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REVIEW OF IMPLEMENTATION OF ARTICLE 10 OF THE CONVENTION (SUSTAINABLE USE OF BIODIVERSITY) AND APPLICATION OF THE ADDIS ABABA PRINCIPLES AND GUIDELINES

Note by the Executive Secretary

EXECUTIVE SUMMARY

Despite widespread inclusion of sustainable use of biodiversity as an element in national biodiversity strategies and actions plans, as well as in other biodiversity-related national strategies and action plans, unsustainable use in many sectors, notably agriculture, fisheries, forestry and hunting, remains a major cause of biodiversity loss. Effective implementation of Article 10 is hampered for many Parties by a range of obstacles, including: lack of political will and of human and financial capacity, *inter alia* for the establishment and enforcement of management plans; lack of cross-sectoral integration and coordination; poor operationalization of the definition of sustainable use; lack of understanding and implementation of the concept of adaptive management; difficulties in establishing thresholds and indicators to measure progress, and lack of monitoring capacities; and unsustainable, unauthorized and unregulated activities. With specific reference to Article 10(c), customary sustainable use of biological resources at national and local levels is hampered by lack of progress in securing indigenous and local communities' access to lands and biological resources and by lack of their effective participation at all levels of resource management and decision-making. The third national reports indicate that more than half of the reporting Parties had started the implementation of the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity (AAPG) by April 2007, and a number of Parties indicated that they had incorporated some key principles into their national biodiversity strategies and action plans. Most Parties, in their fourth national reports, reported on sector-specific sustainable use frameworks and guidelines, such as forest certification schemes. The review concludes that it is critical to further improve the integration of biodiversity concerns into key economic sectors and to strengthen links across various economic sectors and ecosystems. For example, agricultural management has important implications for forest ecosystems and inland water ecosystems, and *vice versa*. Unsustainable use of biological resources influences, and is influenced by, other drivers of biodiversity loss. For example, the overexploitation of tropical wildlife through bushmeat-hunting weakens the resilience and capacity of forest ecosystems to adapt to climate change, while climate change undermines the capacity of forests to provide goods and services, including timber, non-timber forest products (NTFPs), water and carbon storage.

* UNEP/CBD/SBSTTA/14/1.

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SUGGESTED RECOMMENDATIONS

The Subsidiary Body on Scientific, Technical and Technological Advice may wish to recommend that the Conference of the Parties adopt a decision along the following lines:

The Conference of the Parties

1. *Adopts* the recommendations of the Liaison Group on Bushmeat, as annexed to the present document, as a specific complement to the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity (AAPG) in relation to the hunting of wildlife in moist tropical forests, which was identified as a matter of priority in decision IX/5, while taking into consideration Article 10(c) as related to customary sustainable hunting practices for the livelihoods of indigenous and local communities;[1]

2. *Urges* Parties and *invites* other Governments to:

(a) Further integrate sustainable-use concerns into national policies, plans, and strategies for relevant economic sectors, and to develop or further improve criteria and indicators for the sustainable use of biodiversity; and to identify targets and indicators at the national level that contribute to the relevant targets and indicators of the post-2010 Strategic Plan of the Convention;

(b) Increase human and financial capacity for the application of the AAPG and other provisions of the Convention related to sustainable use of biodiversity, *inter alia* by establishing and enforcing management plans; enhancing cross-sectoral integration and coordination; improving the operationalization of the definition of sustainable use; improving the understanding and implementation of concepts of adaptive management; and combating unsustainable, unauthorized and unregulated activities;

(c) Address obstacles and devise solutions to protect and encourage customary sustainable use of biodiversity by indigenous and local communities, such as securing access to land and natural resources and involving indigenous and local communities in decision-making and management of biological resources;

(d) Revise and update national biodiversity strategies and action plans to further engage different sectors of government and the private sector (including *inter alia,* forestry, fisheries, water supply, agriculture, disaster prevention, health, and climate change), with a view to fully account for the value of biodiversity and ecosystem services in decision-making;

(e) Strengthen the application of the ecosystem approach, in particular through adaptive management approaches (including customary management systems by indigenous and local communities, with reference to decision IX/7 on ecosystem approach) and adequate monitoring, for key economic sectors depending on and impacting biodiversity;

(f) With reference to the programme of work on incentive measures (decisions V/15 and IX/6 as well as the decision on incentive measures[2] to be adopted by the Conference of the Parties at its tenth meeting) and national biodiversity strategies and action plans, review and revise national incentive measures and frameworks with a view to identify and remove or mitigate incentives that are harmful to biodiversity, to strengthen existing incentives, and to create new incentives for the conservation and sustainable use of biodiversity;

(g) Support or facilitate effective market-based instruments that have the potential to support the sustainable use of biodiversity and improve the sustainability of supply chains, such as certification schemes;

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[1] The CBD Liaison Group on Bushmeat defines bushmeat (or wild meat) hunting as the harvesting of wild animals in tropical and sub-tropical forests for food and for non-food purposes, including for medicinal use (UNEP/CBD/LG-Bushmeat/1/2).

[2] The Conference of the Parties is expected to take a decision on good practice cases from different regions on the identification and removal or mitigation of perverse incentives, (see UNEP/CBD/SBSTTA/14/17).

(h) Implement the recommendations of the Liaison Group on Bushmeat for the conservation and sustainable use of bushmeat, where appropriate, as annexed to this decision;

3. *Invites* Parties, other Governments, and relevant international and other organizations to:

(a) Welcome, support and participate in the *Satoyama* Initiative,[3] as a useful tool to further disseminate knowledge, build capacity and promote projects and programmes for the sustainable use of natural resources in rural areas for the benefit of biodiversity and human well-being;

(b) Invite the private sector to adopt and apply the AAPG and compatible provisions of the Convention into sectoral and corporate strategies, standards and practices, and facilitate such efforts of the private sector;

4. *Requests* the Executive Secretary to:

(a) Compile information on the operationalization of the definition of sustainable use, and information on the understanding and implementation of the concept of adaptive management, and make this information available to Parties;

(b) Convene, in collaboration with Food and Agriculture Organization of the United Nations and other relevant international organizations, subject to the availability of resources, an Ad Hoc Technical Expert Group on Sustainable Use with the mandate to analyse the coherence of global and regional policy frameworks for key economic sectors (notably forestry, fisheries, and agriculture, including biofuels) with provisions of the Convention on Biological Diversity related to sustainable use of biodiversity, and to provide recommendations for the improvement of such sectoral policies and guidelines, in the context of the achievement of the objectives and targets of the post-2010 Strategic Plan of the Convention, and the revision of national biodiversity strategies and action plans, and to submit its report for the consideration of SBSTTA at a meeting prior to the eleventh meeting of the Conference of the Parties.

