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## Financial Indicators and Targets for Protected Areas<sup>1</sup>

by

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*Abstract: Drawing upon the results of a three year project at the World Conservation Monitoring Centre, this paper examines national investment in protected areas as a financial indicator for biodiversity conservation. An overview of the existing data on financial indicators and targets for biodiversity conservation is presented, including the recently completed global survey of government budgets for protected areas by the WCMC. The paper then discusses the methodological issues involved in standardizing data on investment in protected areas, the setting of target investment levels, and ways to improve the future collection of such information. The discussion is conducted within the framework of the upcoming national reports by the Parties to the Convention on Biological Diversity, and the specific objective of establishing financial indicators from the data included in the national reports.*

### Introduction

The third Conference of the Parties (COP) of the Convention on Biological Diversity (CBD) prioritized the establishment of a "core set" of indicators for biological diversity and the setting of measurable targets for achievement of the Convention's objectives. This core set of indicators and measurable targets will be developed through the national reporting process under the CBD, which specifies that Parties submit national reports on the implementation of their national biodiversity strategies as defined in Article 6.

The national reports are expected to produce a set of information on the status and trends in biological diversity in the countries that are Parties to the Convention. This information is expected to form the

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basis for the refinement of biodiversity indicators and targets which will eventually receive wide dissemination and standardization. However, the COP has yet to select a set of core indicators and targets, or to define guidelines for the national reports in sufficient detail to ensure this information is obtained in a standardized and internationally comparable format.

The selection of a financial indicator for the core set is the subject of this discussion. An indicator based on government investment in biological diversity conservation represents a "response" indicator. This financial indicator measures the response of a government or other funding agency to the challenge of biodiversity loss or degradation. Possible response indicators may include either policy or financial measures. Financial responses have the advantage of being quantifiable, and able to reflect a range of commitment levels to the CBD. Financial indicators also provide a means to estimate unmet financial needs and to set targets for government or international investment.

This paper will discuss the use of national investment in protected areas as a financial indicator for biodiversity assessment. In the CBD, a protected area is defined as "a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives." Protected areas cover over 5% of the earth's land area and represent the primary *in situ* conservation activity undertaken by governments (IUCN, 1994a). While there are other *in situ* conservation activities undertaken by governments such as agricultural biodiversity and sustainable resource use programs, protected areas absorb the majority of national biodiversity investment.

A preliminary estimate in a WCMC study shows that national investment in protected areas accounts for two thirds of annual global biodiversity investment (James, et al., 1997). Table 1 illustrates that national governments invest about \$7.2 billion annually in protected areas, compared with estimated global biodiversity investment of \$11.2 billion. International assistance may add another \$1 billion to biodiversity conservation efforts, though the quantity allocated to protected areas is not known. Protected areas represent the core of national biodiversity conservation activities, and provide a quantifiable indicator that can be measured and followed by the international conservation community.

In this discussion, the national protected area agency is the basic unit of analysis. The financial indicator for biodiversity is the conservation investment undertaken by the national protected area agency. These protected area investments may be directed to capital investment projects, or to fund operating expenses. The protected areas agency budgets can be expressed on the basis of investment per square kilometer (PSK), or as a percentage of the total government budget, or as a percentage of GDP, among other methods. This paper will often refer to PSK budgets as it draws upon the WCMC study of national investment in protected areas that used the same convention (James et al, 1997).

### *Existing Data*

Financial indicators of government investment in protected areas have been very hard to obtain. The international standard reporting system for government budgets does not include a line item for parks and protected area budgets (IMF, 1988). Nor is the data collected and published by other international organizations, such as the UN or World Bank (e.g., World Bank, 1992). There are no financial indicators provided in the recent *Global Biodiversity Assessment* (UNEP, 1995b), or in the publications of major non-governmental organizations (e.g. WRI, 1995).

