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METHODOLOGIES FOR ESTIMATING FUNDING NEEDS

Methodologies that might be used to estimate funding needs

Note by the Interim Secretariat

1. INTRODUCTION

1. At the first session of the Intergovernmental Committee, Working Group II agreed "to recommend that the Secretariat, with the active participation of UNESCO, FAO, and other relevant organizations, should be requested to prepare for submission to the Committee at its next session, a study on various methodologies that might be used to estimate funding needs, including a description of the methodology used in reaching the figure for financial resources needed to fund multilateral biological diversity assistance between 1993 and 2000 contained in Agenda 21" (see UNEP/CBD/IC/2/2, annex III, para. 30). The present note has been prepared pursuant to that recommendation.

2. This note has been prepared with active participation of the Food and Agriculture Organization of the United Nations (FAO), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), and the Department for Policy Coordination and Sustainable Development (DPCSD).

2. POLICY FRAMEWORK

3. Several elements relevant to the estimation of funding needs linked to the Convention will be obtained from the policy, strategy, programme priorities, eligibility criteria and indicative list of incremental costs to be established by the Conference of the Parties in accordance with Article 20 of the Convention.

4. Similarly, the set of potentially useful methods will partly be determined by how "funding need" is defined, the types of costs and benefits included in such estimates, and the extent to which the allocation of costs and benefits in time and space are considered.

3. METHODS TO ESTIMATE FUNDING NEEDS

5. A distinction needs to be made between financial and economic costs. The calculation of economic costs excludes transfer payments (e.g. taxes and subsidies). The concept of economic costs is broader than financial costs in the sense that the former include non-market elements for which other valuation techniques are applied (see section 3.6 below for some of the valuation methods generally applied).

6. Methods identified as being potentially useful in the estimation of funding needs related to the Convention are discussed below. These groups of methods may include some degree of overlap.

3.1 Examination of current expenditures

7. There are many activities and programmes currently undertaken which directly work towards the objectives of the Convention. By examining current expenditures associated with such activities and programmes, a baseline figure can be derived from which future funding-need projections can be made.

8. Three major sources of expenditures can be distinguished: national government expenditures; multilateral- and bilateral-funded expenditures; and private sector and NGO expenditures. In examining current expenditures, only expenditures on the conservation and sustainable use of biological diversity should be included. It may not always be easy, however, to distinguish between expenditures that are and those that are not, concerned with biological-diversity conservation and the sustainable use of biological resources.

3.2. Use of existing funding-need estimates

9. Existing estimates of funding needs for the conservation and sustainable use of biological diversity may prove to be useful for the Conference of the Parties. Estimates have been made ranging from estimates for the protection of specific species, geographical areas or sectors to comprehensive global estimates. A list of references to some funding-need estimates of potential interest in this context is given in the table below.

References to existing estimates of funding needs in the context of conservation and sustainable use of biological diversity

Reference	Focus of estimate
Agenda 21, para. 15.8 (Estimate by the UNCED secretariat)	Implementation of chapter 15 (Conservation of biological diversity)
World Bank, World Development Report 1992: Development and the Environment, (Washington D.C., World Bank, 1992).	Policies and programmes to accelerate environmentally responsible development
World Resources Institute, Natural Endowments: Financing Resource Conservation for Development. International Conservation Financing Project Report, (Washington, World Resources Institute, 1989)	Conservation activities aiming at maintaining natural resources as the basis for meeting the needs of current and future generations
UNEP, Biodiversity Country Studies. Synthesis Report (Country Studies/Inf.1) (Nairobi, UNEP, 23 April 1992), pp. 10-21.	Priority biodiversity conservation needs
IUCN, UNEP, WWF, Caring for the Earth: A Strategy for Sustainable Living (Gland, Switzerland, World Conservation Union-IUCN, 1991), pp. 36 and 202	Programmes to halt deforestation
Keystone Centre, Final Consensus Report: Global Initiative for the Security and Sustainable Use of Plant Genetic Resources. Oslo Plenary Session (Colorado, Keystone Centre, 1991)	Urgent plant-gene conservation

10. The methods used to arrive at the Agenda 21 estimate are presented in section 4 below.

3.3. Methods based on negotiations

11. Some methods to estimate funding needs rely primarily on negotiations, often drawing upon relevant in-depth analysis of economic or biological-diversity data. Negotiations for covering needs beyond what a country is willing to meet internally usually involve compromises on the level of funding made available by bilateral and multilateral agencies. These agencies and the recipient country may mutually agree on the level of funding they view as appropriate and attainable.