[3] See: http://satoyama-initiative.org/en/

I. INTRODUCTION

1. In annex II of decision VIII/10 the Conference of the Parties decided to undertake the in-depth review of the work on sustainable use of biodiversity at its tenth meeting. Article 2 of the Convention defines sustainable use as "the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations". Sustainable use is included as an objective in all programmes of work of the Convention and is reflected in the 2010 biodiversity target, as goal 4 with three associated targets. The Addis Ababa Principles and Guidelines for the sustainable use of biodiversity were adopted by the Conference of the Parties in decision VII/12.

2. Accordingly, the Executive Secretary has prepared this note summarizing the findings of a review process which included: (i) an examination of information available from the third and fourth national reports (based on 53 reporting Parties as of 1 December 2009); (ii) an analysis of the relevance of the Addis Ababa Principles and Guidelines to agricultural biodiversity; (iii) a review of voluntary submissions from international and national non-governmental organizations with respect to the application of the Addis Ababa Principles and Guidelines; (iv) consultation of scientific articles and reports on the state of the world's resources and their use; (v) consideration of the findings of recent or current reviews of a number of programmes of work of the Convention; and (vi) the findings of the first Liaison Group on Bushmeat, which was convened in Buenos Aires, from 15 to 17 October 2009, in conjunction with the World Forestry Congress. The Subsidiary Body may wish to submit to the tenth meeting of the Conference of the Parties its conclusions on ways and means to further implement Article 10 of the Convention and related initiatives, as well as on the application of the Addis Ababa Principles and Guidelines.

3. Section II of the present note presents the findings of the review in relation to: sectoral trends with respect to sustainable use in agriculture, forestry, fisheries, aquaculture, wildlife hunting and trade, and of inland water ecosystems; traditional knowledge and sustainable use; and progress regarding sustainable use of biodiversity and application of the Addis Ababa Principles and Guidelines by Parties;. Section III highlights key challenges identified by Parties in their national reports with respect to sustainable use and the application of the Addis Ababa Principles and Guidelines, including barriers and future priorities for capacity-building. Further information in relation to this in-depth review, including a list of peer-reviewed references, will be made available for information.

4. A draft of this note was posted for comments from 20 November 2009 to 20 December 2009 under notification 2009-156, and the comments received were incorporated as appropriate.

II. FINDINGS OF THE REVIEW

A. Sectoral trends in the sustainable use of biodiversity

1. Agriculture

(a) Current trends in the sustainable use of agricultural biodiversity and sustainable agriculture

5. Agricultural biodiversity (ABD) is a broad term that includes all components of biological diversity of relevance to food and agriculture, and those that constitute the agro-ecosystem: the variety and variability of animals, plants and microorganisms, at the genetic, species and ecosystem levels, which are necessary to sustain key functions of an agro-ecosystem, its structure and processes (decision V/5).

6. Two basic categories of agricultural biodiversity can be distinguished: (i) domesticated crops and animals (including fish and other managed aquatic animals) and their wild relatives, and microbial and fungal genetic resources (particularly for post-harvest processes); and (ii) non-harvested components of agricultural biodiversity that contribute to agricultural productivity by provisioning, supporting and regulating ecosystem services, notably soil biodiversity, pollinators and the antagonists of pest and

diseases. The conservation of the first category of agricultural biodiversity depends on their continued economic use, while the second category depends on sustainable agricultural practices.

7. Trends in agricultural biodiversity and sustainable agriculture were assessed for the consideration of the thirteenth meeting of SBSTTA (in document UNEP/CBD/SBSTTA/13/2 and background documents UNEP/CBD/SBSTTA/13/INF/1, 2 and 3) including, *inter alia*, the FAO State of the World's Animal Genetic Resources, the first State of the World's Plant Genetic Resources and the Millennium Ecosystem Assessment (MA). Observations included: (i) there is urgent need for research, capacity-building and improved management guidelines to promote sustainable utilization and address worrying levels of genetic erosion; (ii) of 7616 livestock breeds, approximately 20 per cent are classified as at risk; (iii) nearly all countries, in their country reports to FAO reported that genetic erosion was taking place and that it was a serious concern, with the main cause of genetic erosion in crops being the replacement of local varieties by improved, genetically modified or exotic varieties and species and invasive alien species; (iv) the intensification of agriculture and its expansion into natural ecosystems, notably tropical forests and wetlands, is arguably the most important direct driver of terrestrial biodiversity loss. Underlying causes are population growth, changing consumption patterns (in particular rising meat consumption) and perverse incentives and subsidies, including for biofuels.

8. Between 1987 and 2007, the area of global agricultural land grew by approximately 3 per cent. With the world population projected to grow to approximately 9 billion by 2050, the demand for agricultural products will increase, and changing consumption patterns towards more resource intensive foods is a significant additional driver of impacts. Over 70 per cent of the world's poorest live in rural settings and depend directly on functioning agricultural ecosystems for their livelihoods. Between 1961 and 1999, the amount of food grown per unit of area increased by 106 per cent, however, this increase in land-use efficiency was accompanied by a 203 per cent increase in the use of phosphate fertilizer, a 648 per cent increase in the use of nitrogen fertilizer, and a 854 per cent increase in the production of pesticides. It was also driven largely by rapid irrigation expansion. Cultivated systems have enhanced only four of the 24 ecosystem services examined in the Millennium Ecosystem Assessment. The in-depth review of the programme of work on inland waters (UNEP/CBD/SBSTTA/14/3 and UNEP/CBD/SBSTTA/14/3/Add.1) highlights the continuing global impacts of agriculture on water availability and quality with significant impacts on biodiversity and ecosystem functioning.

(b) Approaches and conceptual frameworks to promote sustainable use of agricultural biodiversity

9. The Convention on Biological Diversity addresses the conservation and sustainable use of agricultural biodiversity, *inter alia*, through the programme of work on agricultural biodiversity (decision V/5), which was reviewed by the Conference of the Parties at its ninth meeting (decision IX/1).