With no standardized information source available, researchers have had to rely upon data scattered in regional and national reviews of biodiversity conservation and protected area systems, such as the IUCN's four volume *Protected Areas of the World* (IUCN, 1992) and *Protecting Nature: Regional Reviews of Protected Areas* (IUCN, 1994b), or WCMC's *Global Biodiversity* (WCMC, 1992). Some regional data on Africa, related to anti-poaching efforts to protected elephants and rhinos, has appeared (e.g., Cumming et al., 1984, 1990; AECCG, 1992). Even taken together, these data sources do not present a complete picture of global conservation investment.

Table 2 illustrates the scarcity of existing financial indicators of protected area investment. The table includes the findings of the largest cross country studies of protected area investment conducted to date. Three of the studies are limited to African protected areas (Cumming *et al.*, 1984; 1990; AECCG, 1991). The other two are global in scope, but one has only 32 countries in the sample (Martin, 1995). The WCMC study, which is the first major attempt to provide a standardized global data set on protected area investment, includes 100 countries (James *et al.*, 1997).

The large differences in the investment levels reported for certain countries suggest that the data are unreliable for time series comparisons. For example, the investment rates reported in separate studies, for countries such as Turkey or South Africa, can differ by a factor of ten. It is not clear whether such discrepancies in reported budgets for certain countries are due to differences in collection methods, or due to "real" factors relating to changes in government allocations. As a result, the published financial indicators for biodiversity are of limited use for conservationists and policy makers

Moreover, the limitations of the available data have also prevented a consensus from being reached on investment targets for protected areas. One study from a decade ago found that adequate protected area conservation in an African national park required an investment of \$230 per square kilometer (Leader-Williams and Albon, 1988). More recent studies have conjectured that closer to \$500 per square kilometer would be adequate to control poaching in Africa (Leader-Williams, 1993; Dublin *et al.*, 1994). These studies' focus on anti-poaching requirements in a single region does not provide a useful benchmark for general prescriptions of the adequacy of investment at a global level of analysis.

### *The WCMC Study*

In an attempt to remedy this situation, WCMC initiated a project in 1993 to collect financial data on government budgets for protected areas. The project sent a survey questionnaire to the 600+ protected areas agencies in its database, and a follow up questionnaire two years later to 193 agencies. The survey obtained data on each agency's budget for protected area conservation, and an assessment of unmet financial requirements for adequate conservation. The study defined the financial indicator as government investment in core protected areas (IUCN category I-V). Foreign assistance for biodiversity conservation was removed from the sample and treated separately in other studies (e.g. WCMC, 1996). The study chose to compare national and regional budgets based on per square kilometer investment.

A summary of the financial indicators produced in the WCMC study is illustrated in Figure 1. The survey found that global mean investment in parks and protected areas was \$776 per square kilometer in 1993 US dollars, but that protected area budgets varied widely by region with the mean South American investment at \$57 per square kilometer and the East Asian (excluding China) mean investment at \$11,551 per square kilometer. High biodiversity regions in the tropics tended to have lower levels of investment, such as South and Southeast Asia at \$390 and Sub-Saharan Africa at \$143. On average, the developed countries outspent the less developed countries by a factor of ten: \$1,687 to \$161 per square kilometer.

Figure 2 shows another indicator of investment in biodiversity: staff inputs in protected areas. The global mean staff input was 24.5 people per 1000 square kilometers with a range from 2.6 in Australia to 432.1 in East Asia. In the staff sample, the variance between the developed and less developed countries was much less extreme: 27.3 versus 22.6 per 1000 square kilometers, respectively. In addition, some of the biologically rich regions had relatively high staffing inputs with South and Southeast Asia at 62.7, Sub-Saharan Africa at 24.3, though South America reported only 3.7 staff per 1000 square kilometers. While the staff data tell a more optimistic story for the less developed countries, the under investment of capital over a long time period has resulted in inadequate park infrastructure and poorly equipped personnel in many countries.

Clearly, better and more complete data on government investment in protected areas is a prerequisite to the establishment of accurate financial indicators and financial targets for biodiversity assessment. The establishment of a standard basis of reporting protected area investment data is the key to producing useful financial indicators. As shown in Table 2, without internationally comparable data points, no assessments of investment targets or trends can be made with any confidence. The next section discusses some of the technical issues in the standardization of financial indicators.

