kate, 1995).

Considerable income can be generated for protected areas through direct charges. For example, the revenue from tourism to Kenya's Wildlife Service in 1989 amounted to US$18 million. Chitwan National Park in Nepal earns over US$1 million per year from entry fees, elephant rides, and royalties from tourist hotels. In Zambia, revenues from safari hunting amounted to US$1.3 million in 1990, of which $510,000 is returned to wildlife management and $440,000 is allocated to community projects such as the installation of maize grinding mills. This is a small proportion of the funds actually generated by the protected areas. For example, Wells (1993) conservatively estimates that US$ 27 million of total tourist expenditure in Nepal was attributable to the protected area network in 1988, when the cost of managing the parks were less than $ 5 million but direct fees collected from tourists visiting the protected areas amounted to less than $1 million. These figures suggest the parks are a good investment, though the costs of park management were more than five times the revenues collected by the Government from park tourists.

The main barrier to the wider use of these taxes and fees in supporting protected areas lies in the mismatch between locations of protected areas in remote areas far removed from the mainstream of national economic activity and users who can afford to pay a meaningful fee. Thus, governments will need an additional incentive to apply fees across watershed boundaries. One such incentive can come from the value of a reputation as a pioneer in this field. The first few countries that make a serious attempt to implement a water-based fee system for support of forest management and conservation, for example, will likely see additional donor support.

4.2. Tradeable Permits

Panayotou (1995) has proposed the idea of internationally Tradeable Conservation Credits (TCC) as an instrument for widening the market for biodiversity values beyond their direct use value to extractive industries. Recent work on the value of protected areas (e.g., Pearce and Moran, 1994; Barbier *et al.*, 1994) indicate that the indirect use value and non-use values of protected areas generate far greater willingness to pay by the general public than the use values implied by the rather thin market in bioprospecting. However, no marketable instrument is currently available for capturing these non-use values other than voluntary contributions to NGOs.

As conceived by Panayotou (1995), tropical countries could allocate habitats protected areas for biodiversity conservation and divide each habitat into a number of TCCs of a particular size. Each TCC would state the location, condition, diversity, and degree of protection of the habitat and any special rights that it conveys to the buyer or holder. TCCs could then be offered for sale both locally and internationally at an initial offer price that covers fully the opportunity costs of the corresponding land unit plus an appropriate mark-up. The potential buyers of TCCs include local and international organizations, local and international foundations, and corporations, developed country governments, chemical and pharmaceutical companies, scientific societies, university and research institutions, and

even individuals in the developed countries who are conservation-minded. Motivations for purchasing TCCs would vary among the prospective buyers, ranging from direct use values such as prospecting for new chemicals or pharmaceuticals, to non-use values such as conservation or tourism. Others might buy and hold TCCs as an investment, if they expect them to rise in value as a result of decreasing supply and increasing demand for biodiversity in the future.

Developed countries could stimulate the demand for TCCs by providing credits to domestic firms and property owners for the acquisition of TCCs from developing countries against domestic environmental regulations such as forest harvesting and replanting regulations, or by introducing a conservation tax and then allowing people the option to pay this annual tax or to purchase and hold TCCs from conservation in lieu of the tax. A TCC could involve declaring a fragile ecosystem as a protected area which is closed to certain agricultural practices or forms of development, obviously with the consent of the communities involved because they would gain economic benefits from behaviour which is in the national and global interest. This financing mechanism has the great advantage for protected areas in the tropics by making the opportunity costs clear and providing a vehicle for the beneficiaries to pay them. Panayotou (1995) considers that it has the potential to raise billions of dollars for biodiversity without compromising national control and sovereignty over resources.

5. FINANCING PROTECTED AREAS: TOOLS THE PRIVATE SECTOR CAN INITIATE

In 1996, private financial flows to developing countries reached nearly US$260 billion, far more than the $56 billion in development assistance. The private sector has profound influences on biodiversity through its use of resources, trading patterns, and marketing. Many private-sector investors are already deeply involved in biodiversity, holding extensive areas of land important for conservation, promoting bioprospecting (see below), carrying out biodiversity-related research, and supporting conservation efforts in the field. Exxon, for example, has recently made a US$5 million grant to support conservation of the tiger in Asia (its advertising symbol). Many industries are becoming much more "green" and therefore useful potential partners in protected area management.

This trend is most strongly seen in the industrialized countries, but many developing countries are seeking to promote rapid economic expansion, with the consequences that the local business sector will increasingly have the resources to contribute to protected areas, and the emerging consumer class will have the interest, influence, and resources to support national conservation efforts. This assumption leads to a focus on identifying incentives for the for-profit private sector to play a greater role in the financing of protected areas. If the private sector can become a full partner, then the world could see a new era of conservation -- an era in which civil societies have the will and the means to assume an effective stewardship over their own resources, biodiversity included.