10. Several existing legal and action frameworks include: the Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture (GPA); the Global Plan of Action for Animal Genetic Resources (GPA-AnGR); the Global Strategy for the Management of Farm Animal Genetic Resources (GSMFAGR); and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). Two initiatives[4] under the Convention on Biological Diversity address sustainability requirements for pollinators and soil biodiversity whilst a third promotes biodiversity for food and nutrition based on the concept that a broader based diet will enhance the sustainable use of biodiversity.

11. While it should be acknowledged that traditional farming practices used for millennia fit the current definition of "organic agriculture",[5] certified organic agriculture has developed rapidly in recent

[4] See http://www.cbd.int/agro/cross-cutting.shtml

[5] Organic agriculture is defined by the FAO/WHO Codex Alimentarius Commission as "a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs (...) This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials, to fulfill any specific function within the system."

years with more than 31 million ha across at least 623,174 farms worldwide in a total of 120 countries. There are divergent views regarding its feasibility and productivity potential in resource-poor areas. It requires a high level of managerial knowledge, the ability to protect crops from pests and diseases, and compliance with production-process requirements. Certification is one of the most important cost items.

12. The International Assessment of Agricultural Knowledge, Science and Technology for Development addresses issues such as the environmental consequences of productivity increases, impacts of transgenic crops and the consequences of bioenergy development. The assessment recommends a range of options to achieve sustainability, including improving nutrient, energy, water and land-use efficiency; improving the understanding of soil-plant-water dynamics; increasing farm diversification; supporting agro-ecological systems, and enhancing biodiversity conservation and use at both field and landscape scales. Policy options include ending subsidies that encourage unsustainable practices and using market and other mechanisms to regulate and generate rewards for agro-environmental services.

13. Information documents in preparation on the applicability of the Addis Ababa Principles and Guidelines to the sustainable use of agricultural biodiversity and on the specificities of agricultural biodiversity conclude that the Addis Ababa Principles and Guidelines generally apply to the sustainable use of agricultural biodiversity. But in order for the Guidelines to become useful, more would need to be explained or operationalized and better communicated to key stakeholders in order to address specific concerns regarding the conservation and sustainable use of agricultural biodiversity, particularly plant and animal genetic resources, and the enhanced provision of ecosystem services of value to agriculture.

14. In their fourth national reports, most Parties reported at least one measure put in place to promote sustainable use in the agricultural sector. Measures targeted at the sustainable use of genetic resources in agricultural crops included: the elaboration of a protocol for *ex situ* conservation of genetic resources, seed collection and duplication, the establishment of national genetic resource centres, inventories of plant genetic resources for food and agriculture, collection of breed information for farm animal genetic resources, and participatory plant breeding. Measures aimed at sustainable agriculture included: promoting organic agriculture, developing an index to measure the capacity of agricultural land to provide suitable habitat for terrestrial vertebrates, programmes to target agricultural pollution, strengthening of scientific and technical capacities through research, promoting eco-efficient farming techniques, promoting agro-environmental standards and cross-compliance measures (GAEC - Good Agricultural and Environmental Conditions, SMR - Statutory Management Requirements), and formulating a working definition of sustainable agriculture.

15. Some Parties defined indicators to measure the sustainable use of agricultural biodiversity. These included the application rate of agrochemicals, the surface of agricultural land subject to environmentally-conscious practices or supporting biodiversity, the proportion of freshwater areas in good ecologically state, certification criteria for sustainable biofuels, and nitrogen balance. However, few Parties reported measures to monitor these indicators.

2. Forestry

(a) Current trends in the sustainable use of forest biodiversity

16. Trends in forest biodiversity and sustainable forest management (SFM) were assessed for the consideration of the thirteenth meeting of SBSTTA (in document UNEP/CBD/SBSTTA/13/3 and background documents UNEP/CBD/SBSTTA/13/INF/5, 6, 7, 8, 9 and 10). Forest biodiversity is being lost at an alarming rate. Deforestation and forest degradation, including habitat fragmentation and conversion of primary forests to other forest types, remain the major causes of forest biodiversity loss. Many of the drivers of deforestation lie outside of the control of the forest sector, but are rather caused by activities in other sectors, in particular agriculture, transport, energy, and mining. The in-depth review concluded that implementation of the programme of work on forest biodiversity is hampered by a range of obstacles, including lack of integration of biodiversity concerns into key economic sectors, and lack of human and financial capacity.

17. The latest FAO State of the World's Forest report states that deforestation occurs at a rate of about 13 million hectares per year. An estimated 6 million hectares of forests that are lost each year are primary[6] forests, which are exceptionally rich in biodiversity. About 40 per cent of remaining primary forests are increasingly threatened by anthropogenic activities, such as logging and agricultural expansion. While the majority of the loss of primary forests occurs in the tropics, the logging of remaining old-growth forests in temperate and boreal areas is also a matter of concern. In recent years, forest planting, restoration, and natural expansion of forests have partly compensated for the overall loss of forest area, mainly in Europe and Asia.

18. The consumption of timber products (roundwood, sawnwood, pulp, paper) is expected to increase over the next 30 years. Globally, by 2050, the demand for industrial roundwood is expected to increase by 50 to 75 per cent. In consequence of growing demand, tropical forest plantation area more than doubled between 1995 and 2005, to 67 million hectares, mostly in Asia. Plantations in boreal and temperate regions have also increased in area and this trend is expected to continue. The use of relatively few tree species in plantations and modified natural forests is an issue of concern for a number of forest-dependent species and for ecosystem resilience.

19. Illegal logging and illegal harvesting of forest products seriously undermine national efforts to improve sustainable forest management in many countries. Governments, mostly in developing countries, lose an estimated US$ 15 billion a year as a result of uncollected taxes and royalties. Recent estimates suggest that up to 15 per cent of internationally traded roundwood might originate from illegal sources. Rare tree species and those with high value for timber or non-timber forest products are often in danger of becoming locally or regionally extinct.

20. A recent estimate by the International Tropical Timber Organization (ITTO) suggests that 7 per cent of natural production forests found in tropical countries are managed sustainably. For developing countries, it is estimated that at least 6 per cent of forests are included under some form of nationally approved management plan spanning a period of at least 5 years. The 2007 State of the World's Forests report noted that 100 countries were attempting to manage their forest resources more holistically through the use of national forest programmes. Therefore it would appear that many countries are taking steps to promote the sustainable use of their forest resources.

