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APPLICABILITY OF THE ADDIS ABABA PRINCIPLES AND GUIDELINES ON SUSTAINABLE USE OF BIOLOGICAL DIVERSITY TO THE SUSTAINABLE USE OF AGRICULTURAL BIODIVERSITY

Note by the Executive Secretary

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I. INTRODUCTION

A. Background

1. The present note provides information on the applicability of the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity (hereafter referred to as "Principles and Guidelines") to agricultural biodiversity. It aims to contribute to the in-depth review of implementation of the programme of work on agriculture biological diversity (UNEP/CBD/SBSTTA/13/2). This section describes the background, mandate and process of the exploration.

2. The Addis Ababa Principles and Guidelines consist of 14 practical principles, each of which is composed of a rationale and several operational guidelines. This report will examine its applicability principle by principle.

3. The present document was produced in response to a request by the Conference of the Parties (COP) to the Convention on Biological Diversity at its seventh meeting, where, paragraph 3 of its decision VII/12, the Conference of the Parties requested the Subsidiary Body on Scientific Technical and Technological Advice, prior to the ninth meeting of the Conference of the Parties, to explore the applicability of the Principles and Guidelines to agricultural biodiversity, in particular domesticated species, breeds and varieties, and make appropriate recommendations. The decision has a note stating that "SBSTTA will also consider the range of use options and management practices covered by the term agricultural biodiversity".

4. A similar statement, in paragraph 3 of the preamble to the Principles and Guidelines, indicates that agricultural biodiversity was not fully addressed in the process, and a need was identified "for further elaboration specifically with respect to domesticated species, breeds and varieties in the context of the programme of work on agricultural biodiversity".

B. Methodology

5. The discussions in this paper are based on three major sources, from which relevant information was extracted regarding the applicability of the Principles and Guidelines to the programme of work on agricultural biodiversity:

(a) Third national reports submitted under the Convention on Biological Diversity;

(b) Outcomes of the regional workshops; and

(c) Other reports from relevant bodies and inputs from the relevant international partners, in particular the Food and Agriculture Organization of the United Nations (FAO).

6. It is to be noted that the third national reports submitted by Parties to the Convention on Biological Diversity were not originally intended to be used for the purpose of this paper. Its original intention is rather to provide information on the implementation and in-depth review of the programme of work on agricultural biological diversity. However, the programme of work on agricultural biological diversity and the Principles and Guidelines are highly relevant to each other, and both are instruments for achieving the three objectives of the Convention; namely the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

7. As a consequence, references are made to the programme of work on agricultural biological diversity. Compatibility is examined between the programme of work and the Principles and Guidelines for two reasons. First, such an examination will contribute to the in-depth review of the programme of work. Secondly, the compatibility of the two has an implication for how the Principles and Guidelines will be implemented.

8. In response to the endnote to decision VII/12, concrete implemented activities and policies to illustrate the range of use options and management practices covered by the term agricultural biodiversity are listed in the conclusion.

II. ADDIS ABABA PRINCIPLES AND GUIDELINES ON SUSTAINABLE USE OF BIOLOGICAL DIVERSITY AND ITS RELEVANCE TO AGRICULTURAL BIODIVERSITY

A. General discussion

9. The sustainable use of the components of biological diversity is one of the three objectives of the Convention (Article 1) as well as being the subject of Article 10. The Principles and Guidelines reflect the spirit of Article 10 in the context of agricultural biodiversity defined under the Convention as: a broad term that includes all components of biological diversity of relevance to food and agriculture. It also includes all components of biological diversity that support the ecosystems of which agriculture is a part (agro-ecosystems): the variety and variability of animals, plants and micro-organisms, at the genetic, species and ecosystem levels, which are necessary to sustain key functions of the agro-ecosystem, its structure and processes. As such, the Principles and Guidelines have some key concepts that are applicable to agricultural biodiversity such as measures to avoid or minimize adverse impacts on biological diversity and protection and encouragement of the customary use of biological resources in Article 10. Stakeholders anticipated in Article 10 are central in the Principles and Guidelines, such as national governments, "local population" (local and indigenous communities in the Principles and Guidelines) and "private sector". Again, in the case of agricultural biodiversity specific mention of farmers, pastoralists, fisherfolk and livestock managers as stakeholders should be included.

B. History of discussions of sustainable use in the framework of the Convention on Biological Diversity

10. At its fourth meeting, the Conference of the Parties decided to consider sustainable use (including tourism) at its fifth meeting (decision IV/16, annex II).

11. At its fifth meeting, the Conference of the Parties considered sustainable use as a cross-cutting issue, and each existing thematic work programme referred to sustainable use and management of biological resources. In decision V/24, adopted at this meeting, the Conference of the Parties requested the Executive Secretary to:

(a) Invite organizations involved in sustainable-use initiatives, and others, to compile and collect case-studies on best practices and lessons learned under the thematic areas of the Convention;

(b) Adapt the process being used to develop the ecosystem approach and apply it to relevant work on sustainable use and to develop appropriate guidance to assist Parties and Governments; and

(c) Assemble practical principles, operational guidelines and instruments, and guidance specific to sectors and biomes, to assist Parties to achieve sustainable use of biological diversity.

