UNEP

CBD

CONVENTION ON BIOLOGICAL DIVERSITY

Distr.
GENERAL

UNEP/CBD/SBSTTA/8/7/Add.1
9 December 2002

ORIGINAL: ENGLISH

SUBSIDIARY BODY ON SCIENTIFIC, TECHNICAL AND TECHNOLOGICAL ADVICE
Eighth meeting
Montreal, 10-14 March 2003
Item 4 of the provisional agenda*

MAIN THEME: MOUNTAIN BIOLOGICAL DIVERSITY

Proposed elements for a programme of work on mountain biological diversity

Note by the Executive Secretary

Addendum

Indicative list of technologies relevant to the conservation and sustainable use of mountain biological diversity and other related thematic areas and cross-cutting themes

I. INTRODUCTION

1. In preparation for the eighth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA), the SBSTTA Bureau decided to integrate the consideration of the technical and scientific aspects of technology transfer and cooperation, initially included as a distinct item on the agenda of the ninth meeting of SBSTTA, in the discussions of the thematic and cross-cutting issues on the agenda of the eighth and ninth meetings of SBSTTA.

2. Following a request made by the SBSTTA Bureau, the Bureau of the Conference of the Parties at its meeting held in Montreal on 23-24 September 2002, decided that the legal and socio-economic aspects of technology transfer and cooperation would be considered by the open-ended inter-sessional meeting to be held in March 2003 to consider, *inter alia*, the multi-year programme of work.

3. Accordingly, the Executive Secretary has prepared the present note listing examples of technologies relevant to mountain biological diversity, the main theme of the eighth meeting of SBSTTA, and also relevant to other thematic areas and cross-cutting themes. Brief consideration has been given to examples of scientific and technical aspects for their access, and adaptation to national and local conditions as well as institutions, organizations and programmes with a potential for collaboration on the

* UNEP/CBD/SBSTTA/8/1.

/…

specific subjects. In preparing this set of examples of technologies the Executive Secretary took into account the categories of technologies adopted by the Open-Ended Intergovernmental Meeting of Scientific Experts on Biological Diversity, which met in April 1994 in preparation of the first meeting of the Conference of the Parties. 1/. The Executive Secretary also considered elements from the Special Report on Methodological and Technological Issues in Technology Transfer, prepared by the Intergovernmental Panel on Climate Change. 2/

II. EXAMPLES OF TECHNOLOGIES

4. Annexed to the present note are lists some examples of technologies, including biotechnology and traditional knowledge, relevant to the conservation and sustainable use of biodiversity. They are organized under three themes: (i) knowledge, assessment and monitoring; (ii) conservation, sustainable use and benefit-sharing; and (iii) institutional and socio-economic enabling environment.

5. For the purpose of this document a broad definition has been adopted for the terms “technology’ and “technology transfer”. Included are examples of methodologies and approaches of local relevance based on traditional knowledge as well as the results of highly specialized research with a commercial interest. These two extremes are likely to differ in terms of their potential for application and replication and the cost required to install and operate the respective technologies. They are also probably underlying different limitations with respect to the ownership of the technology. This document has placed emphasis, but is not limited to, those technologies that are currently in the public domain. However, it should be borne in mind that:

(a) Privately owned commercial technologies underlying patent restrictions may become public property in the future or patent restrictions can be loosened;

(b) The potential for technology flow, i.e. The application of a technology in a situation other than the one in which it was developed, is greatest when environmental, socio-economic and cultural conditions are similar;

(c) Guidelines regarding the financial and regulatory mechanisms for technology transfer, diffusion and assimilation as well as the monitoring, verification and certification of their operation have not yet been fully developed, even in the framework of the United Nations Framework Convention on Climate Change (UNFCCC), where these issues have been discussed for many years;

(d) The availability of technical and institutional capacities to implement and/or adapt technologies should be taken into account when considering the transfer of technologies;

(e) In accordance with Articles 18 and 20 of the Convention, developed country parties should consider supporting the transfer of suitable technologies and the building of necessary capacities relevant to the conservation and use of biological diversity, as appropriate, under agreements which are beneficial to developing country parties and parties with economies in transition;

(f) North-North, South-South and South-North cooperation should be promoted.