(b) Approaches and conceptual frameworks for sustainable forest management

21. The Convention on Biological Diversity addresses the conservation and sustainable use of forest biodiversity through the expanded programme of work on forest biodiversity (decision VI/22). The Conference of the Parties, at its ninth meeting, reviewed the programme of work and adopted a new set of priorities for its implementation, including: unregulated and unsustainable use of forest products and resources (including unsustainable hunting and trade of bushmeat, and their impacts on non-target species), climate change, desertification and desert creep, illegal land conversion, habitat fragmentation, environmental degradation, forest fires, and invasive alien species (decision IX/5).

22. The General Assembly of the United Nations adopted, in December 2007, resolution 62/98 on non-legally binding instrument on all types of forests (or the "forest instrument"), which describes sustainable forest management (SFM) as a "dynamic and evolving concept which aims to maintain and enhance the economic, social and environmental value of all types of forests, for the benefit of present and future generations." The resolution further identifies the seven thematic elements of sustainable forest management as: (i) the extent of forest resources; (ii) forest biological diversity; (iii) forest health and vitality; (iv) the productive functions of forest resources; (v) the protective functions of forest resources; (vi) the socio-economic functions of forests; and (vii) the legal, policy and institutional framework.

[6] Forests of native species, in which ecological processes are not significantly disturbed (FAO, Global Forest Resources Assessment, 2005).

23. The Second Ad Hoc Technical Expert Group on Biodiversity and Climate Change under the Convention on Biological Diversity, in its final report,[7] raised concerns regarding the applicability of SFM to the implementation of efforts under the United Nations Framework Convention on Climate Change (UNFCCC) to reduce emissions from deforestation and forest degradation in developing countries (REDD-plus). With reference to decision IX/5 of the Convention on Biological Diversity, there is a need for further clarification of the links between the sustainable use of forest biodiversity and SFM, in particular with regards to primary forests.

24. Criteria and indicators of sustainable forest management include those of the Montreal Process, the Ministerial Conference for the Protection of Forests in Europe, and within-country criteria and indicators, such as those that form the basis of the Canadian Standards Association certification standard for sustainable forest management.

25. ITTO and the International Union for Conservation of Nature (IUCN) have developed and field-tested "Guidelines for the conservation and sustainable use of biodiversity in tropical timber production forests". The guidelines are designed to assist forest stakeholders in reducing their impacts on biodiversity in tropical production forests, and can, in many cases, be equally applied to other types of forest ecosystems.

26. Forest certification schemes when appropriately designed, agreed and implemented, can be useful instruments in achieving biodiversity conservation. Several Parties refer, in their third and fourth national reports, to increases in the areas under various forest certification schemes, including their own national certification systems. For example, the Czech Republic created a Czech Forest Certification Scheme (CFCS) based on the Pan-European Forest Certification Scheme (PEFC) and Malaysia designed a Forest Management Certificate based on the 1994 Malaysian Criteria and Indicators (MC&I) for Sustainable Forest Management. Estonia reports that it has one of the biggest areas of FSC certified forests in Eastern Europe and South Africa reports that 80 per cent of its forest plantations are managed according to FSC standards.

27. Almost all Parties mentioned, in their fourth national reports, that they are implementing measures to promote sustainable use in the forestry sector, for example through the concept of sustainable forest management (SFM). Reported measures included community-based forest management programmes, policies and strategies for forestry management (i.e., national forest policies and forestry codes), forest management plans, monitoring timber harvesting, addressing illegal forest loggings, protected areas and forest reserve areas, harvest quotas, the use of various certification standards and the development of national certification standards for SFM, environmental impact assessments, public awareness building, gene reserve forest networks, the production or use of guidelines for forest plantations, and forest products research initiatives.

28. Some Parties defined indicators to measure the sustainable use of forests. These included the percentage of forest cover, the area of forests managed sustainably in proportion to total forested area, the number of community-managed forests, the area of forests under certification, the presence of a national forestry plan, and the number of forest management plans. Progress related to these indicators is reported to FAO through the Forest Resources Assessment 2010.

3. Fisheries

(a) Current trends in sustainable use of fishery resources

29. Scientific assessment of trends in the sustainability of inland fisheries is constrained by poor data availability and inland catches that are widely regarded as underestimated and in particular do not reflect the real nature of small-scale fisheries, which can be critical for local food security. According to the actual data, global landings from inland fisheries have grown continuously, and there are few examples of collapsing fisheries, with some fish stocks, especially in Latin America, remaining lightly exploited.

[7] Available as CBD Technical Series No. 41 'Connecting Biodiversity and Climate Change Mitigation and Adaptation. Report of the Second Ad Hoc Technical Expert Group on Biodiversity and Climate Change', (See www.cbd.int/ts)

According to the FAO, inland fisheries could be developed further. However, such generalizations mask regional and local variations where declines are being widely reported. The impacts of fishing on many inland water species are clearly evident, but the impacts on total production are often unknown; most inland fisheries are multi-species based and most of which are not recorded. Most experts also concede that it is difficult, if not impossible, to disaggregate the impacts of fishing on resources *versus* the impacts of environmental degradation (which is a far bigger problem in inland waters than in oceans). Consequently, trends in sustainable inland fisheries have not been properly assessed despite the importance of this sub-sector.

30. The in-depth review of the programme of work on marine and coastal ecosystems has reviewed the status and trends of fisheries in these areas (see the note by the Executive Secretary on the in-depth review of the implementation of the programme of work on marine and coastal biological diversity (UNEP/CBD/SBSTTA/14/4 and UNEP/CBD/SBSTTA/14/INF/2)). Fishing has been the most important direct driver of change and biodiversity loss in these areas in the past 50 years and there remain serious sustainability issues with many stocks. A recent global survey suggests that the management of fisheries worldwide is lagging far behind international guidelines to minimize the effects of overexploitation. Few countries had a robust scientific basis for management recommendations and transparent and participatory processes to convert those recommendations into policy while also ensuring compliance with regulations. The study suggests that the conversion of scientific advice into policy, through a participatory and transparent process, is at the core of achieving fisheries sustainability, regardless of other attributes of the fisheries.

31. Aquaculture globally has grown dramatically in the last 50 years. Production is reported to have risen from less than 1 million tonnes in the early 1950s to 51.7 million tonnes, with a value of US$ 78.8 billion in 2006. Most aquaculture production of fish, crustaceans and molluscs continues to come from inland waters (61 per cent by quantity and 53 per cent by value). Mariculture contributes 34 per cent of production and 36 per cent of total value. Assessments of trends in genetic resources used in aquaculture are currently ongoing but are likely to be similar to those for livestock (that is, a narrowing genetic pool). Environmental impacts associated with aquaculture include: competition for space; pollution from nutrients, chemicals or pharmaceuticals; escaped farmed fish, which can become invasive and spread diseases; and contribution to the overfishing of wild fisheries, as many farmed species are fed with wild resources. In some cases, the impacts have been severe, e.g. the expansion of shrimp farming in South East Asia has led to the destruction of mangroves and wetlands that are of vital importance for flood control and as habitat for marine wild life, including marine populations of importance for fisheries.