In response to these requests, the Secretariat organized three regional workshops on the sustainable use of biological diversity.

12. At its sixth meeting, in April 2002, the Conference of the Parties requested the Executive Secretary to organize a fourth open-ended workshop on the sustainable use of biological diversity to synthesize the outcomes of the three workshops, integrate different views and regional differences, and develop a final set of practical principles and operational guidelines for the sustainable use of biological diversity (decision VI/13). The Fourth Open-ended Workshop for the Sustainable Use of Biological Diversity was held from 6 to 8 May 2003 in Addis Ababa, Ethiopia. It developed a set of 14 practical principles and operational guidelines for the sustainable use of biodiversity (see UNEP/CBD/WS-Sustainable Use/4/4). The results of the fourth workshop were submitted to the ninth session of the Convention's Subsidiary Body on Scientific, Technical and Technological Advice for its consideration in November 2003 and subsequently forwarded to the seventh meeting of the Conference of the Parties (COP 7) in February 2004. The Conference of the Parties, at its seventh meeting adopted the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity (herein referred to as "Principles and Guidelines").

13. In adopting the Principles and Guidelines, reservations were expressed regarding its application to the agricultural biodiversity programme of work, and further consideration was called for. In concrete terms, the Conference of the Parties requested the Subsidiary Body on Scientific Technical and Technological Advice to explore the applicability of these principles and guidelines to agricultural biodiversity, as described in detail in the introduction to the present document.

C. Overview of discussions in recent workshops since the seventh meeting of the Conference of the Parties

14. Since the seventh meeting of the Conference of the Parties, the Executive Secretary organized a series of regional technical expert workshops with financial assistance from the Government of the Netherlands. The African Regional Workshop on Sustainable Use of Biological Diversity was held in Nairobi, from 12 to 15 December 2006, with support of Food and Agriculture Organization of the United Nations (FAO) (UNEP/CBD/RW-SU-Afr/1/2); the Latin American and Caribbean Workshop was held in Buenos Aires from 13 to 16 September 2005 (UNEP/CBD/SBSTTA/11/INF/21); and the Eastern European Workshop was held in Moscow from 30 May to 2 June 2005 (UNEP/CBD/SBSTTA/11/INF/6).

15. The outcome of each of the workshops is reflected in this document, particularly from the last two meetings, which focused on the sustainable use of agricultural biodiversity. SBSTTA may wish to take note of the analysis and suggestions from the regional outcomes listed in these reports.

III. APPLICABILITY OF THE ADDIS ABABA PRINCIPLES AND GUIDELINES ON SUSTAINABLE USE OF BIOLOGICAL DIVERSITY TO THE SUSTAINABLE USE OF AGRICULTURAL BIODIVERSITY

16. In considering the applicability of the Guidelines and Principles, different dimensions of agricultural biodiversity need to be taken into consideration; that is to say, the focus is not to be exclusively on the genetic level but also on broader issues related to ecosystem service and functions, inside and outside of a wide range of farming systems, including cultivated, pastoralist, livestock and aquatic production systems. The applicability of the principle may vary depending on the components of agricultural biodiversity that are being considered.

17. As discussed in the methodology section, the discussions are based on the outcomes of the regional workshops, the third national reports submitted under the Convention on Biological Diversity, other reports from relevant bodies, and inputs from the relevant international partners, in particular the Food and Agriculture Organization of the United Nations (FAO).

18. While all of the elements of the programme of work on agricultural biodiversity and the Guidelines and Principles are compatible, a few activities are particularly relevant. Roughly half of the Principles are relevant to activities 2.2 and 2.3 in element 2 of the programme of work. The table below illustrates the activities of the programme of work on agricultural biological diversity and principles from the Principles and Guidelines that are interlinked (the table provides examples and is not meant to be exhaustive). It highlights the synergy between the two. Parties are largely in line with the Principles and Guidelines if they are implementing the activities from the programme of work, particularly those listed in the table. Further discussions of individual principles are examined in the following section.