III. SUGGESTED RECOMMENDATIONS

6. SBSTTA may wish to consider the technologies and/or technological interventions outlined in this document, and provide guidance on future work on this item to the Executive Secretary and to the Open-Ended Inter-Sessional Meeting on the Multi-Year Programme of Work of the Conference of the

1/ UNEP/CBD/COP/1/16.

2/ http://www.ipcc.ch/pub/srtt-e.pdf.

Parties Up To 2010, which will consider the legal and socio-economic aspects of technology transfer and development. In particular, SBSTTA may wish to request the Executive Secretary to:

(a) Provide, by adding to the annex to this note and for consideration by SBSTTA at its ninth meeting, examples of relevant technologies relating to all the substantive items on the agenda of the ninth meeting of SBSTTA. The table should include, *inter alia,* information on:

(i) Availability of relevant documentation, and

(ii) Opportunities, requirements and possible barriers/obstacles to access, transfer and absorption/adaptation of the technologies, including legal and socio-economic aspects and an assessment of the possible impact of the technologies on biological diversity;

(b) Undertake to evaluate positive and negative experiences on the development and transfer of technologies and technical cooperation, and propose for consideration by SBSTTA at its ninth meeting a set of best practices on the transfer of technologies relevant to the conservation and sustainable use of biodiversity and the fair and equitable sharing of the benefits arising from the utilization of genetic resources.

7. SBSTTA may also wish to discuss how the role of the clearing-house mechanism of the Convention could be enhanced so that it can become a central mechanism for exchange of information on technologies relevant to the conservation and sustainable use of biological diversity, access to technologies, technology development, technical cooperation and transfer of technologies. In particular, SBSTTA may wish to recommend that the Conference of the Parties request that the clearing-house mechanism:

(a) Develop a searchable catalogue (database) of technologies which are in the public domain, taking into account on-going initiatives while avoiding unnecessary duplication;

(b) Set up a portal that international organizations, such as institutions of agricultural research centres and members of the Consultative Group for International Agricultural Research (CGIAR), can be encouraged to use to disseminate technologies, e.g. biotechnology, biological control, sustainable production etc.

Annex

EXAMPLES OF TECHNOLOGIES RELEVANT TO THE CONSERVATION AND SUSTAINABLE USE OF MOUNTAIN BIOLOGICAL DIVERSITY AND OTHER RELATED THEMATIC AREAS AND CROSS-CUTTING THEMES

Technology, tools, methods and approaches	Possible applications	Scientific/technical aspects	Potential supporters/ collaborators
Knowledge, assessment and monitoring			
Tools for assessment, monitoring and analysis of biodiversity information; **Assessment** tools include: • Ground-based assessments (e.g. targeted surveys of rare or economically important species; rapid biodiversity assessments; full inventories); and • Remotely sensed information (e.g. aerial surveys; satellite imagery). **Monitoring** based on: • targets of both a quantitative and qualitative character which are measured against pre-agreed	**Examples of application of ground-based assessments**: Environmental impact assessments evaluating proposed developments and their impacts, for example on the biodiversity of forests, drylands, inland waters and coastal and marine ecosystems. Forest inventories for the assessment of sustainable yield data or quantification of harvestable non-wood forest products. **Examples of application of remotely-sensed information:** Assessment of the impacts of climate change on the extent and quality of inland water, dry and semi-arid lands and forests. Assessment of susceptibility of agricultural land to soil erosion. **Examples of indicator-based monitoring:** Monitoring of stream quality based on the population of breeding salmon.	**Availability**: Methodologies for ecosystem assessment, monitoring and analysis are generally available and information on approaches is accessible. Computational requirements and other equipment are increasingly available. Traditional taxonomic knowledge, including traditional landscape classification systems and nomenclature, can make important contributions to ecosystem assessments. **Limitations**: Ecosystem assessment require long-term commitments (technical and financial). The taxonomic impediment and limited ecological knowledge, particularly with respect to lower taxa, prevents a full understanding of ecosystem functioning and creates major uncertainties with respect to models and predictions. Automatic data collection tools (e.g. data loggers) have been developed but are usually expensive and prone to	National research institutions; Ministries of Environment; FAO, UNEP, CGIAR centers; Conservation International, CSIRO, WCMC; Meteorological stations, WMO, space agencies (e.g. ESA, NASA)

