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MAIN THEME: MOUNTAIN BIOLOGICAL DIVERSITY

Proposed elements for a programme of work on mountain biological diversity

Note by the Executive Secretary

EXECUTIVE SUMMARY

In its decision VI/30, the Conference of the Parties agreed, *inter alia*, that the Executive Secretary prepare a draft programme of work on mountain biological diversity. In response to this decision, the present document contains proposed elements for a programme of work on mountain biological diversity. The goal of this draft programme of work is to promote the implementation of the overall objectives of the Convention on Biological Diversity in natural and man-modified mountain ecosystems. Specifically, the proposed elements for a work programme focus on conservation and sustainable use; institutional and socio-economic enabling environment; and monitoring and assessment.

SUGGESTED RECOMMENDATIONS

The Subsidiary Body on Scientific, Technical and Technological Advice may wish to:

(a) *Welcome* the notes by the Executive Secretary on status and trends of, and threats to, mountain biological diversity (UNEP/CBD/SBSTTA/8/5), and on measures taken for the conservation and sustainable use of mountain biological diversity (UNEP/CBD/SBSTTA/8/6);

(b) *Adopt* the proposed elements of work on mountain biological diversity and encourage relevant organizations to include mountain biological diversity in their assessments, develop activities aimed at improving monitoring and evaluation of mountain biodiversity, including ecological functions, valuation of ecosystem services, impacts of climate change on biotic and abiotic components, and development of sustainable management practices, including tourism;

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(c) *Request* the Executive Secretary to develop, in collaboration with relevant organizations proposals for targets, time frames, main partners and actors related to the proposed programme of work on mountain biological diversity at the global and regional scale. Institutions, programmes, or relevant partnerships include, *inter alia*, the Food and Agriculture Organization of the United Nations (FAO), the International Centre for Integrated Mountain Development (ICIMOD), the International Centre for Agricultural Research in the Dry Areas (ICARDA), the International Partnership for Sustainable Development in Mountain Regions,^{1/} the International Human Dimensions Programme on Global Environmental Change (IHDP), the Centre for Mountain Studies, the Consorcio para el Desarrollo de la Ecoregion Andina (CONDESAN), and the Mountain Research Initiative (MRI);

(d) *Recommend* that the Conference of the Parties, at its seventh meeting:

- (i) *Encourage* Parties to apply the activities of the existing programmes of work on forests, inland waters, agricultural, and dry and sub-humid land biodiversity, to mountain ecosystems. Particular attention to specific mountain issues, such as those referred in section III B of the present note, should be made when implementing existing programmes of work to mountains;
- (ii) *Urge* Parties to incorporate the activities and elements of the programme of work into their national biodiversity strategies and action plans, and implement them;
- (iii) *Invite* Parties and other Governments, and relevant organizations to report on implementation of this decision and the programme of work through, *inter-alia*, their national reports submitted to the Convention;
- (iv) *Establish* an *ad hoc* technical expert group to assess the effects and consequences of--and suggest practical mitigation and adaptation actions to--climate change on mountain biological diversity. Integrative research and development approaches, and ways to translate scientific information into both public awareness and policy should also be considered.
- (v) *Encourage* Parties to the development of national targets related to mountain biological diversity, and their incorporation into relevant plans, programmes, and initiatives, including national biodiversity strategies and action plans as mentioned in section E of the Global Strategy for Plant Conservation (decision VI/9, annex).

^{1/} www.mountains2002.org/archive/news/prtnrshps.html.

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I. INTRODUCTION

1. In its decision VI/30, the Conference of the Parties welcomed the proposals put forward by the Executive Secretary in his note on preparations for its seventh meeting (UNEP/CBD/COP/6/2) and requested the full preparation of the priority themes for that meeting. With regard to the theme on mountain biological diversity, the Executive Secretary planned, *inter alia*, to draft, for the consideration of SBSTTA, a proposed programme of work on mountain biodiversity, including priorities, targets, time frames, potential actors and partners, and indicators in implementation.

2. The present note has been prepared to propose elements for a programme of work on mountain biological diversity, whose implementation may be directly applicable to both high-elevation and low-elevation mountain ecosystems. High elevation mountain ecosystems are defined as the alpine and nival zones; that is, zones where forest cover is naturally absent.^{2/} Because natural ecosystem types such as forests, dry and sub-humid lands, inland waters, and man-made agricultural ecosystems, are all an integral part of mountain habitats, most of the goals and activities within the programmes of work on those thematic areas are also directly applicable to mountains.