(b) Approaches and conceptual frameworks for sustainable fisheries in marine and coastal waters

32. The Convention on Biological Diversity addresses the conservation and sustainable use of marine and coastal ecosystems through, *inter alia*, the programme of work on marine and coastal biodiversity (decision VII/5, annex I). The 1995 FAO Code of Conduct for Responsible Fisheries, adopted by more than 170 members of FAO, is voluntary and its aim is for all stakeholders to adopt more sustainable approaches to fisheries and aquaculture in both inland or ocean waters. The Code consists of a collection of principles, goals and elements for action. The FAO has also examined and promoted the application of the ecosystem approach to fisheries as a sectoral approach to responsible management. In coastal areas, the ecosystem approach has been more commonly implemented through initiatives on integrated marine and coastal area management (IMCAM), a participatory process for decision-making to prevent, control, or mitigate adverse impacts from human activities in the marine and coastal environment, and to contribute to the restoration of degraded coastal areas. The Marine Stewardship Council, created in 1999, has developed standards and certification for sustainable fishing and seafood traceability based on independent third-party assessments by accredited certifiers.

33. National initiatives as reported in the fourth national reports include the following: Australia's Guidelines for the Ecologically Sustainable Management of Fisheries; the Norwegian Directorate of Fisheries has implemented a 30-point action plan to dramatically cut the number of escapees; and the Swedish Board of Fisheries, has been given a government assignment to operationalize the concept of

sustainable use so that it can be used in the fisheries sector, thereby improving the integration of biodiversity issues in this sector. In their fourth national reports, most Parties mentioned measures pertaining to sustainable use in the fisheries sector. These measures included regulations and quotas for specific species, marine protected areas, guidelines for the ecologically sustainable management of fisheries, bans on fishing in breeding zones and at certain times and on the use of toxic products and engines, national codes of conduct for responsible fishing operations, fishing licensing systems, various oceanographic and aquaculture research programmes, provisions for the types of fishing gear to use and limits on the number of boats, reinforcement of fishing surveillance, management plans for fisheries, and participatory fishing programmes.

34. In their national reports and in the voluntary reports on implementation of the programme of work on marine and coastal biodiversity (14 reports submitted), some Parties reported on the development and adoption of overarching policies for marine aquaculture. These include the Strategy for Sustainable Development of European Aquaculture, which promotes an integrated approach regarding farming technologies, socio-economics, natural resources use and governance, and Canada's Aquaculture Policy Framework, which includes a set of principles to ensure that actions support the social, economic, and environmental aspects of sustainable aquaculture development. Although quantitative data are not available, the information provided by Parties in the voluntary reports indicates that there is an increasing trend towards systematic spatial planning of all uses of the marine and coastal environment, including mariculture.

(c) Approaches and conceptual frameworks to promote sustainable use of inland water biodiversity

35. The sustainable use of inland water ecosystems is addressed, *inter alia*, through the programme of work on inland waters (decision VII/4, annex). This programme of work is undergoing an in-depth review and details on this subject are presented in a note by the Executive Secretary on the subject (UNEP/CBD/SBSTTA/14/3) and a background information document. Sustainable use is a complex topic for this work programme. The direct use of biodiversity is covered partly under inland fisheries, (see sections 3 (a) and (b) above. The more complex issue, however, is the sustainable use of ecosystems and the services they provide. The review notes that on most fronts the trends in ecosystem-service delivery are in general in serious decline driven largely by factors associated with land- and water-use practices. Further discussion, including proposed remedies, is provided in the aforementioned documents.

4. Hunting and trade of wildlife

(a) Current trends in the sustainable use of wildlife

36. The Department for International Development of the United Kingdom estimates that of the 1.2 billion people in absolute poverty (with an income of less than US$ 1/a day), up to 150 million (13 per cent) rely on wildlife as a key element of their livelihood asset base. This is partly to do with their proximity to wildlife resources but is also related to their limited access to substitutes or alternatives.

37. Hunting for food in tropical forests is an issue of concern as there is strong evidence illustrating that the scale of hunting occurring in these regions poses a real threat to many tropical forest species and as the depletion of wildlife is intimately linked to the food security and livelihood of numerous tropical forest-region inhabitants. For instance, hunting provides between 30 to 80 per cent of the overall protein intake of rural households in Central Africa.

38. An information document entitled The Conservation and Sustainable use of Wildlife-based Resources: The Bushmeat Crisis, available as CBD Technical Series No. 33, reviews the literature addressing the sustainability of hunting in tropical forests. The report suggests that over half of the species examined were hunted unsustainably, leading to growing concerns about ecosystem stability, food security, and the livelihoods of indigenous and local communities. The Liaison Group on Bushmeat under the Convention on Biological Diversity, which met from 15 to 17 October 2009, adopted a set of recommendations further to decision IX/5, and requested the Executive Secretary to include its recommendations before the Subsidiary Body at its fourteenth meeting, through the in-depth review of

work on sustainable use. The recommendations are annexed to the present document; the full report of the meeting is available as document UNEP/CBD/LG-Bushmeat/1/2.

39. The use of wildlife for trade is a major economic activity: TRAFFIC has estimated the value of legal, international wildlife trade alone to be worth nearly US$ 300 billion in 2005, based on declared import values. This excludes the considerable amount of domestic trade. Wildlife trade comprises any sale or exchange by people of wild animal and plant resources, including medicines, food, ornaments and furnishings, clothing, pets/hobbies, ornamental plants, manufacturing and construction. While some communities and countries have been extremely successful in managing and regulating the use of their wildlife resources, a huge proportion of wildlife trade is manifestly unsustainable and often illegal.

(b) Approaches and conceptual frameworks to promote sustainable use of wildlife

40. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which regulates international trade in endangered species, lists approximately 5,000 fauna species and 28,000 flora species in its three appendices. In several cases, pressures related to overuse by hunting have led to the inclusion of animals species in the appendices. Although CITES decisions are made on the basis of conservation concerns, increasing attention has been paid recently to the impacts some CITES decisions may have on local people's livelihoods and a commitment has been made to identify whether these conservation-motivated decisions will have unintended negative implications for poor people.