Technology, tools, methods and approaches	Possible applications	Scientific/technical aspects	Potential supporters/ collaborators
indicators; and • periodic measurement of the value of each indicator. **Analysis** of biodiversity information including: • presentation and analysis of spatial information using geographic information systems (GIS); • statistical analysis of quantitative information and time series based on hypothesis-testing	Monitoring of forest health based on a combination of canopy cover and the total cover of invasive alien species. Monitoring of the quality of soils in agricultural fields using the numbers and diversity of earthworms. **Examples of geographic analysis**: Presentation of the spread of an invasive alien species. Simulation of the consequences of global warming on the biodiversity of mountain and forest ecosystems as well as dry and sub-humid land and coastal zones and small islands. **Examples of statistical analysis:** Testing the significance of annual data on flamingo mortality in a soda lake against null hypothesis. Correlating annual counts of rock hyraxes with the number of giant groundsels in a particular Afroalpine environment.	but are usually expensive and prone to failure in unprotected environments. Other limitations include the: • availability of georeferenced data; • compatibility of data sets and software; • availability of vectorial information; • development of algorithms for interpretation of multi-polar, multi-wavelength remotely-sensed images; • understanding of ground-truthing requirements. **Other observation**: There is need to combine the capability of interpreting environmental information (what does the information tell us?) with the technical ability to analyse and present the information. The analysis of scenarios and models depends on the availability of baseline information, which is often scanty. The value of a model is therefore difficult to judge.	

Technology, tools, methods and approaches	Possible applications	Scientific/technical aspects	Potential supporters/ collaborators
Conservation, sustainable use and benefit-sharing			
Examples for *in situ* conservation: **Integrated pest management (IPM)** including: • biological control of weeds and invasive alien species; • biological control of insects and pathogens; • biotechnological approaches **Sustainable forest management (SFM)** through: • low-impact logging; • sustainable yield; • sustainable management of non-timber forest products **Integrated water management** including: • watershed planning and stabilization;	**Examples of integrated pest management:** Many examples of control of weeds in agro-ecosystems and invasive alien species (in all ecosystems) using host-specific weed feeders and pathogens as well as mechanical approaches, e.g. control of water hyacinth (*Eichhornia crassipes*) using species of the water hyacinth weevil or mechanical control. Many examples of biological control of insects and pathogens on crops using microorganisms (e.g. *Bacillus thuringiensis*, mycopesticides) entomopathogenic nematods, insects (e.g. ladybeetle larvae, parasitic wasps). Increasing interest in genetic engineering approaches introducing resistance genes, e.g. to virus infections. **Examples of sustainable forest management:** Many examples from different forest types including montane and dry forests, as exemplified by certified forest management operations following ITTO, Forest Stewardship Council (FSC) or ISO criteria and indicators. Efforts are currently underway to open forest certification to small holdings and farm forestry (thus also applicable to agrobiodiversity conservation) as well as for the harvesting of non-wood forest products.	**Availability**: Methodologies and approaches are generally available and most of them are in the public domain. Possible exception: bioengineering technologies. Most technologies are inexpensive but have a good potential to combine positive conservation effects with long-term savings from reduced spending on mitigation measures. Required equipment is usually commercially available from many suppliers. **Limitations**: Transfer of technologies requires careful verification and monitoring of their applicability. Biosafety concerns have been raised regarding biotechnological approaches. Short-term commercial interests often prevail over sustainable approaches with lower initial returns and tend to suppress local and traditional techniques. **Other observations**: Large potential for application of traditional methods and approaches in most areas and ecosystems. Many traditional methods and approaches are labour-intensive but cost-effective. Potential to use locally available products	CGIAR centres, Ministries for Agriculture; Technical universities; Intermediate Technology; Tropical Soil Biology and Fertility (TSBF) Programme; FAO, ITTO, FSC; ICIMOD