Already, the International Chamber of Commerce (ICC), the World Business Council for Sustainable Development (WBCSD), Keidanren in Japan, and many others are channelling substantial private sector resources to provide business leadership for change towards sustainable development and to promote the attainment of high standards of environmental and resource management in business. Many individual companies are working on innovative approaches to ensuring that their activities preserve fragile ecosystems, even when mineral extraction is involved.

5.1. Transfer of Development Rights and Credits

The real potential of JI (as discussed in Section 3.2) as a funding source for biodiversity conservation projects lies in the private sector of industrialized countries, including electric utilities, automobile manufacturers, and chemical manufacturers who may find the potential cost-effectiveness of carbon offsets to be an attractive alternative to facility-specific emissions reductions (Trexler, 1995).

5.2. Prospecting Rights and Biological Royalties

Conservationists have long cited the untapped potential of rainforest species for yielding useful drugs as a reason for saving tropical forests (Eisner and Beiring, 1994; Mendelsohn and Balick, 1995). Within the last few years a number of partnerships have been formed to try to develop this potential to the point where new drugs, derived from naturally occurring compounds, are on the market. These have been discussed elsewhere (Sittenfeld and Gámez, 1993; Reid, 1992; Acharya, 1995; ten Kate, 1995; Simpson, 1995), so will not be discussed further here.

5.3. "Green" Business Investments in Protected Areas

World trade patterns are changing rapidly. Many environmental NGOs are lobbying for more study to understand possible environmental consequences of new trade regimes such as will be fostered by treaties such as NAFTA and GATT. These groups seek to use these agreements to promote globally uniform environmental impact assessment procedures and environmental management practices. Most groups have so far emphasized identifying new regulatory mechanisms capable of addressing environmental problems that will emerge with new trading patterns. Many other possibilities also exist for providing incentives to the private sector. For example, the International Finance Corporation (IFC) has been developing a proposed $20-30 million Biodiversity Enterprise Fund for Latin America. This would be a private equity fund to mobilize capital to invest in biodiversity-related projects such as alternative agriculture (organic farming, aquaculture, and the use of under-utilized species); sustainable forestry; non-timber products from forests and wildlands; ecotourism; biodiversity prospecting; and other activities that restore or take development pressure off of biodiversity. The proposed Fund would be designed to bring together investors, grant funds, and expertise and making them available to entrepreneurs.

The above discussion touches on just a few of the many possibilities for involving the private sector in implementing the Convention on Biological Diversity. Given the immense sums involved in the private sector, the dependence of many businesses in the private sector on biological resources, and the realization by many business leaders that their future, too, lies in sustainable development, the great scope for expanding the collaboration between the private sector and protected areas remains one of the most promising areas for improvement in the coming years.

6. FINANCING PROTECTED AREAS: TOOLS NGOs CAN INITIATE

Conservation finance dates its history from the work of the NGOs that have been raising money and lobbying for protected areas actively for at least a hundred years. It is largely as a result of the lobbying and advocacy efforts of NGOs over the past fifteen years that donors and governments have increased their support for protected areas. NGOs are still in the forefront of innovation in bringing

more investors and more financing to the support of conservation (WRI, 1989; Clark and Downes, 1995; IUCN, 1994; Spergel, 1993). The following describes tools that NGOs have been, and will likely continue to be, in the forefront of implementing, often in support of the efforts of governments and the private sector.

6.1. "Debt-for-Nature" Swaps

Debt-for-nature swaps are the best known of a family of deals that exchange debt in "hard" currency for local currency and or equity in local enterprises. The concept of debt swaps is described in many papers and reports (e.g., Gibson and Schrenk, 1991; Hansen, 1991; Rubin *et al.*, 1994). One key feature is worthy of emphasis: these swaps were a "win-win" deal for all involved. In a typical swap the commercial bank holding a non-performing note of a developing country was able to get cash (at a discount over face value) for the note and clear its books. The Central Bank that redeemed the note for local currency got out from under a portion of its debt. The donor, often a philanthropic foundation in the early days, got more impact for its grant money through a better rate of exchange for its donation for conservation. And the international NGO arranging the swap saw an increase not only in the local currency funding for its projects, but also in the number and amounts of donations to its programmes.

6.2. Fund Raising from the Public

The general public also has a surprisingly generous willingness to pay for conserving biodiversity, provided appropriate means are available for them to exercise this choice. Traditionally, usual way of expressing this support is through charitable giving, which sometimes can reach very significant numbers. For example, in the US, 1993 private sector contribution totaled US$126.22 billion, including $103 billion from individuals, $9 billion from foundations, $8.5 billion from bequests and $5.9 billion from corporate foundations. Funds donated to wildlife and environment issues amounted to $3.19 billion.