41. The BioTrade Initiative of the United Nations Conference on Trade and Development (UNCTAD) assists developing countries in the formulation and implementation of National BioTrade Programmes. It focuses on countries which are rich in biodiversity and whose governments have a clear interest in developing a national capacity to promote biotrade. Since 2003, the BioTrade Initiative has also hosted the BioTrade Facilitation Programme (BTFP) which focuses on enhancing sustainable bio-resources management, product development, value adding processing and marketing.

42. Other relevant guidelines and frameworks include a joint FAO-International Council for Game and Wildlife Conservation (CIC) publication *Principles for Developing Sustainable Wildlife Management Laws*[8], which translates the Addis Ababa Principles and Guidelines into the context of hunting laws. The European Charter on Hunting and Biodiversity[9] drew on the Addis Ababa Principles and Guidelines and the ecosystem approach to derive 12 fundamental charter principles that give guidelines for regulators and practitioners intended to ensure that hunting and hunting tourism in Europe are practiced in a sustainable manner.

43. TRAFFIC International and WWF International produced a report which addresses how societies can minimize the risks posed by wildlife trade.[10] Suggestions include: (i) the establishment of appropriate ownership and tenure regimes for wildlife; (ii) the use of captive, or semi-intensive, production to reduce the pressure on wild resources; (iii) the use of certification processes to identify wildlife goods that are derived sustainably and to promote sustainable management while generating better returns for poor producers; and (iv) shortening of the length and complexity of international wildlife trade chains.

44. In their fourth national reports, most Parties mentioned measures pertaining to sustainable use of wildlife. Almost all Parties mentioned the implementation of CITES. Other measures included bans on use or harvesting of some species, in particular wild and endangered species, hunting regulations, licensing or permit systems for trade in species of wild flora or fauna, wildlife trade management plans, wildlife quotas, regulations on harvest timing or the size of specimens, environmental impact assessments, awareness-raising for managers, producers, traders and consumers of wildlife plants and animals protection, training of enforcement and customs officers, the European Union Action Plan for

[8] CIC Technical Series Publication No.3.

[9] Nature and Environment No. 180, Council of Europe, 2008.

[10] Roe, D. (2008) Trading Nature. A report, with case-studies, on the contribution of wildlife trade management to sustainable livelihoods and the Millennium Development Goals. TRAFFIC International and WWF International. 84 pp.

Forest Law Enforcement, Governance and Trade (FLEGT), monitoring surveys of species to gauge recovery rate, and strengthening the enforcement of CITES.

45. Indicators used to measure the sustainable use of wildlife, as reported by Parties, included the number of species and quantity of imported/exported plants, the number of permits/certificates and elaborated environmental agreements, and the number of surveillance, control, and legislative measures.

B. Traditional knowledge and sustainable use

46. In decision IX/13 A, paragraph 4 on Article 8(j) and related provisions, the Conference of the Parties requested that the Executive Secretary continue to compile case-studies, to analyse and report on work concerning Article 10(c), and to provide advice to the Working Group on Article 8(j) and Related Provisions at its sixth meeting on how this related provision may be further advanced and implemented as a priority. This advice is synthesized in a note by the Executive Secretary (UNEP/CBD/WG8j/6/2/Add.1) prepared for the sixth meeting of the Working Group, held in Montreal in November 2009. The note makes, among others, the following points relevant for further efforts to protect and encourage customary use:

(a) Customary-use practices are closely connected with traditional knowledge, as these practices are learned, maintained and applied in hands-on settings and transmitted orally. Practices relating to use of biological resources are often guided by customary regulations, moral codes, ethical norms, and specific sanctions that help to promote sustainability;

(b) Providing access to lands and resources and involving indigenous and local communities in decision-making and management of those resources are the two most important equity issues that Parties to the Convention face in relation to Article 10(c);

(c) Customary use depends on striking a balance between two interdependent aspects: access to customary lands and resources, and management of such resources in a way that fully includes indigenous and local communities and other stakeholders. Management options that devolve authority to indigenous and local communities have the greatest potential for long-term sustainable customary use.

(d) Access to lands and biological resources could be provided according to a spectrum of possible mechanisms, including land tenure, recognition of indigenous and/or community conserved areas, special access, and general access. It is relevant to stress that the recognition and respect of traditional land tenure is arguably the most effective method, as it ensures secure and long-term access to lands and biological resources and allows resource allocation and use to be based on traditional knowledge and practices;

(e) There is a need to balance conservation needs, the protection of species, and the rights of Indigenous and local communities to benefit from the use of species. Indigenous and local communities must be involved and effectively participate at all levels of resource management, and national Governments must be responsive to the input of local communities;

(f) Customary management by indigenous and local communities of traditional territories is highly complementary to the ecosystem approach (especially principles 1 and 2) and the Addis Ababa Principles and Guidelines (especially principle 2). Recognizing customary-use rights can benefit conservation efforts, while denying customary-use rights can threaten biological diversity.

C. Reports on the application of the Addis Ababa Principles and Guidelines by Parties

47. A synthesis of inputs on sustainable use and the Addis Ababa Principles and Guidelines in the third and fourth national reports (72 fourth national reports received as of 11 November 2009) indicates that:

(a) Almost all reporting Parties included the sustainable use of biological resources as an objective in their national biodiversity strategy and action plans (NBSAPs). Several Parties reported on the integration of sustainable-use considerations in legislation, including environmental laws and

sector-specific legislation, such as fisheries and forestry codes. In addition, all Parties reported that they have integrated the sustainable use of biological resources in policy frameworks for at least one of the following sectors: agriculture, forestry, fishery, tourism, and wildlife hunting and trade;

(b) Approximately 25 per cent of reporting Parties have developed tangible indicators to measure sustainable use. Indicators include: the number of fish refuges; the number of forest or fisheries law infringement cases; the number of species exported; the total volume and annual increase of standing stock (volume of all trees growing in a certain land area); and the ecological footprint;[11]

(c) According to third national report submissions, more than 50 per cent of reporting Parties had initiated application of the Addis Ababa Principles and Guidelines while 26 per cent were in the process of reviewing them;

