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CONFERENCE OF THE PARTIES TO THE
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Agenda item 27.2

DECISION ADOPTED BY THE CONFERENCE OF THE PARTIES TO THE CONVENTION ON BIOLOGICAL DIVERSITY AT ITS EIGHTH MEETING

VIII/25. Incentive measures: application of tools for valuation of biodiversity and biodiversity resources and functions

The Conference of the Parties,

Recognizing that biodiversity and its resources and functions provide important ecosystem services to humankind that need to be adequately recognized and taken into account in private and public decision-making,

Also recognizing that public and private decisions can be improved if they are informed of the economic value of these ecosystem services under alternative management options and involve deliberative mechanisms that bring to bear non-economic considerations as well,

Recalling that the programme of work on incentive measures adopted by decision VI/15 foresees as one of its expected outcomes "the assessment, as appropriate and applicable to circumstances of Parties, of the values of biodiversity in order to internalize better these values in public policy initiatives and private-sector decisions",

Underlining that the development and application of practical methods to assess the changes of the value of biodiversity resources and functions, and associated ecosystem services, that result from public and private decision-making, can contribute to meeting the 2010 target,

Recalling that the Conference of the Parties, in decision VI/15, recognized that the full internalization is often not possible because of the limitations of valuation methods, but that identifying and assessing the value of biodiversity and the environmental services it provides can be an incentive in itself and supports the design of other incentive measures,

Also recalling that the recommendations for further cooperation endorsed by decision VI/15, *inter alia*, call for further cooperative work on valuation methodologies and tools, including their continued exploration as well the development and refining of non-market valuation methods and tools, and for the establishment or strengthening of information systems including on valuation methodologies,

Cognizant that a careful application of valuation methodologies is fairly demanding in terms of capacity and time and that the main constraints are likely to be costs of implementation, understanding the complementarity of approaches, and the lack of trained specialists, especially for developing countries, in particular the least developed and small island developing States among them, and countries with economies in transition,

Recognizing that benefits transfer has been the subject of considerable controversy in the economics literature,

Also recognizing that theoretical and methodological challenges remain, in particular with regard to an adequate incorporation of biodiversity values in conventional macroeconomic indicators of growth, and that further research directed at the development of a biodiversity adjustment for national accounting seems to be an important means to have biodiversity losses better reflected in macro-economic discourse,

Noting with appreciation the work of other international organizations and initiatives that have developed protocols and guidelines on valuation of biodiversity resources and functions and associated ecosystem services,

1. *Takes note* of the options for the application of tools for valuation of biodiversity and biodiversity resources and functions annexed to the present decision;

2. *Invites* Parties and other Governments to take, in accordance with their national policies and legislation, their capacity, and taking into account other international instruments, these options into consideration as possible inputs for analysis when considering, on a voluntary basis, the application of methods for assessing the changes of the value of biodiversity resources and functions, and associated ecosystem services, that result from their decision-making, including through pilot projects;

3. *Encourages* relevant national, regional and international organizations and initiatives to extend capacity-building and training on the valuation of biodiversity resources and functions and associated ecosystem services, in accordance with the human development processes of countries and with national needs and priorities;

4. *Invites* national, regional and international organizations and initiatives to promote systematic analysis and information exchange with a view to promote common understanding of valuation techniques and managerial skills in technical staff of Governments and stakeholders to facilitate the extension of capacity-building and training referred to in paragraph 3 above;

5. *Invites* institutions that support web-based information systems and databases on valuation, in accordance with their mandates, to fully include cases on the valuation of biodiversity resources and functions and associated ecosystem services, especially in developing countries, in particular the least developed and small island developing States among them, and countries with economies in transition in their databases, and to facilitate access to the databases in particular for experts and practitioners from the countries referred to above;

6. *Invites* national, regional and international funding institutions to identify gaps and needs to support the building or enhancement of national capacity as well as research and training, including through pilot projects, in accordance with the needs and priorities identified by Parties, for undertaking valuation of biodiversity resources and functions and associated ecosystem services; to support the further development of regional and international capacity such as regional and international information systems and databases on valuation, and to explore options for interlinked funding mechanisms with a view to supporting the design and the harmonized application of valuation tools among different multilateral environmental agreements;

7. *Encourages* relevant national, regional and international research institutions to strengthen research activities including research cooperation and exchange at national, regional and international levels including through South-South cooperation and/or the establishment of regional research consortia as appropriate, in order to promote a common understanding of valuation techniques among governments and stakeholders, on, *inter alia*:

(a) Integration of the values of biodiversity resources and functions and associated ecosystem services into national accounting and decision-making, taking into account the conceptual framework of the Millennium Ecosystem Assessment;

(b) Conducting a limited number of pilot valuation studies in developing countries, in particular the least developed and small island developing States among them, in countries with economies in transition and in countries that are centres of origin of biodiversity, with a view to enable Parties to develop, based on such experience, appropriate valuation tools;