3.4. Methods based on strategies

12. The Conference of the Parties may decide on a specific strategy for the implementation of the Convention. Typically, a strategy defines objectives and a time-frame. A strategy may also outline the steps needed to reach the objectives within the indicated time-frame. Funding needs for the Convention would then consist of costs associated with the programmes, projects and incentive measures proposed to realize the strategy.

3.5. Methods based on scenarios

13. Various scenarios can be prepared on how to implement measures which fulfil the obligations of the Convention. These scenarios can provide the basis for funding-need estimates. One scenario would be to assume the number of developing countries that are eligible for funding and need packages of support. If a set of support packages over a given time period can be costed, it would be possible to estimate the amount of funding needed in that period. It would be a policy question for the Conference of the Parties to mark the boundaries of such scenarios, including the extent to which the root causes of biological diversity loss, as well as the symptoms, are treated.

3.6. Cost-benefit based methods

14. Generally speaking, methods to estimate the full range of biological diversity values are not universally agreed. Cost-benefit based methods were developed for the evaluation of investment projects using market prices, but attempts are being made to extend these to include projects with large non-market-priced components such as those encountered in biodiversity conservation. Despite progress in valuation methods, not all environmental assets and effects are captured in economic values. The fact that large areas of the environment cannot be valued by cost-benefit means, indicates that they can only supplement other funding-need approaches such as through negotiations and pledges. Cost-benefit methods are, therefore, often used in connection with the other methods listed above.

15. A wide range of cost-benefit methods and techniques can be used to deal with the large variety of costs and benefits associated with the conservation and sustainable use of biological diversity, they include:

(a) Incremental-cost-based methods. Article 20 of the Convention on Biological Diversity requires that the Conference of the Parties establish an indicative list of incremental costs. This list can provide useful assistance in estimating funding needs (see also the note by the Interim Secretariat on definition of the term "full incremental costs" as applied to biological diversity and indicative list of incremental costs(UNEP/CBD/IC/2/17));

(b) Methods to measure specific value categories. Full cost-benefit analysis integrates both market and other values across sectors and functional usages. The valuation methods associated with full cost-benefit analysis and described below are often used when the value categories so estimated are not captured in ordinary market situations. A compilation of value categories may be found in the annex to the present note, while valuation methods are described in the report of expert Panel II (UNEP/Bio.Div/Panels/Inf.2, para. 28);

(i) The replacement/compensation-cost method can be used to estimate costs that would have to be incurred in order to replace a damaged biological diversity asset, e.g. restocking of fisheries, captive breeding of endangered species. The shadow-projects method, a special type of replacement-cost method, involves the design and costing of one or more compensatory projects that provide for substitute ecological services to compensate for the loss of biological resources and biological diversity under the ongoing project, e.g. new forest plantations to replace those submerged by a dam;

(ii) The preventive-expenditure method establishes the minimum value that people will put on the quality of their environment by determining just how much they are prepared to spend on preventing damage either to it or to themselves. Valuation performed in this way is known as the "preventive-expenditure" or "mitigative-expenditure" approach. This method would, for example, consider the actual costs of protecting crops and property from wild animals incurred by farmers living adjacent to nature parks;

(iii) The hedonic-price method can be used to identify the inferred preferences for biological-diversity quality by looking at changes in prices of surrogate goods, the most common of which are *property and labour*. The property-value approach has mainly been used to estimate the implicit damage to the environment caused by air and water pollution and vehicular noise;

(iv) The travel-cost method seeks to determine the value that people place on any location from the time and cost they incur in travelling to it. This method has been used to assess the commercial value of tourist sites;

(v) Use of marketed goods and services as proxies for non-marketed goods and services to estimate the value of non-marketed goods and services by observing the market prices of their substitutes;

(vi) The contingent-valuation method, by which individuals' responses to questions regarding their willingness to pay for, or their willingness to accept compensation for, changes in biological diversity, are used to derive their preferences and to attach a monetary value to changes in biological diversity;

(vii) Functional-analysis methods (viz., effects on production) tries to establish a functional relationship between the environmental impact of an action and change in the value of an output that it causes. An example of this type is the reduced value of fish caught as a result of river pollution.