3. The information provided by the notes by the Executive Secretary on status and trends of, and threats to, mountain biological diversity (UNEP/CBD/SBSTTA/8/5) and on measures taken for the conservation and sustainable use of mountain biological diversity (UNEP/CBD/SBSTTA/8/6), served as a basis for the proposed elements of programme of work on mountain biological diversity.

II. GOALS, APPROACHES, AND GUIDING ELEMENTS

4. As detailed in the note by the Executive Secretary` on status and trends, mountain ecosystems are areas of high biodiversity, which house 12% of the world's population, with over 50% of the world's population either directly or indirectly depending on mountain resources. As a result, mountains are subject to a variety of pressures and threats, including increasing human land use, both in mountain areas and areas adjacent to mountains; as well as climate change. However, biological inventories of mountain ecosystems are lacking for most developing countries, and therefore the current understanding of the status of the biological diversity of mountain ecosystems is still limited.

5. As a result, there is an urgent need to ensure the sustainability of human activities in mountain ecosystems, while at the same time addressing the well-being of mountain populations. An additional priority includes the implementation of environmental monitoring programmes to address current knowledge gaps, and to monitor both human-induced and natural changes to these fragile environments.

6. The overall goal of the proposed elements for a programme of work on mountain biological diversity is to promote the implementation of the objectives of the Convention on Biological Diversity in natural and man-modified mountain ecosystems. The specific goals are as follows:

- (a) Promote the conservation and sustainable use of biological resources;
- (b) Improve knowledge, assessment, and monitoring of biological resources with emphasis on specific biodiversity components;
- (c) Develop an enabling socio-economic environment for the implementation of the proposed activities.

^{2/} For definitions, see the note by the Executive Secretary on status and trends of, and threats to, mountain biological diversity (UNEP/CBD/SBSTTA/8/5).

7. The ecosystem approach is the primary framework for the planning and implementation of the proposed programme of work. In mountain environments, the application of the ecosystem approach is essential because different ecosystem types and biomes are closely interconnected in terms of fluxes of energy and matter, and in terms of socio-economic activities that in turn, influence local and national livelihoods.

8. The proposed elements of the programme of work cover three main issues:

(a) *Conservation, sustainable use, and benefit-sharing.* Reduce or mitigate the impacts of threatening processes on ecosystem function, with special consideration of sustainable use in high-elevation low-elevation linkages;

(b) *Institutional and socio-economic enabling environment.* Activities aimed at strengthening the institutional and socio-economic atmosphere in order to ensure implementation of the proposed activities;

(c) *Monitoring and assessment.* Evaluate the impacts of climate-change on high-elevation specific biodiversity, and ecosystem functioning. Develop valuation systems of high-elevation mountain ecosystems with emphasis on linkages to low-elevation areas.

III. PROPOSED ELEMENTS OF THE PROGRAMME OF WORK

9. Mountain areas cover almost one quarter of the Earth's land surface and host about 12% of its human inhabitants. Additionally, mountains provide vital natural resources for lowland peoples. Mountains are both a unique environment in their own right, and one that incorporates many of the existing thematic areas under the Convention. For example, forests, inland waters, dry and sub-humid lands and agricultural areas can all be found in mountain ecosystems. Therefore, the goals and activities contained in the existing programmes of work of each of these thematic areas can also be applied and implemented for their respective areas in mountain ecosystems. In addition, proposed elements of work related to mountain areas are given below.

A. *Guidance from international forums*

10. Mountains have received attention in a number of international forums, and the output from these for a can be used as guidance in developing the Convention's programme of work on this topic. Agenda 21, one of the major outputs of UNCED in 1992, has a chapter relating to sustainable mountain development. The objectives of the two programme areas identified in chapter 13 of Agenda 21 are contained in annex I below. Ten years later, the World Summit on Sustainable Development also considered mountain ecosystems. Paragraph 42 of the Plan of Implementation of the World Summit states that "mountain ecosystems support particular livelihoods, and include significant watershed resources, biological diversity and unique flora and fauna. Many are particularly fragile and vulnerable to the adverse effects of climate change and need specific protection". The Plan of Implementation proposed a number of specific actions to be undertaken in regard to mountains. These actions can be found in annex II below. The International Year of the Mountains (IYM) also provides valuable guidance for the Convention. The overall goal of the Year is to ensure the well-being of mountain populations by promoting sustainable development of mountain regions. The specific objectives, and some broad guidance on how to achieve those objectives, are listed in annex III below.