Technology, tools, methods and approaches	Possible applications	Scientific/technical aspects	Potential supporters/ collaborators
and stabilization; • wastewater management; • irrigation management **Integrated soil management** through: • erosion control; • soil improvement technologies	**Examples of integrated water management:** Design of structural water supply and flood control improvements including through desalination plants, water reclamation plants, groundwater protection, improved water harvesting techniques. Approaches particularly relevant to conservation of forest, dryland, mountain ecosystems and inland waters). Sewage treatment in specifically designed artificial wetlands. Introduction of appropriate and novel irrigation techniques, e.g. drip irrigation, relevant to agrobiodiversity conservation. **Examples of integrated soil management:** Erosion control through a range of measures including contour planting, leguminous ground cover, terracing, no-till technologies, living fences. Particular relevance to agricultural, montane and dryland ecoystems. Soil improvement technologies include integrated soil nutrient management and effective microorganisms (EM) technology through nitrogen fixation, biofertilizers, use of vesicular arbuscular mycorrhizae or benign nematodes in agro-ecosystems	and technologies, e.g. for the creation of artificial wetlands for sewage treatment. Importance to fully integrate the knowledge of local farmers, forest users, pastoralists and fishermen in the design and validation of local resource-based, production and conservation options, for example through appropriate integrated, multi-stakeholder planning and research activities. Investments in construction of irrigation, desalinization and other plants can be large.	

Technology, tools, methods and approaches	Possible applications	Scientific/technical aspects	Potential supporters/ collaborators
Institutional and socio-economic enabling environment			
Appropriate and new information and communication technologies particularly: **Internet-based and wireless information and communication technologies** leading to: • Access to technical information and databases; • Access to information about products and services; • Transparency of decisions • Participation in democratic processes.	**Examples of Internet-based information technologies:** Information on either commercial or free biological, chemical, physical and medicinal databases and meta-databases reduces costs and minimizes duplication of efforts. Information about products and services, their application, availability and prices facilitates selection of suitable product. Internet-based invitations for tenders for the delivery of products and services related to the conservation and sustainable use of biological diversity lead to wider coverage thus potentially improving quality and reducing costs. Wireless telecommunication improves access to information, for example market information and best practices, particularly for residents of remote areas with limited infrastructure. Video-conferencing, virtual meetings and electronic governance potentially widen participation in democratic processes while reducing costs. The clearing-house mechanism of the Convention has been set up to provide for exchange and management of information and facilitate communication and participation relating to all provisions under the Convention.	**Availability**: Technologies are becoming increasingly available and affordable and have important social consequences as they lead to a democratization of knowledge. **Limitations**: Some difficulties still exist with respect to the limited compatibility across networks and platforms. Despite an increased effectiveness of database and information management structures, the quality of original data is variable and quality control systems are difficult to maintain and usually less attractive than the creation of large information services. Information sharing policies are not always stated and agreed upon. **Observations**: Concerns are being raised regarding the disparity between quality and quantity of the information being circulated. There is a potential loss of traditional knowledge through redundancy and changes in traditional lifestyles through introduction of new communications and production methods.	UNESCO, FAO, IIED, World Bank

---