(c) Capturing the calculated values through the careful analysis and design of markets for ecosystem services where appropriate, taking into account the three objectives of the Convention;

8. In carrying out the work in paragraphs 6 and 7 above, *encourages* relevant institutions to support the participation of indigenous and local communities, in order to facilitate the inclusion of cultural values in work on valuation of biodiversity resources and functions and associated ecosystem services with a view to generate valuation mechanisms that are suitable to indigenous and local communities;

9. *Invites* national, regional and international funding institutions to support the research activities identified in paragraph 7 above;

10. *Requests* the Executive Secretary:

(a) To continue, in cooperation with, and with input from, Parties, Governments and relevant international organizations, the compilation of information on methods for the valuation of biodiversity resources and functions and associated ecosystem benefits, and to disseminate this information through the clearing-house mechanism of the Convention and other means, including the CBD Technical Series, in order to promote a common understanding of valuation techniques among Governments and stakeholders;

(b) To explore with relevant organizations options for cooperative activities that strengthen existing information systems on valuation methodologies and existing cases for the purpose of the Convention, in accordance with annex II to decision VI/15, in order to promote a common understanding of valuation techniques among governments and stakeholders;

(c) To explore options for the design and application of flexible and reliable innovative tools for assessment and valuation of biodiversity resources and functions and associated ecosystem services;

(d) To prepare, in cooperation with relevant organizations and initiatives, terms of reference for a study on how monitoring can support the implementation of valuation tools and positive incentive measures. The study would propose a framework to capture the relationship between the monitoring of, and the valuation of, biodiversity resources and functions, and would aim to provide Parties with a practical tool to facilitate in-country studies.

Annex

OPTIONS FOR THE APPLICATION OF TOOLS FOR VALUATION OF BIODIVERSITY AND BIODIVERSITY RESOURCES AND FUNCTIONS

Biodiversity and its resources and functions generate substantial ecosystem services many of which are not traded on markets and whose value is therefore not reflected in market prices. Consequently, private and public decision-making and the allocation of funds will be distorted if the repercussions of activities on biodiversity resources and functions, and the associated ecosystem services, are not adequately taken into account. This distortion is an important underlying cause of biodiversity decline. Undertaking valuation of biodiversity resources and functions and the associated non-marketed ecosystem services has the potential of improving private and public decision-making, thereby contributing to the target of the Convention to significantly reduce by 2010 the current rate of biodiversity loss.

Total Economic Value (TEV). Most public and private resource management and investment decisions are strongly influenced by considerations of the monetary costs and benefits of alternative policy choices. Undertaking valuation should seek to address the relevant components of the Total Economic Value of non-marketed ecosystem services, bearing in mind that the concept of Total Economic Value includes both the direct and indirect use value and well as non-use value of ecosystem services and hence goes beyond the immediate benefits of commercial exploitations of biodiversity resources. Decisions can be improved if they are informed by the economic value of alternative management options and involve mechanisms that bring to bear non-economic considerations as well.

The options of valuation tools provided in the appendix below should not be taken as a closed set of tools, considering the evolutionary character of this field.

A. Valuation tools

A number of valuation tools are available that, when applied carefully and according to best practice, can provide useful and reliable information on the changes in the value of non-marketed ecosystem services that result (or would result) from management decisions or from other human activities (see the appendix below). Data requirements may be quite demanding for a number of tools, as are the preconditions in terms of technical expertise. Moreover, conducting primary valuation studies is typically time-consuming and costly. Therefore, other approaches, including deliberative mechanisms that bring to bear non-economic considerations, will often be needed to support final decision-making.

Efficiency. A cost/benefit criterion should be applied, as appropriate, to the valuation study itself. In principle, valuation techniques or tools should be used when the anticipated incremental (including long-term) improvements in the decision are commensurate with the costs of undertaking the valuation.

*Choice of valuation tools***.** The choice of the valuation tool or valuation tools in any given instance will be informed by the characteristics of the case, including the scale of the problem and the types of value deemed to be most relevant, and by data availability. Several techniques have been specifically developed to cater to the characteristics of particular problems, while others are very broadly applicable but may have other limitations that should be taken fully into account when choosing the appropriate tool or set of tools. Different approaches can be used in a complementary manner. In general, tools based on observed behaviour (the so-called revealed-preference techniques) are preferred to tools based on hypothetical behaviour (the so-called stated-preference techniques).