Programme of work on agricultural biological diversity	**Relevant Principle in the Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity**
Programme element 1, activity 1.2: Promote and develop specific assessments of additional components of agricultural biodiversity that provide ecological services, drawing upon the outputs of programme element 2. This might include targeted assessments on priority areas (for example, loss of pollinators, pest management and nutrient cycling).	5, 10
Programme element 1, activity 1.3: Carry out an assessment of the knowledge, innovations and practices of farmers and indigenous and local communities in sustaining agricultural biodiversity and agro-ecosystem services for and in support of food production and food security.	4, 11
Programme element 2, activity 2.2: Identify and promote the dissemination of information on cost-effective practices and technologies, and related policy and incentive measures that enhance the positive and mitigate the negative impacts of agriculture on biological diversity, productivity and capacity to sustain livelihoods (abbreviated).	1, 3, 4, 7, 8, 11, 13
Programme element 2, activity 2.3: Promote methods of sustainable agriculture that employ management practices, technologies and policies that promote the positive and mitigate the negative impacts of agriculture on biodiversity, with particular focus on the needs of farmers and indigenous and local communities.	1, 2, 5, 7, 9, 10, 11
Programme element 3, activity 3.1: Promote enhanced capabilities to manage agricultural biodiversity by promoting partnerships among researchers, extension workers and farmers in research and development programmes for biological diversity conservation and sustainable use of biological diversity in agriculture. To achieve this, countries should be encouraged to set up and maintain, *inter alia*, local-level forums for farmers, including indigenous farmers using traditional knowledge, researchers, extension workers and other stakeholders to evolve genuine partnerships, including training and education programmes.	4, 6, 9

Programme element 3, activity 3.2: Enhance the capacity of indigenous and local communities for the development of strategies and methodologies for *in situ* conservation, sustainable use and management of agricultural biological diversity, building on indigenous knowledge systems.	4, 6, 9, 11
Programme element 3, activity 3.4: Identify and promote possible improvements in the policy environment, including benefit-sharing arrangements and incentive measures, to support local-level management of agricultural biodiversity.	3, 8, 11
Programme element 4, activity 4.1: Support the institutional framework and policy and planning mechanisms for the mainstreaming of agricultural biodiversity in agricultural strategies and action plans, and its integration into wider strategies and plans for biological diversity (abbreviated)	5, 7

A. Applying principle 1 to agricultural biodiversity

Practical principle 1: ***Supportive policies, laws, and institutions are in place at all levels of governance and there are effective linkages between these levels.***

19. This principle is valid at the basic level for the sustainable use of agricultural biodiversity. It is foreseen that national governments will play a central role in ensuring the effective linkages at all levels of governance by taking into account the existing local customs and laws.

20. In addition to the existing text of the Principles and Guidelines, experts suggest the more effective integration of *in situ* and *ex situ* conservation of agrobiodiversity since one of the main concerns of agrobiodiversity is its continued evolution and adaptation to changing contexts (human management, climate change, etc.) through sustainable use. Also there is a need to differentiate long- and short-term approaches, while taking the cross-cutting nature of the issue into consideration.

21. The principle is compatible with three elements in the programme of work on agricultural biodiversity (annex to decision V/5): element 2 on adaptive management, element 3 on capacity-building and element 4 on mainstreaming. Listed activities in adaptive management address identification of appropriate policy and legal measures. Activities under capacity-building and mainstreaming can be interpreted as the means to bring congruence of governance at all levels. Farmers 1/ and consumers need to be aware, through training and outreach activities, of the ongoing international and national policy-making that would affect their lives, while the discussions on governance will need to reflect needs and issues at the local level. Governments are encouraged to listen to farmers, as well as local and indigenous groups.

22. Both principle 1 and the programme of work on agricultural biodiversity emphasize the role of national governments for linking the local and international levels. The programme of work explicitly points out that capacity-building and mainstreaming are to be implemented primarily at the national level ("ways and means"). Similarly, principle 1 states that "the primary means for achieving congruence between local and international levels of governance should be through national Governments" ("rationale"). In both contexts, national Governments are encouraged to create congruence at all levels for the sustainable use of agricultural biodiversity. In most countries, responsibility for ensuring congruence at the local level rests with local governments.

1/ The term farmers includes pastoralists in the African context. This point was emphasized in the regional workshop.

23. There are also slight differences in the stakeholders mentioned in the programme of work and Principle 1. Principle 1 generally refers to the local level and Articles 8(j) and 10(c) of the Convention. Element 2 emphasizes farmers, and indigenous and local communities. In element 3, the organizations listed are more specific, such as farmers, extension services, local government, educational and civil-society organizations, including farmer/producer and consumer organizations. Similarly, suggested mechanisms in the programme of work are concrete and specific, such as farmers and farmers' organizations at the regional level for exchange of information and experience. In applying principle 1 to agricultural biodiversity, the beneficiaries listed in the programme of work are to be taken into consideration.

24. Principle 1 focuses on governance, legislation, policies, incentive measures and integration of the local and traditional elements at all levels. The programme of work addresses these issues at the operational level, suggesting concrete operational and management tools, such as collection of case-studies and capacity-building, partly in order to create linkages between supportive policies, laws and institutions at all levels. Principle 1 and the programme of work are thus compatible at the operational level.

1. The third national reports submitted under the Convention on Biological Diversity

25. The Parties to the Convention on Biological Diversity made the following points in their third national reports:

(a) Empowerment of the local community, in particular indigenous people, was considered critical in many contexts (Philippines);

(b) Involving different ministries and organizations creates horizontal synergy that is critical in strengthening the vertical linkages between local, regional and international governance (Austria).