International NGOs have pioneered the art of fund raising targeted at a particular location, species, or issue. Examples abound since the beginning of modern conservation efforts. Indeed many international NGOs were formed around campaigns to preserve a place in a natural state. The Sierra Club had its origins in the campaign to save the Yosemite Valley. The National Audubon Society had its origins in a campaign to save egrets from overhunting fueled by demand for feathers as millinery ornament.

More recently this technique has seen great success in fund raising from the concerned public of donor countries. Targeted fund raising works because it gives a sense of ownership to individual donors. Whether the cause is tiger or an island, a whale or a coral reef, contributors identify with the object. This success has created internal tensions within international conservation NGOs between scientific and field staff who understand that true security of protected areas depends on creating a sense of ownership among the people living in and around protected areas. Directors of fund raising campaigns have often, against the advice of field staff, allowed their fund-raising literature to imply that local people are the enemy of conservation, or at least indifferent bystanders, rather than its stewards.

As countries continue to grow economically, targeted fund raising will see a burst of growth -- especially in countries where television programming is also growing. Campaigns targeted at

specific species or locales could generate funds from the urbanized middle class but also could lead to tension between them and indigenous peoples living in the area targeted by the fund appeal. Developing strong financial support from the emerging middle classes without also worsening this tension is the challenge targeted fund raising faces. If this challenge is met, then countries showing high rates of economic growth may soon be able to raise substantial amounts of funding for protected areas. The key to success is to have representatives of both funders and local communities involved in the control of flow of such funds.

7. CONCLUSIONS

More funds are required for supporting government efforts to manage protected areas, and this paper has indicated the breadth of opportunities for innovative sources of funding, and the kinds of policy reforms required to enable the new funds to be effectively applied to protected areas. Numerous other possibilities are certainly available and as conditions change in the future, perhaps even more will become feasible. The key lesson from this discussion is that funding need not be a limiting factor for protected areas. The major requirements for sustainable finance include:

- Establishing new policy frameworks that will facilitate innovation in fund-raising for protected area-related topics.

- Reducing expenditures that tend to operate in ways contrary to the objectives of protected areas.

- Designing new approaches for spending money effectively for achieving the national objectives for protected areas.

The last requirement may be the most difficult to achieve.

This paper has argued that successful management of protected areas requires a combination of policy reform and appropriate economic instruments. The policy reforms would remove the underlying causes of threats to protected areas and create incentives for their effective management. The economic instruments will further strengthen the incentives for behaviour which is supportive of the objectives of the Convention on Biological Diversity and will generate the additional financial resources required to fund investments in protected areas.

Obviously, some innovative measures will be easier than others. It would seem reasonable to start with policy options and financing instruments that promise win-win outcomes, followed by those which would raise at least sufficient revenue to be self-financing. Environmental investments that clearly involve net additional costs should be done last and in increments, with full assessment of the trade-offs involved. Taken together, the policy changes, innovative funding mechanisms, and expanded partnerships with the private sector will greatly enhance the prospects for protected areas in the 21st century.

REFERENCES

Acharya, Rohini. 1995. Biodiversity prospecting: Prospects for private sector participation in the Asia-Pacific region. pp. 367-388, in McNeely, J.A. (ed.) **Biodiversity Conservation in the Asia and Pacific Region**. Asian Development Bank, Manila, Philippines.

Barbier, E.B., J.C. Burgess, J.T. Bishop, and B.A. Aylward. 1994. **The Economics of the Tropical Timber Trade**. Earthscan, London.

Bezanson, Keith and Reuben, Mendez. 1995. Alternative funding: Looking beyond the nation-state. **Futures** 27(2):223-229.

Broadway, R. and F. Flatters. 1993. The taxation of natural resources. Policy Research Working Papers, WPS 1210, World Bank, Washington D.C.

Bruce, N. and G.M. Ellis. 1993. Environmental taxes and policies for developing countries. Policy Research Working Papers, WPS 1177, World Bank, Washington D.C.

Clark, Dana and David Downes. 1995. **What Price Biodiversity? Economic Incentives and Biodiversity Conservation in the United States**. Centre for International Environmental Law, Washington D.C.

Eisner, Thomas and Elizabeth A. Beiring. 1994. Biotic exploration fund: Protecting biodiversity through chemical prospecting. **BioScience** 44(2): 95-98.

Gibson, J.E. and W.J. Schrenk. 1991. The Enterprise for the Americas initiative: A second generation of debt-for-nature exchanges -- with an overview of other recent exchange initiatives. **The George Washington Journal of International Law and Economics** 25:1-70.