Stated-preference techniques. Stated-preference techniques are, however the only techniques that are able to capture non-use (or passive-use) values, which tend to be important in certain biodiversity contexts, and can provide useful and reliable information when used carefully and in accordance with authoritative best practice. Limitations of stated-preference techniques include: (i) the detail of information needed by respondents in order to value complex processes or unfamiliar species or ecosystem functions; (ii) difficult external validation of the results; and (iii) the need for extensive pre-testing and survey work, implying that this technique can be expensive and time consuming. Their application could therefore be considered if all of the following conditions are met: (i) non-use values are expected to be an important component of the value of the ecosystem service under consideration; (ii) it can be ensured that the sample group of respondents is representative and has an adequate understanding of the issue in question; and (iii) capacity requirements for an application in accordance with best practice, including adequate skills in survey design, are met.

Cost-based approaches. Cost-based approaches can provide useful guidance, if the nature and extent of physical damage expected is predictable and if the cost to replace or restore damaged assets, and the resulting ecosystem services, can be estimated with a reasonable degree of accuracy, and does not exceed the value of the ecosystem services in the first place. These approaches can in particular be used when the specific decision-making problem calls for a comparison of the costs resulting from different replacement or restoration options to meet a specific objective, and there is a general view that the benefits associated with meeting the objective outweigh the costs.

Benefits transfer. Benefits transfer can provide valid and reliable estimates under certain conditions, including: (i) that the commodity or service being valued be very similar at the site where the estimates were made and the site where they are applied; (ii) that the populations affected have very similar characteristics; and (iii) that the original estimates being transferred must themselves be reliable. When used cautiously, it has the potential to alleviate the problems of deficient primary data sets and limited funds often encountered in valuation. However, benefits transfer is still a developing subject. More work needs to be undertaken to assess its validity in studies where it has been used to value biodiversity. Cautious application and further development of this method needs to be undertaken.

B. Institutional considerations

Development or improvement of institutions. Adequate institutional arrangements can generally be identified as an important precondition to the further promotion of valuation as a tool in biodiversity management and the generation of reliable valuation studies. These arrangements should, *inter alia*, provide a clear assignment of responsibilities for conducting appraisal processes and auditing for quality control.

Biodiversity values and national-income accounts. In the last two decades there have been numerous attempts, at national and international levels, to include environmental externalities into national-income accounts, including through satellite accounts, and to apply measures of environmental depreciation to reflect the environmental losses that occur as a result of economic activities. Such measures can serve as a basis for prioritizing national environmental policies and giving focus on mitigation or reversal of environmentally damaging activities. The development of a biodiversity adjustment for national accounting may be useful in reflecting biodiversity losses more adequately.

Development of national guidelines. National valuation guidelines and protocols can be useful means to ensure that biodiversity values are adequately taken into account and/or integrated in domestic appraisal processes and income accounts. They can also ensure that valuation tools are applied in accordance with domestic conditions and can thereby contribute to increasing the credibility and acceptability of appraisal processes including the application of valuation methods.

Involvement of stakeholders as well as indigenous and local communities. The full involvement of all relevant stakeholders as well as indigenous and local communities is another important means of increasing the credibility and acceptability of decision-making processes including the application of valuation methods. By ensuring that sample groups are representative, their full and effective involvement can also contribute to the quality of applying certain valuation tools. Institutions should therefore have mechanisms in place that ensure the full and effective involvement of relevant stakeholders as well as indigenous and local communities in appraisal processes including the application of valuation tools.

Awareness-raising and incentive measures. Identifying and assessing the value of biodiversity resources and functions and of the associated ecosystem services can raise awareness, thus creating incentives for the conservation and sustainable use of biodiversity, and can also support the adequate design and calibration of other incentive measures for the conservation and sustainable use of biodiversity, 1/ bearing in mind that incentive measures should not negatively affect biodiversity and livelihoods of communities in other countries. Furthermore, raising awareness among all stakeholders of the value of biodiversity improves the chances for other incentive measures to be successful.

Awareness-raising and pilot projects. Undertaking valuation studies as pilot projects on key domestic ecosystems can be another effective means to raise awareness of the value of biodiversity resources and functions and associated ecosystem services, and to advance the application of biodiversity valuation in domestic decision-making procedures.

C. Capacity-building and training

Capacity-building. The effective application of tools for the valuation of biodiversity resources and functions and associated ecosystem services requires considerable capacity and technical expertise. In many countries, capacity needs to be enhanced for putting adequate institutions in place, for conducting effective appraisal processes including the valuation of biodiversity and associated ecosystem services, for improved oversight and auditing for quality control, as well as for putting valuation results to good use in governmental decision-making by an effective and credible follow-up. Capacity would also be needed to, as appropriate: improve biophysical information to support biodiversity valuation; address ethical concerns about valuing environmental impacts in monetary terms; and address technical concerns surrounding the use of valuation tools for biodiversity.

1/ See decisions IV/10 A and VI/15, annex I, paragraph 22.

Regional workshops. Regional workshops on ecosystem valuation are an important means to exchange national experience on best practices in the valuation of biodiversity resources and functions and associated ecosystem services, and in the development of national guidelines and protocols, and to extend training.