Linkage between the local and national levels was well addressed, with a number of examples of economic incentives, yet the national and international dimensions are not fully illustrated in many reports

2. Regional workshops under the Convention on Biological Diversity

26. In the African Regional Workshop on Sustainable Use of Biological Diversity, practical needs were expressed in implementing the Principles and Guidelines (UNEP/CBD/RW-SU-Afr/1/2). Specifically, the following were pointed out as necessary steps for principle 1:

(a) Streamline national and international policies (agriculture, environment, land, trade, etc) to enable and enhance the conservation and sustainable use of agro-biodiversity;

(b) Develop relevant national legislation, including by-laws for local communities and explore other instruments to better match short-term goals of land users with longer term goals (for example participatory planning processes, financial and non financial incentive measures);

(c) Promote interactions amongst relevant institutions at national settings, including a multi-stakeholder process for specific actors, such as pastoralists and other groups that manage natural resources and ecosystems for the provisioning of food, fuel and other goods and services;

(d) Establish mechanisms to identify and solve conflicts;

(e) Decentralize while securing transparency through monitoring and prevention of corruption.

27. Other suggestions from the workshop were to make operational guidelines more specific so that they could serve as a quick reference. An example from Uganda demonstrated that the Principles and Guidelines have been applied to agricultural biological diversity by creating synergy between agricultural product policies at the local and regional level. The presentation was conducted by an expert from Uganda with focus on technology and policy instruments appropriate for the local communities.

28. The Latin American and Caribbean Workshop suggested a new operational guideline to create mechanisms for strengthening rural lifestyles and contributing to *in situ* conservation and sustainable use of agricultural biodiversity (UNEP/CBD/SBSTTA/11/INF/21).

B. Applying principle 2 to agricultural biodiversity

Practical principle 2: Recognizing the need for a governing framework consistent with international 2/national laws, local users of biodiversity components should be sufficiently empowered and supported by rights to be responsible and accountable for use of the resources concerned. 3/

29. Empowering local users of biodiversity components, and supporting their rights to access to the resources required to achieve sustainable agricultural development including land, water, crop, livestock and aquatic genetic resources, are required in order to foster responsible and accountable use of resources. This fact should be taken into account when crafting governing frameworks consistent with international and national laws.

30. Decentralization and empowerment, especially at the local and community level, are two facets of the conventional wisdom of much of current conservation and sustainable use management. These elements of principle 2 are frequently included in the best practices and adaptive management of the programme of work and implemented national activities. This approach is endorsed by a number of case-studies illustrating the ecosystem approach in the national reports submitted by Parties.

31. Case-studies illustrating the ecosystem approach at the local and community levels, and national reports submitted by Parties, demonstrate that empowerment of local communities is a successful form of conservation and sustainable use management. Decentralization, an important element of principle 2, is necessary for successful adaptive management. Thus, principle 2 is an integral component of the sustainable use of agricultural biodiversity. It is compatible with the ecosystem approach, the programme of work on agricultural biodiversity and the implementation of Article 8(j). Furthermore, the principle is compatible with Article 6 of the International Treaty on Plant Genetic Resources, which has a section on Farmers' Rights.

32. Principle 2 and its operational guideline have cross-references to other principles (principle 2 of the ecosystem approach) and programmes (the programme of work related to the implementation of Article 8(j)).

33. Three relevant elements in the programme of work overlap with the Principle 2: element 2 on adaptive management, element 3 on capacity-building, and element 4 on mainstreaming. Activities listed

2/ Where consistency with international law is referred to this recognizes: a) that there are cases where a country will not be a party to a specific international convention and accordingly that law will not apply directly to them; and b) that from time to time countries are not able to achieve full compliance with the conventions to which they are a party and may need assistance.

3/ See principle 2 of the ecosystem approach.

in element 2 include case-studies to identify best-management practices, while element 2 refers to capacity-building for indigenous and local communities.

34. Anticipated actions for the Parties and Governments vary somewhat between principle 2 and the programme of work. The key term for principle 2 is "delegation" to indigenous and local communities, while the language in the programme of work is to "identify best management practices," and "strengthen capacity" of stakeholders, including local and indigenous groups. Conservation of agrobiodiversity does not depend only on *in situ* conservation (e.g. by local resource users) but also on national support for *ex situ* conservation (e.g. for improved breeding to adapt to change, to control pests and diseases, and for restoration after disasters) and the provision of a supportive policy and strategic framework that enables farmers/herders/fisherfolk to continue to use local and indigenous species and varieties in viable and sustainable production systems.

1. The third national reports submitted under the Convention on Biological Diversity

35. Question 164 in the third national report, which looks at the interactions between agricultural practices and the conservation and sustainable use of biodiversity, is relevant to local rights and stewardship. The biodiversity component here includes socio-economic and cultural dimensions, such as (i) traditional and local knowledge of agricultural biodiversity, cultural factors and the participatory process; (ii) tourism associated with agricultural landscapes; and (iii) other socio-economic factors.