### *Financial Indicators*

The challenge in establishing a financial indicator for protected areas lies in deciding which sources of funds and which conservation activities to include in the statistic. A practical choice might be government investment in protected areas, but even this simple definition requires working with the organizational complexity of the different protected area agencies of the world.

Table 3 presents a diagram of the many sources and uses of investment funds for biodiversity conservation in a typical country. The table illustrates the extent to which biodiversity conservation activities cut across different sectors of government and the economy. Biodiversity conservation involves a great number of individual activities, from protected area conservation to sustainable use to the rehabilitation of degraded ecosystems and endangered species protection. In practice, these activities receive funding from a wide variety of sources, including governments (national, provincial, and local), non-governmental organizations, academic and research institutions, private sector individuals and corporations, and foreign sources.

A number of government agencies typically contribute to the management of a country's system of protected areas. In addition to a national parks or wildlife department, often a department of forestry, agriculture, fisheries, tourism, transport, police, and education contribute to a government's biodiversity conservation effort. In some countries even military expenditure contributes to protected area conservation. State and provincial level parks add a further dimension to biodiversity expenditure. Outside government sources, there are the expenditures of foreign aid agencies, non-governmental organizations, private individuals and corporations, and academic or research foundations for biodiversity conservation.

Protected area investment is typically allocated to a range of different conservation areas, distinguished by their level of protection. National designations for protected areas range from strict preservation of the resources to multiple use zones where significant economic activity may take place. The IUCN has organized these national designations into a six level system with Categories I-V pertaining to primary conservation areas, and Category VI for multiple use zones that include a conservation component (IUCN, 1994b). The funding intensity of protected areas usually varies by the national designation: national parks tend to receive the most funds, wildlife and resource reserves getting an intermediate amount, and marine protected areas and multiple use zones usually a smaller amount of funding for biological diversity. As a result, financial indicators for biodiversity conservation can vary considerably within the same country, depending upon the class of protected area. Thus, it is important to specify whether the indicator represents a country's highest designation of protected areas, or an average of all of the protected areas.

As an illustration of how a financial indicator might be defined, the sources and uses of funds marked with an asterisk in Table 3 represent the WCMC definition of government investment in protected areas. The WCMC study narrowed the range of governmental agencies to each country's primary protected areas agencies. The investment undertaken by other agencies such as agriculture or transportation were not counted, though a question was asked in the survey regarding the amount of assistance received by other agencies. State and provincial protected area agencies were included in the total. The activities included only the higher level protected areas, excluded multiple use zones, marine protected areas, and conservation activities outside of protected areas. The underlying assumption of this indicator is that the

core protected areas are critically important responsibilities of governments, regardless of the activities of foreign or non-governmental donors.

In the WCMC study, the basic unit of analysis is the protected area agency, rather than individual parks or whole countries. The protected area agency is the institutional unit that carries out a nation's primary conservation activities. Many countries use multiple agencies to manage their protected areas, so it is clearer to establish the financial indicators based on organizational lines. If necessary, the average investment of all of the protected area agencies within a country can be calculated, and used as a national indicator for conservation commitment.

### *Financial Targets*

A financial target is a measure of the financial capacity required for the achievement of a stated conservation objective. The investment required for adequate protected area conservation in a country is a financial target for biodiversity. The financial target can be expressed in terms of total financial requirements, or per square kilometer investment requirements, or other possible ways. In any case, the target investment level provides a benchmark against which the adequacy of actual investment can be measured. For example, budgetary adequacy can be expressed as a country's actual investment as a percentage of its target investment. The resulting adequacy ratio can be compared across countries to identify areas in special need of international assistance.

However, the setting of target budgets requires a scientific assessment of adequate biodiversity conservation in a country's protected areas. Further, the efficiency of the country's protected area agencies will impact the financial requirements to achieve these conservation objectives. Thus, both of the financial and the scientific judgments are likely to be somewhat subjective. These judgments must take into consideration a range of country-specific environmental, economic, and institutional factors, making it difficult for an external agency or organization to establish meaningful investment targets for global protected area conservation.