Regional and international cooperation and training. Training is an important component in activities to build or enhance domestic capacities. A number of mechanisms exist that extend training on the valuation of biodiversity resources and functions and associated ecosystem services, and could be further strengthened. They include:

(a) Regional centres of expertise which offer training activities;

(b) Long-term and short-term academic exchange programmes;

(c) Short-term courses offered by international organizations;

(d) Bilateral arrangements between agencies for temporary secondment;

(e) Web-based resources and training manuals.

International databases for benefits transfer. There exists web-based databases that collect valuation data for use in benefits transfer. As the use of this concept seems to be an increasingly appealing way to advance the use of valuation information in particular in light of the time and resource requirements for undertaking extensive primary research, fostering its further development and wider application should therefore be considered. This could also include increased cooperation among existing initiatives with a view to ensuring, in accordance with their mandates, a comprehensive coverage of cases of valuation of biodiversity resources and functions and associated ecosystem services, especially in developing countries, in particular the least developed and small island developing States among them, and countries with economies in transition.

D. Further research

International research cooperation. Considerable progress has been made in the last decades in developing reliable tools, as well as the protocols for their application, for the valuation of biodiversity resources and functions and associated ecosystem services. However, important opportunities for further research and development remain. Research initiatives that address these opportunities and seek to establish regional or international cooperation and exchange should be supported.

Biodiversity valuation and national accounting. Further research directed at the development of a biodiversity adjustment for national accounting seems to be an important means to have biodiversity losses more reflected in macro-economic policy-making.

Valuation tools. Further research on the conditions for validity and robustness of valuation techniques, in particular of stated-preference techniques, may contribute to further the reliability of valuation information of non-marketed ecosystem services, in particular with regard to non-use values.

Benefits transfer. Further research on the conditions for validity and robustness of benefits transfer may further advance the use of valuation information under tight time and resource constraints, which prevent extensive primary research.

Links between biodiversity, biodiversity functions, and associated ecosystem services. Despite recent progress made in understanding the links between biological diversity, biodiversity functions, and the associated ecosystem services, many questions remain unresolved. Further research in addressing these important questions is therefore warranted and may also lead to the development of innovative tools and methodologies for the valuation of biodiversity and biodiversity resources and functions.

Appendix

MAIN VALUATION TECHNIQUES (SOURCE: ADAPTED FROM MILLENNIUM ECOSYSTEM ASSESSMENT)

Method	***Description***	***Applications***	***Data requirements***	***Potential challenges/limitations***
Revealed-preference methods				
Change in productivity	Trace impact of change in ecosystem services on produced goods	Any impact that affects produced goods	Change in service; impact on production; net value of produced goods	Lacking data on change in service and consequent impact on production
Cost of illness, human capital	Trace impact of change in ecosystem services on morbidity and mortality	Any impact that affects health (e.g. air or water pollution)	Change in service; impact on health (dose-response functions); cost of illness or value of life	Lacking dose-response functions linking environmental conditions to health; value of life cannot be estimated
Cost-based approaches (e.g., replacement, restoration costs)	Use cost of replacing or restoring the service	Any loss of goods or services; Identification of least cost option to meet given objective	Extent of loss of goods or services, cost of replacing or restoring them	Risk to over-estimate actual value if unknown benefits are higher than identified costs
Travel cost (TCM)	Derive demand curve from data on actual travel costs	Site-specific recreation; site-seeing (e.g. protected areas)	Survey to collect monetary and time costs of travel to destination, distance travelled	Limited to described applications; difficult to use when trips are to multiple destinations
Hedonic prices	Extract effect of ecosystem service on price of goods that include those factors	Air quality, scenic beauty, cultural benefits	Prices and characteristics of goods	Requires transparent and well-working markets, and vast quantities of data; very sensitive to specification
Stated-preference methods				
Contingent valuation (CV)	Ask respondents directly their WTP for a specified service	In particular in cases where non-use values are deemed to be important	Survey that presents scenario and elicits willingness to pay (WTP) for specified service	Ensuring sample representativeness important but large survey is time-consuming and costly; knowledge of respondents may be insufficient; potential sources of bias in responses; guidelines exist for reliable application
Choice modelling	Ask respondents to choose their preferred option from a set of alternatives with particular attributes	In particular in cases where non-use values are deemed to be important	Survey of respondents	Similar to Contingent valuation, but minimizes some biases; analysis of the data generated is complex
Other methods				
Benefits transfer	Use results obtained in one case in a different, but very similar case	Any for which suitable and high-quality comparison studies are available; applicable in cases where savings in time and costs outweigh certain loss of accuracy (e.g., rapid assessments)	High-quality valuation data from other, similar sites	Can be wildly inaccurate when not used cautiously, as many factors may still vary even when cases seem “similar”