B. *Main issues*

11. From all these initiatives, and from the reviewed information contained in document note by the Executive Secretary on the status and trends of, and threats to, mountain biological diversity, the

following features specific to mountain ecosystems are listed below as proposed elements for a programme of work.

1. *High vulnerability to human and natural disturbances, and low rates of ecosystem recovery following these disturbances*

12. *Suggested actions:* Monitoring and assessment of mountain environments, threats to pollution, and hazardous areas most vulnerable to erosive processes and other natural perturbations. Studies on land-use zoning. Protection of unique, fragile mountain ecosystems. Identification of suitable interventions for accelerating ecosystem restoration processes.

2. *High degree of ecological and human connectivity to lowland areas, with particular reference to water resources*

13. *Suggested actions:* Promotion of integrated watershed management practices at the local, national, and regional levels: soil, water, and agricultural management, restoration of degraded areas, promotion of diversification of income-generating activities. Assessment effects of climate change on upland sources of freshwater. Assessment of pollutants from distant sources. Development and conservation strategies on an upstream-downstream basis, and introduction of compensation mechanisms for goods and services. Integration of biodiversity protection into main productive sectors of the economy.

3. *High levels of crop genetic diversity, and also a high potential for diversification of agricultural varieties*

14. *Suggested actions:* Activities aimed at maintaining the exceptional agrobiodiversity of mountain regions both for meeting current demands and as an adaptation measure to climate change.

4. *Exceptional levels of human cultural diversity*

15. *Suggested actions:* Decentralization, encouraging full participation and involvement of local communities in decisions that affects them. Improvement of local livelihoods, maintenance of cultural self-determination and traditional beliefs.

5. *Relatively higher abiotic and biotic susceptibility to climate change than lowland areas*

16. *Suggested actions:* Landscape planning of protected areas (to allow migration). Development of monitoring systems based on identification of key abiotic and biotic indicators of changes in ecosystem structure and function. Development of adaptation measures to alterations in hydrologic regimes in lowland areas.

Annex I

PROGRAMME AREAS A AND B OF CHAPTER 13 OF AGENDA 21: MANAGING FRAGILE ECOSYSTEMS: SUSTAINABLE MOUNTAIN DEVELOPMENT

A. *Generating and strengthening knowledge about the ecology and sustainable development of mountain ecosystems*

13.4 Mountains are highly vulnerable to human and natural ecological imbalance. Mountains are the areas most sensitive to all climatic changes in the atmosphere. Specific information on ecology, natural resource potential and socio-economic activities is essential. Mountain and hillside areas hold a rich variety of ecological systems. Because of their vertical dimensions, mountains create gradients of temperature, precipitation and insolation. A given mountain slope may include several climatic systems - such as tropical, subtropical, temperate and alpine - each of which represents a microcosm of a larger habitat diversity. There is, however, a lack of knowledge of mountain ecosystems. The creation of a global mountain database is therefore vital for launching programmes that contribute to the sustainable development of mountain ecosystems.

Objectives

13.5. The objectives of this programme area are:

- a. To undertake a survey of the different forms of soils, forest, water use, crop, plant and animal resources of mountain ecosystems, taking into account the work of existing international and regional organizations;
- b. To maintain and generate database and information systems to facilitate the integrated management and environmental assessment of mountain ecosystems, taking into account the work of existing international and regional organizations;
- c. To improve and build the existing land/water ecological knowledge base regarding technologies and agricultural and conservation practices in the mountain regions of the world, with the participation of local communities;
- d. To create and strengthen the communications network and information clearing-house for existing organizations concerned with mountain issues;
- e. To improve coordination of regional efforts to protect fragile mountain ecosystems through the consideration of appropriate mechanisms, including regional legal and other instruments;
- f. To generate information to establish databases and information systems to facilitate an evaluation of environmental risks and natural disasters in mountain ecosystems.