The WCMC project established target budgets based on countries' self-assessment of financial requirements for adequate protected area conservation. In the survey, each protected area agency was asked to estimate an amount of additional funds required to meet their stated conservation objectives. In this way, the survey asked agencies to judge for themselves the cost of adequate conservation. In the study, a per square kilometer target budget was calculated for each country by summing its actual investment in protected areas with their reported shortfall amount. Then, an assessment of budgetary adequacy was made by dividing actual budgets by the self-assessed target budgets.

Table 4 shows the WCMC financial targets for protected area investment in each of the geographical regions. Only the developing countries were included in the analysis. The target budget for each region is comprised of the mean actual budget plus the mean reported financial shortfall. The regions fell into three groups based on target budgets: lower cost regions, higher cost regions, and very high cost regions. The target budgets for these regions were \$150 to \$350 per square kilometer; \$750 to \$1000 per square kilometer; and \$1500 to \$2500 per square kilometer. Despite its deficiencies, this analysis shows clearly that financial targets for adequate protected area conservation should vary widely in different regions of the world.

However, it is worth considering the advantages and disadvantages of relying upon national self-assessments for setting targets of financial adequacy since this will be the method used in the national reporting under the Convention. The chief advantage is that the estimates are based on national expertise with regard to the ecological, social, and economic conditions that impact the cost of operating protected areas. The disadvantages are that countries will have different standards with regard to adequate *in situ* conservation, which may reflect differences in income, society, and extent of commitment to conservation. Another limiting factor is the variance in institutional capacity within countries. The estimation of costs

of adequate conservation will necessarily involve subjective judgments. The skill at which these estimates are made will reflect the degree of institutional development.

The advantages of the national assessment data certainly outweigh the disadvantages. National assessments are the only practical way of incorporating the range of ecological, economic and institutional factors into subjective judgments about the cost of achieving conservation objectives. At the least, nationally defined target budgets can serve as the basis for further discussion among the Parties, non-governmental organizations, and conservationists. In the course of such discussions, national interpretations of adequate conservation may ultimately lead to some internationalization of standards.

### Reporting

The national reports due in January 1998 pertain to the implementation of Article 6, the national biodiversity action plans. The national action plans represent each country's implementation of the measures necessary to meet its obligations under the CBD. To assist Parties in the reporting process, the COP has issued a set of "suggested guidelines" for the information to be included in the national reports (Decision II/17, Annex, UNEP (1995a)). The suggested guidelines include a call for countries to report their budgets for the national biodiversity action plan.

The guidelines specify that the budgets should include "funding requirements for operating expenses, capital purchases, transport, field costs, ect." and a "list of the personnel needed by category." In addition, information is requested on "possible international technical and financial cooperation" (UNEP, 1995a). While these guidelines appear to be tailored quite well to *in situ* conservation activities, particularly protected area conservation, they actually pertain to all of the activities under the national biodiversity action plan. Thus, the reported financial information could potentially include a very broad range of activities, well beyond protected area conservation. Protected areas are likely to be only one of many investments included in the national reports.

Table 5 illustrates where protected area investment fits into the national reports. The table divides national reports into measures that require a government budgetary outlay and those that are primarily changes in government policy or laws. Protected area investment falls under Article 8, *In Situ* Conservation, one of many budgetary measures. Article 8 contains a range of *in situ* conservation activities that go well beyond the management of a system of protected areas. Hence, if countries report an aggregated budget for the implementation of the entire national biodiversity strategy, the protected area investment component may be buried in the numbers. While the Conference of the Parties now has an excellent opportunity to gather financial data, the format for national reports may need to be standardized at a relatively high level of detail in order to provide useful indicators for biodiversity assessment.