16. The choice of any particular method described in this section is dependent on many factors including the volume and quality and availability of data needed, ease of execution by personnel likely to be involved, and intelligibility and plausibility to decision makers. The contingent-valuation and hedonic-price methods have been more used in the developed countries. Of the other methods presented above, the replacement-cost method, the preventive-expenditure method, the travel-cost method and the functional-analysis method have seen growing application in the developing countries.

4. METHODS USED IN AGENDA 21

17. Chapter 15 of Agenda 21, on conservation of biological diversity, states, inter alia, that:

> "15.8 The Conference secretariat has estimated the average total annual cost (1993-2000) of implementing the activities of this chapter to be about $3.5 billion, including about $1.75 billion from the international community on grant or concessional terms. These are indicative and order-of-magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms, including any that are non-concessional, will depend upon, inter alia, the specific strategies and programmes Governments decide upon for *implementation*."

18. During the third session of the Preparatory Committee for the United Nations Conference on Environment and Development (UNCED), the Committee expressed an interest in having an indication of the costs involved in implementing Agenda 21. The UNCED secretariat followed up by compiling a compendium of existing estimates of the global costs of conserving biological diversity. This involved research with an extensive network of contacts within and outside the United Nations system. A careful study was made of information available in published documents such as the WRI/IUCN/UNEP Global Biodiversity Strategy, the IUCN/UNEP/WWF publication Caring for the Earth and in the country studies guidelines published by UNEP. Having established an indicative global estimate using existing literature, the UNCED secretariat sought the advice of its ad hoc expert working party on biodiversity to provide an estimated cost of implementing each activity under the four programme areas of the relevant draft chapter of Agenda 21. The four programme areas were: (a) providing information on biodiversity; (b) maximizing and spreading the benefits of biodiversity; (c) improving the conservation of biodiversity and wildlife; and (d) enhancing the capacity to manage biological resources, including wildlife. During the fourth session of the Preparatory Committee, the Committee decided to consolidate the four programme areas of the draft biodiversity chapter (A/CONF.151/PC/100/Add.20) into one and to omit or amalgamate some activities.

19. The task of revising the cost estimate of this new draft of the biodiversity chapter in Agenda 21 entailed scaling down the separate totals of the former programme areas by reference to the costs of the activities excluded or amalgamated and producing revised total costs. The figures arrived at are those appearing in the final text of Agenda 21. As stated in Agenda 21, these were indicative and order-of-magnitude estimates only and were not reviewed by Governments.

20. At the time of the UNCED cost-estimates exercise, there was no agreed material on the global costs of conserving biodiversity. In the absence of more comprehensive information, therefore, the UNCED secretariat had to make a number of broad assumptions. First, the total costs over the period 1993-2000 were divided to arrive at an average annual cost, having extrapolated the costs of existing and planned activities. Secondly, it was assumed that international financing would be required for developing countries only, which were assumed to number 100 in all. Thirdly, it was assumed that most of the financing would come from the international donor community, national Governments, non-governmental organizations, local communities and households. No attempt was made to specify burden-sharing among these entities. It was in any case very much the intention of the UNCED secretariat that the resulting estimates should reflect only orders of magnitude of the overall cost rather than specific costing of particular activities.

5. CONCLUSION

21. The Committee is invited to give guidance on further work required on methodologies that might be used to estimate funding needs and advise on the methodologies to be applied.

Annex

A MATRIX APPROACH TO VALUES OF BIOLOGICAL DIVERSITY

Value Categories→ / Sectors ↓	Ecological Services	Employment and private income	Public economy	Products for consumption	Aesthetic and recreational value	Socio-cultural, spiritual and existence value	Scientific and educational values
Agriculture							
Forestry							
Fisheries							
Other Sectors (i.e. pharmaceuticals)							
Protected areas							

Source: Report of Panel II: Evaluation of Potential Economic Implications of Conservation of Biological Diversity and Its Sustainable Use and Evaluation of Biological and Genetic Resources (UNEP/Bio.Div/Panels/Inf.2), UNEP, Nairobi, 1993.