36. Activities in the reports fall under two categories: farming practices and socio-economic activities. The former includes development of sustainable farming practices (Vanuatu), support of organic farming methods (Australia) and strategies for protecting cultures and technologies in agriculture (France). The latter includes a socio-economic survey (Lebanon) and a study of traditional agricultures and their impacts (Mexico, Morocco).

37. The descriptions of the Parties focused on legislative and technical aspects of the assessments. Insufficient information was available regarding concrete actions on socio-economic components, in particular the relationship to traditional and local knowledge.

38. Question 170 is also relevant as it addresses the improved policies (i.e., benefit-sharing and incentives) to support local management of agrobiodiversity, as discussed under principle 1. Reported activities ranged from legal to managerial issues. New legislation and laws were reported, such as indigenous people's right (Philippines). Ongoing activities reported include the drafting of the Seed Act and Breeder's Right Bill (Mauritius). As for positive changes in management, the tendency to increase the role of local people in protection was reported (Syrian Arab Republic). Generally, the descriptions in the report focused on legal rights; fewer comments were made as to stewardship in implementation.

2. Regional workshops under the Convention on Biological Diversity

39. Participants in the African Regional Workshop on Sustainable Use of Biological Diversity singled out land tenure as one of the underlying issues, in particular for common property resources. Land stewardship is closely linked to land tenure and security of land use. Support for communities at the local level was considered necessary, as they alone cannot shoulder responsibility. In addition, benefits should flow back to the resource-managing community for the practice to be sustainable. Critical comments were expressed regarding a bias towards protected areas in principle 2 and the need for modifications in applying it to agricultural biological diversity. Workshop participants identified the need to contextualize the principle in African practices, taking account of the following aspects:

(a) Types of resources (crop, livestock, pasture, aquatic, wild foods, landraces, beneficial predators, pollinators, soil organisms etc);

(b) Indigenous crop and livestock germplasm (network for the exchange of these resources);

(c) Wild resources important for the rural poor (indigenous trees, wild collective plants resources);

(d) Soil and water quality, soil degradation, soil and water conservation;

(e) Expansion of farmland (e.g. river-line, wetlands, mountainous areas, semi arid areas); and

(f) Control of unsustainable intensification.

40. In the Latin American and Caribbean Workshop, the creation of an applied research agency in charge of transferring and promoting sound agricultural practices, and of addressing sustainability issues based on existing institutional models in the region, was suggested. It was also requested that further guidance be provided on the involvement of stakeholders: their involvement should be from the bottom up and based on the understanding that participation entails commitment.

C. Applying principle 3 to agricultural biodiversity

Practical principle 3: International, national policies, laws and regulations that distort markets which contribute to habitat degradation or otherwise generate perverse incentives that undermine conservation and sustainable use of biodiversity, should be identified and removed or mitigated.

41. This principle is pertinent to, and consistent with, the sustainable use of agricultural biodiversity. For instance, further to requests by the Conference of the Parties at its fifth and sixth meetings, 4/ the Executive Secretary studied the impact of trade liberalization on agricultural biodiversity, in particular the role of domestic support measures in agriculture, 5/ and concluded that "the process of reducing trade-distorting domestic support policies has the potential to generate synergies with the objectives of the Convention on Biological Diversity to conserve and sustainably use biological diversity. Specifically, a reduction of Amber Box support policies 6/ can contribute to easing the pressure on agricultural biodiversity stemming from agricultural expansion and intensification, especially if complemented with well-designed "flanking" policies both in implementing and in other countries." The Conference of the Parties took note of this study at its seventh meeting. 7/ Policies which create perverse incentives for the sustainable use of agricultural biodiversity include examples such as subsidies on hybrid seeds, reducing incentives to maintain traditional varieties, or subsidies for pesticide use leading to overuse, and a decline in diversity in agricultural ecosystems.

42. The principle is also reflected in other guidance developed under the Convention, such as: principle 4 (a) of the ecosystem approach, guideline (i) of the guidelines for selecting appropriate and complementary elements, contained in the proposals for design and implementation of incentive measures (see decision VI/15, annex I, and decision VII/18, paragraphs 1-7 and annex, for further work on perverse incentives, including interim guidance).

43. While not explicitly referring to perverse incentives and their removal or mitigation, the programme of work on agricultural biodiversity foresees, under activity 2.2 (c) identification, at

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4/ Decisions IV/6, paragraph 10, VI/5, paragraph 17.

5/ See document UNEP/CBD/COP/7/INF/14, an updated version of which was subsequently published as CBD Technical Series No. 16.

6/ Trade-distorting support is labelled as 'Amber Box' according to the WTO classification (explanatory footnote added).

7/ Decision VII/3, paragraph 6.

international and national levels, in close collaboration with relevant international organizations, of appropriate marketing and trade policies that promote an integration of non-market values of diversity into marketing processes, legal and economic measures which may support beneficial practices, which may include the removal or mitigation of market distortions that generate perverse incentives.