Hansen, Stein. 1991. **Debt for Nature Swaps: Overview and Discussion of Key Issues**. Environment Department Working Paper No. 1, World Bank, Washington D.C.

IUCN, 1994. **First Global Forum on Environmental Funds,** Santa Cruz, Bolivia. IUCN, Washington D.C.

Jennings, Vernon. 1995. The commercialization of biodiversity assets. pp. 342-366 in McNeely, J.A. (ed.) **Biodiversity Conservation in the Asia and Pacific Region**. Asian Development Bank, Manila, Philippines.

Li, Song. 1995. Sources of funding for the Convention on Biological Diversity. pp. 304-319 in McNeely, J.A. (ed.) **Biodiversity Conservation in the Asia and Pacific Region**. Asian Development Bank, Manila, Philippines.

McNeely, J.A. 1993. Economic incentives for conserving biodiversity: Lessons for Africa. **Ambio** 22(2-3):144-150.

Mendelsohn, Robert and Michael J. Balick. 1995. The value of undiscovered pharmaceuticals in tropical forests. **Economic Botany** 49(2):223-228.

Newcombe, Ken. 1995. Financing innovation and instruments: Contribution of the investment portfolio of the pilot phase of the Global Environment Facility. pp. 320-341 in McNeely, J.A. (ed.) **Biodiversity Conservation in the Asia and Pacific Region**. Asian Development Bank, Manila, Philippines.

OECD. 1993. **Taxation and Environment: Complementary Policies.** OECD, Paris.

Panayotou, Theodore. 1995. Matrix of financial instruments and policy options: A new approach to financing sustainable development. Paper presented to Second Expert Group Meeting on Financial Issues of Agenda 21, Glen Cove, New York, 15-17 February 1995.

Pearce, D. 1991. An economic approach to conserving tropical forests. in Helm, D. (ed.) **Economic Policy Toward the Environment**. Blackwell, Oxford.

Reid, W.V. 1992. Conserving life's biodiversity. **Environ. Sci. Technol**. 26(6):1095.

Repetto, Robert. 1986. **Skimming the Water: Rent-seeking and the Performance of Public Irrigation Systems**. World Resources Institute, Washington D.C.

Rubin, Steven M., Jonathan Shatz and Colleen Deagan (undated). **International Conservation Finance: Using Debt Swaps and Trust Funds to Foster Conservation of Biodiversity**. Conservation International, Washington, D.C.

Sierra Club. 1995. **Risky Business: Why Joint Implementation is the Wrong Approach to Global Warming Policy**. Sierra Club, Washington D.C.

Simpson, R. David. 1995. Biodiversity prospecting and biodiversity conservation. Paper presented for IUCN-CSERGE workshop on financing the conservation of biological diversity, Harare, Zimbabwe, 13-15 September.

Sittenfeld, Ana and Rodrigo Gámez. 1993. Biodiversity Prospecting by INBio, pp. 69-97 in **Biodiversity Prospecting: Using Genetic Resources for Sustainable Development**. World Resources institute, Washington D.C.

Spergel, Barry. 1993. **Trust Funds for Conservation**. World Wildlife Fund-US, Washington D.C.

ten Kate, Kerry. 1995 Green gold or a flash in the pan? The role of bioprospecting partnerships in financing the conservation and sustainable use of biodiversity. Paper presented for IUCN-CSERGE workshop on financing the conservation of biological diversity, Harare, Zimbabwe, 13-15 September.

Trexler, Mark C. 1995. **Biodiversity Conservation and Joint Implementation: An Action Agenda**. Paper presented for IUCN-CSERGE workshop on financing the conservation of biological diversity, Harare, Zimbabwe, 13-15 September.

Trexler, M.C. 1995. Carbon offset strategies: A private sector perspective. In Jepma, C.J. (ed.) **The Feasibility of Joint Implementation**, Kluwer Academic Publishers, Dordfrecht.

Wells, Michael. 1992. Green Funds. **Ecologica** 9(Jan-Feb):13-15.

World Resources Institute. 1989. **Natural Endowments: Financing Resource Conservation for Development**. WRI, Washington D.C.

ACKNOWLEDGEMENTS

This paper grew out of work done with Paul Weatherly in preparation for the IUCN-Asian Development Bank Conference on "Biodiversity and Conservation in the Asian and Pacific Region". It has been further enriched by contributions to a workshop organized by IUCN and CSERGE held in Zimbabwe on 12-16 September 1995. Special thanks go to David Pearce, Ed Barbier, Tim Swanson, Juan di Castro, Kathy MacKinnon, Kerry ten Kate, Dhira Pantumvanit and Theo Panayotou for their stimulating comments.