B. *Promoting integrated watershed development and alternative livelihood opportunities*

Basis for action

13.13. Nearly half of the world's population is affected in various ways by mountain ecology and the degradation of watershed areas. About 10 per cent of the Earth's population lives in mountain areas with higher slopes, while about 40 per cent occupies the adjacent medium- and lower-watershed areas. There are serious problems of ecological deterioration in these watershed areas. For example, in the hillside areas of the Andean countries of South America a large portion of the farming population is now faced with a rapid deterioration of land resources. Similarly, the mountain and upland areas of the Himalayas, South-East Asia and East and Central Africa, which make vital contributions to agricultural production, are threatened by cultivation of marginal lands due to expanding population. In many areas this is accompanied by excessive livestock grazing, deforestation and loss of biomass cover.

13.14. Soil erosion can have a devastating impact on the vast numbers of rural people who depend on rainfed agriculture in the mountain and hillside areas. Poverty, unemployment, poor health and bad sanitation are widespread. Promoting integrated watershed development programmes through effective participation of local people is a key to preventing further ecological imbalance. An integrated approach is needed for conserving, upgrading and using the natural resource base of land, water, plant, animal and human resources. In addition, promoting alternative livelihood opportunities, particularly through development of employment schemes that increase the productive base, will have a significant role in improving the standard of living among the large rural population living in mountain ecosystems.

13.15. The objectives of this programme area are:

- a. By the year 2000, to develop appropriate land-use planning and management for both arable and non-arable land in mountain-fed watershed areas to prevent soil erosion, increase biomass production and maintain the ecological balance;
- b. To promote income-generating activities, such as sustainable tourism, fisheries and environmentally sound mining, and to improve infrastructure and social services, in particular to protect the livelihoods of local communities and indigenous people;
- c. To develop technical and institutional arrangements for affected countries to mitigate the effects of natural disasters through hazard-prevention measures, risk zoning, early-warning systems, evacuation plans and emergency supplies.

Annex II

GUIDANCE FROM THE WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT

Paragraph 42 of the Plan of Implementation of the World Summit on Sustainable Development, which is quoted below, is particularly relevant to mountain ecosystems:

“Mountain ecosystems support particular livelihoods, and include significant watershed resources, biological diversity and unique flora and fauna. Many are particularly fragile and vulnerable to the adverse effects of climate change and need specific protection. Actions at all levels are required to:

“(a) Develop and promote programmes, policies and approaches that integrate environmental, economic and social components of sustainable mountain development and strengthen international cooperation for its positive impacts on poverty eradication programmes, especially in developing countries;

“(b) Implement programmes to address, where appropriate, deforestation, erosion, land degradation, loss of biodiversity, disruption of water flows and retreat of glaciers;

“(c) Develop and implement, where appropriate, gender-sensitive policies and programmes, including public and private investments that help eliminate inequities facing mountain communities;

“(d) Implement programmes to promote diversification and traditional mountain economies, sustainable livelihoods and small-scale production systems, including specific training programmes and better access to national and international markets, communications and transport planning, taking into account the particular sensitivity of mountains;

“(e) Promote full participation and involvement of mountain communities in decisions that affect them and integrate indigenous knowledge, heritage and values in all development initiatives;

“(f) Mobilize national and international support for applied research and capacity-building, provide financial and technical assistance for the effective implementation of sustainable development of mountain ecosystems in developing countries and countries with economies in transition, and address the poverty among people living in mountains through concrete plans, projects and programmes, with sufficient support from all stakeholders, taking into account the spirit of the International Year of Mountains, 2002.”

Annex III

GUIDANCE FROM THE INTERNATIONAL YEAR OF MOUNTAINS

The following is an extract of the Concept Paper of the International Year of Mountains, describing the objectives of the Year and giving some broad activities for the achievement of these objectives:

“Under the overall goal of ensuring the well-being of mountain populations by promoting sustainable development of mountain regions, International Year of Mountains objectives are to:

- Ensure present and future well-being of mountain communities by promoting conservation and sustainable development in mountain areas;
- Increase awareness of, and knowledge on, mountain ecosystems, their dynamics and functioning, and their overriding importance in providing a number of strategic goods and services essential to the well-being of both rural and urban, highland and lowland people, particularly water supply and food security;
- Promote and defend cultural heritage of mountain communities/ societies; and
- Pay attention to frequent conflicts in mountain areas and to promote peace-making in those regions.

Objectives are to be achieved through: information generation and exchange; awareness-raising and sensitization; education, training and extension; documentation of best practices and formulation of recommendations based on successful field case-studies; and promotion of mountain-specific policy formulation and legislation.”