1. The third national reports submitted under the Convention on Biological Diversity

44. The incentives mentioned in the third national reports are primarily positive incentives, mostly persuading farmers to practise environmentally friendly agriculture. Almost no reference is made to the removal of market-distorting measures and perverse incentives, an approach endorsed in the synthesis report on incentive measures, which indicates that measures associated with agriculture featured most prominently in the range of monetary positive incentive measures. 8/

45. Agricultural measures were prominent also in discussions of removal or mitigation of perverse incentives. A number of Parties also reported on specific means and mechanisms, such as the review of the tax system, the application of environmental impact assessment procedures, organizational measures or reforms, including the establishment of commissions and new authorities. Parties referred to regulations and their enhanced enforcement as a means to mitigate perverse incentives. Some Parties underscored the importance of stakeholder involvement.

46. In question 170 of the third national report, Parties partially addressed incentive and policy issues by asking for improved policies (i.e., benefit-sharing and incentives) to support local management of agrobiodiversity. Responses related to Principle 3 focused on positive incentive measures for providing support to practise environmentally friendly agriculture. Amongst these incentives, some measures targeted sustainable use, such as incentives for conservation and sustainable use of agricultural biodiversity (Uganda), and incentives for indigenous breeds (Croatia).

2. Regional workshops under the Convention on Biological Diversity

47. Perverse incentives were discussed in the African Regional Workshop on Sustainable Use of Biological Diversity. The need to support farmers to diversify was expressed as an incentive to restore degraded lands and enhance livelihoods. Issues related to seeds and incentives were discussed, including that the seed system should cover domestic races and local varieties rather than "established" crops, toward which there is often a bias. Experts in the workshop pointed out that food and famine relief programmes often depend on imported seed and that there is a risk that free seed and foreign aid can lead to dependency. Subsidies and tax advantages for specific export commodities can become a form of perverse incentive if the points above are not properly taken into account.

48. A few sectors were identified, such as the dairy industry and the chemical sector for fertilizer and pesticides. The energy sector is becoming increasingly relevant to agriculture. The policies mentioned in the workshops that can potentially cause market distortions were:

(a) Food and famine-relief programmes that depend on imported seed;

(b) Subsidies on pesticides;

(c) Development of wetlands and riverine areas;

8/ See document Synthesis report of information on incentive measures provided by Parties in the third national reports (**1st unedited version**)

(d) Extension policies biased towards cash crops, away from integrated systems approaches that also address land and water resources and ecosystem service management;

(e) Inappropriate water management.

49. In the Latin American and Caribbean Workshop, market forces were highlighted in the context of access and conservation of genetic resources. If the market for genetic resources is inadequately regulated, the resulting distortions will be unacceptable because they will entail appropriation of the value of collective and heritage resources. The ongoing negotiations under the Convention on Biological Diversity of an international regime for access to genetic resources and benefit-sharing is strategically important and should take into consideration the International Treaty on Plant Genetic Resources for Food and Agriculture of the Food and Agriculture Organization of the United Nations (FAO).

50. In summary, the importance of considering informal and formal seed and market systems by involving different sectors and stakeholders, including indigenous farmers and the private sector, was highlighted in the discussions.

D. Applying principle 4 to agricultural biodiversity

Practical principle 4: Adaptive management should be practised, based on:

- ***Science and traditional and local knowledge;***
- ***Iterative, timely and transparent feedback derived from monitoring the use, environmental, socio-economic impacts, and the status of the resource being used; and***
- ***Adjusting management based on timely feedback from the monitoring procedures.9/***

51. Principle 4 is applicable to the sustainable use of agricultural biodiversity. Adaptive management plays a central role for sustainable use of agricultural biodiversity. In their daily routine, farmers are constantly adapting their practices based on timely feedback from monitoring and based on scientific, traditional and local knowledge. Adaptive management is also one of the four main elements of the programme of work.

52. Integrating feedback and adaptive management between farmers and other key stakeholders in the agricultural sector is also central. One example is given by the case of plant breeders and farmers interacting in the development of new crop varieties using a system of participatory plant breeding.

53. The main question is the implementation of the feedback and monitoring procedures, based on the discussions from the ecosystem approach. The difficulties seem to lie at the operational level in obtaining feedback and monitoring. Most Parties are at the stage of establishing or implementing the monitoring system in general, and it remains to be seen how the monitoring activities, including those in the framework of the 2010 biodiversity target will provide feedback to management on the ground.

54. The principle includes a provision for "suspension of unsustainable practices" as a measure. Understanding the underlying causes of such unsustainable practices, in particular from local contexts, is critical if any measures to suspend them are to be taken and sustained. In addition, the principle highlights that a quick response is necessary (*Operational Guidelines*). However this may not be always possible, notably if the driving forces behind the unsustainable practices are to be tackled - which is more likely to have significant impact and long term success than addressing only the direct causes. Given the

9/ See principles 9 and 11 of the ecosystem approach.

current level of monitoring, the application of the principle, including the quick suspension measures, depends on the monitoring activities that are yet to be in place.