(d) Four Parties voluntarily submitted information on the Addis Ababa Principles and Guidelines. Australia's fourth national report mentions that the Addis Ababa Principles and Guidelines are consistent, where possible, with the part 13A of its Environment Protection and Biodiversity Conservation Act. Madagascar applied the Addis Ababa Principles and Guidelines in the process of establishing new protected areas. Sweden reported on the use of the Addis Ababa Principles and Guidelines by the Swedish Board of Fisheries, the authority responsible for conservation and exploitation of Sweden's fish resources, which produced a report on how to apply the ecosystem approach and the Addis Ababa Principles and Guidelines in fisheries management. The Government of Japan submitted information on the management of sustainable rural landscapes in Japan. *Satoyama* landscapes are a traditional Japanese socio-ecological production system characterized by sustainable use of biodiversity. In recognition of the potential of such sustainable use of landscapes to enhance human well-being and biodiversity, a so-called the *Satoyama* Initiative is being proposed to promote the rebuilding and enhancement of sustainable ties between humans and the natural environment through optimized use and management of land and natural resources. A consultative process is under way to develop the initiative and establish an international partnership as a supporting and awareness-raising mechanism in support of the implementation of the Convention, to be launched at the tenth meeting of the Conference of the Parties.

III. KEY ISSUES FOR SUSTAINABLE USE AND FURTHER APPLICATION OF THE ADDIS ABABA PRINCIPLES AND GUIDELINES

48. In their fourth national reports, several Parties to the Convention on Biological Diversity identified challenges and/or obstacles to implementing sustainable use of biodiversity. These obstacles are listed below:

(a) ***Non-operational definition of sustainable use.*** Application of the Addis Ababa Principles and Guidelines to a level that would be usable for users of biodiversity, such as farmers and foresters, is a challenge. One obstacle is that the concept of sustainable use does not have clear, widely accepted operational definitions, criteria and indicators within relevant sectors;

(b) ***Lack of standards and indicators to implement policies, programmes, and adaptive management.*** Sustainable use has been integrated in most national strategies and plans; however, clear indicators to measure progress are often lacking, which hampers adaptive management;

(c) ***Lack of permanent systems to monitor the use of biodiversity.*** Several Parties lack a permanent system to monitor the state of biodiversity and the use of biodiversity, and as a result, have difficulty assessing the degree to which the use of biodiversity is influencing the state of biodiversity. Limited knowledge on the current levels of harvesting of many resources, such as medicinal plants, hampers the establishment of sustainable levels of use and indicators to measure progress;

[11] See http://assets.panda.org/downloads/living_planet_report_2008.pdf

(d) ***Insufficient knowledge***. In many cases, the scientific basis for sound decision-making on the sustainable use of biological resources is insufficient. While the precautionary approach and adaptive management can temporarily bridge gaps in knowledge, further research is needed to improve sustainable exploitation of natural resources, and to monitor impacts of natural resource use;

(e) ***Lack of harmonization between management and conservation plans.*** Although targets have been set in the programmes of different sectors for usage and production, they usually do not capture sustainable use well. Available management plans for natural resources such as water bodies, forests, game, and wildlife may not include measures to ensure sustainable use of biodiversity;

(f) ***Difficulty in finding alternative means of subsistence.*** Obstacles often exist for communities of people to find alternative livelihoods which might reduce pressures on resource sustainability;

(g) ***Lack of law enforcement.*** Although most Parties report having ratified CITES, lack of implementation of CITES was frequently cited as a major obstacle for sustainable use. Capacity and resources to enforce laws on illegal harvesting is a challenge;

(h) ***Inadequate economic incentive frameworks to encourage sustainable use.*** There is a need for better methods to value ecosystem services, and to design incentive measures that facilitate sustainable use, and to minimize perverse incentives which contribute to biodiversity loss;

(i) ***Lack of political commitment and vision.*** This is often due to poor understanding of the benefits, goods and services provided by biodiversity and its contribution to sustainable development. It can lead to a lack of leadership and low national priority for sustainable use;

(j) ***Insufficient financial resources, human and technical resources, and capacity.*** Inadequate and poorly qualified staff; lack of incentives for dedicated staff; non-continuity of trained personnel and change of staff were cited as obstacles. Limited financial resources and inadequate means hinder the enforcement of legal protections (and CITES) and, for example, the creation of management plans for protected areas**.**

49. Opportunities to strengthen ongoing efforts include, *inter alia*, identifying feasible indicators of performance; developing standards for application of the Addis Ababa Principles and Guidelines; simplified and improved approaches to communicating them; addressing incentives for sustainable use; and capacity-building. The following list summarizes capacity-building needs in order to overcome the identified obstacles:

(a) ***Build knowledge of adaptive management through personnel training.*** Training objectives include fostering a greater understanding of adaptive management and building capacity in developing and using indicators and monitoring methods (including community-based methods) to measure sustainable use;

(b) ***Develop indicators of performance.*** Indicators of performance are needed if progress is to be credibly assessed. Consideration might be given to assessing the extent to which existing indicators can be used;

(c) ***Make scientific information easier to access through improved information management.*** This might include an information system or database on existing information on sustainable use, publications and research projects;

(d) ***Develop regional collaboration to address scientific information needs.*** A regional network of institutions, universities or laboratories working in various sectors (fisheries, forestry, agriculture etc.) can collaborate to address management information needs in their areas of expertise, avoiding overlap and ensuring that all important research needs are covered. This requires strong coordination, dialogue with management entities, and information-sharing.

Annex

NATIONAL AND INTERNATIONAL LEVEL RECOMMENDATIONS TOWARDS A MORE SUSTAINABLE USE OF BUSHMEAT

The Liaison Group on Bushmeat[12] of the Convention on Biological Diversity met in Buenos Aires, from 15 to17 October 2009, and adopted the following recommendations to improve the sustainability of harvesting of bushmeat:

National level

1. *Increase capacity to fully evaluate the bushmeat issue for policy and planning.* National Governments should evaluate the role of bushmeat and other wild animal products in national and local economies as well as the ecological services provided by wildlife and biodiversity as an essential step towards conserving and sustainably using this resource. This can be done by:

(a) Increasing the visibility of the existing bushmeat market as a precursor to putting its management on a sounder footing;

(b) Increasing capacity to monitor levels of bushmeat harvest and consumption in national statistics to inform improved policy and planning;

(c) Incorporating a realistic and open assessment of wildlife consumption and its role in livelihoods into major policy and planning documents.

2. *Engaging the private sector and extractive industries.* Wildlife management, including bushmeat species management, should be an essential part of management or business plans for the extractive industries (oil, gas, minerals, timber, etc.) operating in tropical, sub-tropical forest, wetland and savannah ecosystems.