### Solutions

If the Parties to the Convention select protected area budgets as one of the "core set" of biodiversity indicators, the national reports should provide the following level of financial detail. Countries should itemize their national action plan budgets based on each of the Articles that require a governmental expenditure, as outlined in Table 5. Specifically, countries should specify separate budgets for *in situ* conservation, *ex situ* conservation, identification and monitoring, research and training, public education, and technical cooperation. The policy related components of national action plans would not require disclosure of a budget. Importantly, the budget for Article 8, *in situ* conservation, should be further broken down into budgets for each of the activity areas, particularly protected area conservation.

The reporting of the Article 8 budgets should include the following for each country in order to isolate the investments of national protected area agencies:

- the government allocated budget for the national protected area agency(ies)

- an indication of the distribution of expenditure between salaries, operations/maintenance, capital investment and other
- the square kilometers under the management of each agency
- an estimate of the expenditures of secondary agencies that contribute to conservation activities
- the expenditures by foreign agencies and NGOs
- the total of any other sources of investment in protected areas, including revenues raised and retained within the agency and donations/subscriptions
- an indication of the distribution of funds between the different national designations of protected areas
- an estimate of the shortfall in the budgets of each protected area agency, measured relative to the objectives of the convention, or the agency's stated conservation objectives
- staffing data related to each of the above

The Parties might select a set of financial reporting categories to use as a template for the national reports. Such a template could standardize the reporting of national investments in protected areas, facilitating the construction of financial indicators. The main feature of such a template would be the disaggregation of the budgets for national action plans into investments under each of the Articles of the Convention. The template might ask for greater detail on *in situ* conservation expenditure, including budget details for the major conservation agencies in the country, their staffing levels, the size of the protected areas under their management, and an estimate of the unmet financial needs in each of the conservation agencies.

An important feature of standardized templates is their compatibility with computerized databases. A financial database could be housed at the Secretariat of the Convention on Biological Diversity, or alternatively at the UNDPCSD offices. Such a database would increase the availability of information to the Parties, NGOs, and conservation researchers by allowing electronic transfers of data. Also, a database can easily be constructed to manage time series data on financial investments as it becomes available in future reports by the Parties. The Parties have the option now of setting up a reporting and data management system that could institutionalize the availability of financial indicators for biodiversity conservation, similar to other forms of economic data.

The WCMC protected areas database is another suitable location for financial indicators for protected area conservation. The WCMC database is the definitive source for geographical information on the global system of protected areas and serves as the basis for the UN List of Protected Areas (IUCN, 1994a). As a part of the survey reviewed here, the WCMC database was developed further to contain a layer of financial information that pertains to the funding of protected areas. As a part of the UN List reporting process for protected area information, countries could be asked to contribute financial information on a standardized template. If the budgetary data provided by countries in the upcoming national reports under the Convention are not practical for the establishment of financial indicators for biodiversity assessment, then the WCMC protected areas database may another useful source of financial data.

## **Conclusion**

In the coming national reports on the implementation of Article 6, the Conference of the Parties has an opportunity to obtain a large set of potentially valuable data on financial investments in biological diversity conservation. Thus far, such data have been lacking. As a result, the development of indicators of financial investment, and targets for adequate investment has not been possible. For example, assessments of the financial obligations of the GEF have been impeded by a lack of knowledge on national investment in biological diversity conservation and the incremental costs of providing global benefits. The Parties now have the opportunity to remedy this situation and produce a set of data that can provide guidance for financial policy and strategy into the future. However, to take fullest advantage of this opportunity the Parties will need to adopt reporting guidelines in advance of the reporting deadline.

Even if the Parties take no further action on clarifying the guidelines for national reporting, the opportunity to improve data on financial indicators is not lost. The reports will provide an enormous amount of new data, which may be analyzed to produce something close to a standardized data set. This process can be expected to inform the second round of national reporting (the interval of national reports will be determined at the next Conference of the Parties). At that time, it would be reasonable to expect the guidelines to have been improved as a process of institutional learning takes place. This paper will at least have flagged some of the issues that are likely to become apparent through time as national reports, and the resulting financial indicators and targets, become further refined.

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