1. The third national reports submitted under the Convention on Biological Diversity

55. There are relevant questions in the third national reports. In particular, question 167 focuses on adaptive management, asking Parties to describe implemented activities and policies in the field. One of the key terms was "knowledge-based management". Management examples provided include management based on traditional knowledge for practices and technologies that encourage positive effects, mitigate negative effects, and enhance productivity (Mauritania), monitoring of invasive species (Saint Vincent & the Grenadines) and small-scale irrigation systems (Cambodia) based on adaptive management. There were cases for developed countries, such as the Environmental Health Program to develop knowledge and technologies that minimize the impact of agricultural production on soil, air, water and biodiversity while maintaining the sustainability of the sector (Canada).

2. Regional workshops under the Convention on Biological Diversity

56. In the African Regional Workshop on Sustainable Use of Biological Diversity, several suggestions were made regarding the application of the principle to agricultural biological diversity:

(a) Create a mechanism for participatory research, combining traditional knowledge and other knowledge (modern technologies) with farmers. Promote interdisciplinary research and approaches (cf. principle 6);

(b) Promote decentralized adaptive co-management at the community level;

(c) Develop strategies for changing from unsustainable to sustainable practices (such as short-term slash-and-burn agriculture and overgrazing) to sustainable practices through training and tools (for example no-tillage technology, holistic management for more productive and sustainable pasture/rangelands, sustainable intensification);

(d) Design indicators by involving local communities; use local monitoring tools and incentives;

(e) Approval and recognition of intellectual property rights of knowledge holder, in particular for traditional knowledge.

57. Similar to point (d) above, the Latin American and Caribbean Workshop also suggested the creation of an environmental information system, including environmental performance indicators and economic valuation of environmental services.

E. Applying principle 5 to agricultural biodiversity

Practical principle 5: Sustainable use management goals and practices should avoid or minimize adverse impacts on ecosystem services, structure and functions as well as other components of ecosystems. 10/

58. Different dimensions of agricultural biodiversity are to be considered in the application of the principle. For simplicity of discussion, the applications are considered on both operational and genetic levels. Principle 5 applies to both levels.

10/ See principles 3, 5 and 6 of the ecosystem approach.

59. Agricultural practices and products (in the range of cropping, livestock and aquatic farming systems) are intimately linked with one form of ecosystem services, namely **the provisioning services** that provide goods and services derived both from agricultural and wider biodiversity. As agriculture practices depend on the use of land, water and biological resources they are also of great importance for the maintenance of **regulating services**, in particular, nutrient cycling, carbon sequestration (above and below ground) and maintenance of the hydrological regime and water quality. Goals and practices for agriculture and agricultural biodiversity should, therefore, avoid or minimize adverse effects to the natural resources and ecosystems on which they depend. Indeed this is crucial in order to maintain the productive capacity, adaptability and resilience of production systems. Fresh water, pollination, soil, and the nutrient cycle, key underlying issues for sustainable use, are listed in the programme of work as components of agricultural biodiversity that provide ecological services (decision V/5, annex).

60. The set of ecosystem services generated in the process of agricultural production varies tremendously depending on specific practices and agro-ecological conditions. At present, aside from agricultural products, most ecosystem services are not valued and thus tend to be underprovided in favour of agricultural products. In some cases, a shift in agricultural practices to obtain a better mix of ecosystem services provided from agro-ecosystems will require new incentives. Key services which agricultural ecosystems need to provide in higher levels for sustainable use include maintenance of water quality, hydrological functions, soil quality and nutrient cycling.

61. The socio-economic aspect of agricultural biodiversity is relevant to this principle. Agricultural activities are often rooted in the livelihood, well-being and social relationships of rural communities, frequently affecting health, food, and education, in addition to income.

62. The precautionary principle, a key concept highlighted in the rationale of the principle, is regarded as an integral element of management goals and practices when using modern technology. In past discussions, including those of the Conference of the Parties, the use of modern technology in the context of agricultural biodiversity was highlighted and developed in line with the precautionary principle.

63. The elements outlined in the principle can be found in the programme of work. Supportive activities for forming goals and practices to avoid or minimize adverse impacts on ecosystem services are found across the programme of work. For example, activity 4.1 (b) promotes policy frameworks generally for the sustainable use of agricultural biodiversity. Activity 4**.**4 addresses the issues at the genetic level through the support for *in situ* conservation on farms, which includes the precautionary approach to the possible adverse effects of the use of modern technology.

1. The third national reports submitted under the Convention on Biological Diversity

64. The discussions in the third national reports addressed goals and practices both at the operational and genetic levels.

65. At the genetic level, a few Parties reported on establishing national laws and committees to cope with the use of genetic use restriction technologies, including their potential adverse effects. However, the measures and assessments for these purposes were not conducted to their full extent due to inadequate human, technological and financial resources, alternative technology and absence of monitoring practices.

66. At the operational level, a number of Parties integrate the principle by putting in place flexible and adaptive policies and frameworks. By doing so, unforeseen adverse impacts can be contained in the early stages as they are identified during the implementation phase.