3. *Rights and tenure, and traditional knowledge.* Access, rights and associated accountability, as well as the responsibility to sustainably manage wildlife resources should be transferred whenever possible to local stakeholders who have a vested interest in maintaining the resources and who can deliver sustainable, desirable solutions. Capacity of these empowered local communities should be built and strengthened to ensure that they have the capacity to exercise these rights. Conservation and sustainable use of wildlife resources would be enhanced through the incorporation of traditional knowledge into management and monitoring systems, as well as by favouring the use of the most ecologically friendly (e.g. species-specific), cost-efficient, and humane hunting methods.

4. *Review of national policies and legal frameworks.* States within the range of bushmeat species are strongly encouraged to review existing policies and legal frameworks related to the conservation and sustainable use of wildlife. Whenever possible, outside strictly protected areas and species, it is recommended to establish policies, capacity, and management systems that support the legal and sustainable hunting of targeted species (i.e. common and fecund). The review should ensure:

(a) The coherence of policy and legal frameworks through mainstreaming conservation and sustainable use of wildlife in the various sectoral and national planning exercises;[13]

(b) That management schemes are practical and feasible for harvestable species as well as those in need of strict protection (e.g., endangered species);

[12] The meeting was convened in collaboration with the Food and Agriculture Organization (FAO), the Center for International Forestry Research (CIFOR), and the International Council for Game and Wildlife Conservation (CIC).

[13] Including Poverty Reduction Strategy Papers (PRSP), forest management plans, national biodiversity strategies and action plans (NBSAP), national forest programmes (NFP), nationally appropriate mitigation actions (NAMAs), national adaptation programmes of action (NAPA), REDD-PIN, national bushmeat action plans, national wildlife management plans and regulations, species-specific national management and conservation plans.

(c) Realistic approaches to enforcement in which control measures are consistent with capacity;

(d) Rationalizing legal and regulatory texts to reflect actual practices without surrendering key conservation objectives;

(e) Favouring the harvest of low-risk species (e.g. highly productive species) while promoting trade-offs to enhance protection of high-risk species.

5. *Landscape-level management*. An effective and coherent network of protected areas is essential to ensure the effective conservation of wildlife, including threatened species. Wildlife populations outside protected areas are also essential and management should be instigated at the highest possible landscape scale.

6. *Science.* Management decisions should be made based on the best available and applicable science and the precautionary approach. Further research is crucial and better information management is needed. Appropriate monitoring systems of bushmeat harvest and trade should be developed and implemented at national level, and allow for comparability of bushmeat harvest and trade at the regional level. Standard and comparable population status assessment methods should be developed and implemented. New and additional reliable knowledge on used species' populations and on levels of use and trade should be made available for consideration within the IUCN Red listing process.

7. *Substitution and other palliative measures.* The development of alternative food and income sources is essential as wildlife alone cannot be sustainably used to support current or future livelihood needs, but these palliative measures (farming, ranching, captive breeding, etc.) are unlikely to be effective alone in conserving wildlife resources. In the long term, there is no substitute for proper management of the resource for protection and production, as appropriate.

8. *Capacity-building and awareness-raising.* To achieve conservation and sustainable use of wildlife resources, capacity-building and public awareness need to be raised at national and local levels across a range of themes, including: governance and law enforcement, wildlife monitoring and management, livelihood alternatives, and collaboration across government, private and public sectors.

9. *Health*. Where wildlife hunting and bushmeat trade occur, appropriate public-health information and capacity-building should emphasize disease prevention to mitigate risk and protect both human and animal health. In regions with bushmeat trade, sanitary control and biosecurity measures are necessary to prevent the sale of infectious meat or animal products that can contribute to the spread of pathogens (including emerging infectious diseases and parasites) between wildlife, domestic stock and people. Furthermore, wildlife, domestic livestock and human health need to be monitored and legislation, regulations, and enforcement need to be developed and implemented to reduce the threat of epizootics from newly emerging infections.

10. *Climate change*. Mechanisms such as REDD+ should take into account the importance of wildlife for maintaining healthy ecosystems and ecological services, and for the permanence of forest carbon stocks and forest adaptation capacity.

11. *Special management areas:* Specific areas for wildlife management should be designated at national and local levels, similar to permanent forest estates designated to manage timber resources. These may span existing protected area systems and multi-use landscapes (e.g., game-management areas or districts).

International level

1. *National and international strategies to address bushmeat. Such strategies could include:*

(a) Supporting and strengthening national political will to take action on key bushmeat and existing conservation commitments;

(b) Supporting and strengthening existing international commitments and agreements and encourage new ones concerning the conservation and sustainable use of transboundary and shared wildlife resources.

2. *Participatory processes.* International community invites national Governments to develop or strengthen participatory and cross-sectoral processes in formulating and implementing the sustainable management and harvesting of bushmeat species.

3. *Policy processes*. International partners should seek to effectively integrate wildlife conservation strategies for long-term sustainability into relevant internationally supported development policy processes, such as poverty reduction strategies.

4. *Impacts of international trade on natural resources.* International policy processes and institutions concerning trade and development should take steps to better assess and mitigate impacts of extraction and trade of natural resources such as timber, fish, minerals and oil etc. on wildlife and resulting bushmeat demands.

5. *International trade in wild bushmeat.* The international community is concerned with the potential threat that a growing international trade in bushmeat may have on wild populations and discourages an international trade in illegally harvested bushmeat.

6. *International policy environment.* In order to optimize the sustainability of hunting, the international community should support integrated national, transboundary, and local action to build partnerships among organizations and institutions to:

(a) Build enforcement capacity;

(b) Develop and implement protein and income alternatives;

(c) Increase awareness and education regarding bushmeat hunting and trade.

These actions taken together have the potential to encourage communities to sustainably manage their wildlife resource and reduce the demand for bushmeat.

7. *International science*. The international community should encourage ecosystem research to inform future policy, with a focus on natural forest regeneration, including the role of seed-dispersers such as primates and game-birds, DNA bar-coding, keystone species, disease transmission and impacts on climate change.

8. *Incentives.* Financial mechanisms and payments for ecosystem services such as REDD should take into account the importance of ecosystem functioning and the role of forest fauna in forest health and resilience.

9. *Forest certification.* Forest certification schemes should take into account the conservation and sustainable use of wildlife to maintain healthy forest ecosystems.