2. Regional workshops under the Convention on Biological Diversity

67. In the African Regional Workshop on Sustainable Use of Biological Diversity, discussions were mainly on positive actions to avoid and minimize adverse impacts. The actions included:

(a) Promote landscape management approaches in areas of critical biodiversity and other ecosystem service value (e.g. upstream watersheds, habitats for associated species), including special use designations. Integrate agricultural biological diversity into landscape management (e.g. hedgerows, field borders, woodlots, etc). The approach should address diversity at different spatial levels of farms and landscapes;

(b) Support common property and effective co-management of land areas, including rangelands, wetlands, and forested lands that contain important genetic resources. Maintaining farmer access to the resources often has a positive effect;

(c) Development of alternative technologies and managements, such as agro-ecological approaches to mimic natural systems (including organic agriculture and conservation agriculture systems and holistic management of pasture/rangelands); and

(d) Develop regulations for community participation in management at wider ecosystem and landscape levels.

68. In the Latin American and Caribbean Workshop, the importance of valuating ecosystem services on different scales was highlighted as one way to avoid and minimize adverse impacts on ecosystem services, structure and functions as well as other components of ecosystems.

F. Applying principle 6 to agricultural biodiversity

Practical principle 6: Interdisciplinary research into all aspects of the use and conservation of biological diversity should be promoted and supported.

69. Principle 6 is essential in the context of agricultural biodiversity. The components of agricultural biodiversity are highly complex and require interdisciplinary research, incorporating social and natural sciences ranging from genomics, agronomy, ecology, rural sociology and economics amongst others.

70. The need for interdisciplinary research is also obvious from necessity of assessing the overall positive and negative impact of various agricultural production systems on agro-ecosystems and the factors that influence choice of production technologies. Well managed agricultural production systems can generate a range of positive ecosystem services including conservation of genetic and other forms of biodiversity, maintaining pollinator habitat and watershed improvement. However, pressures on agricultural production to meet the rising demand for food can potentially reduce biodiversity, and this can be exacerbated without proper policy and management regimes. Clearly the ecosystem approach to management is needed, where an interdisciplinary approach is a central element. In particular, principle 12 of the ecosystem approach states involvement of all relevant scientific disciplines. 11/

71. There are also on-going international efforts in the development of an interdisciplinary approach to research. For example, the Platform for Agrobiodiversity Research was launched in order to support research action on the loss of biodiversity in and around areas of agricultural. 12/

11/ Principle 12: The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

12/ Decision VII/3.

72. The purpose here is not to celebrate the interdisciplinary nature of the approach *per se*. What is needed is the research that will, in turn, promote implementation of the activities that will promote the sustainable use of agricultural biological diversity. Interdisciplinary research is a means of achieving this goal, since research activities can be translated into action.

73. The need for an interdisciplinary approach is pointed out clearly in the programme: of work: "much more research is needed, for example, to examine the relationship between diversity, resilience and production in agro-ecosystems" (*Rationale, Adaptive Management*). The topics are all complex and will require interdisciplinary approaches.

1. The third national reports submitted under the Convention on Biological Diversity

74. The third national report showed some encouraging signs from developing countries. Kenya presented their ambitious network plan in agricultural research that covers all ecological zones, including fisheries, forests and wildlife. Mexico launched an agricultural research programme, involving 20 universities and various disciplines. Viet Nam included a review of research institutions to enable interdisciplinary approach as one of the strategic options.

75. Parties are implementing organizational changes in an adaptive manner in order to reflect the needs for institutional capacity-building. The examples demonstrate that Principle 6 and its interdisciplinary approach are fully applicable to agricultural biodiversity.

1. Regional workshops under the Convention on Biological Diversity

76. In the African Regional Workshop on Sustainable Use of Biological Diversity, a number of concrete research topics were proposed for applying Principle 6 to agricultural biological diversity.

(a) Development of strategies for knowledge management in a participatory manner;

(b) Promotion of interdisciplinary participatory research to encompass production, provision of ecosystem services, biodiversity conservation and livelihood systems;

(c) Research on rural livelihoods and indicators to measure ecosystem services;

(d) Collect and compile information to build on farmer innovation and modern scientific approaches, including information-sharing partnerships between researchers and farmers.

77. The Latin American and Caribbean Workshop suggested, based on existing institutional models in the region, the creation of an applied research agency in charge of transferring and promoting sound agricultural practices, and of addressing sustainability issues.

G. Applying principle 7 to agricultural biodiversity

Practical principle 7: The spatial and temporal scale of management should be compatible with the ecological and socio-economic scales of the use and its impact 13/

78. This principle applies to the sustainable use of agricultural biodiversity but it requires special consideration due to agriculture's vast spatial and short-term temporal scale.

13/ See principles 2 and 7 of the ecosystem approach.

79. Agricultural land occupies a vast area. Nearly one quarter (24%) of the world's land area is used for food production, making agriculture the largest area of human activity, according to the Millennium Ecosystem Assessment. Agriculture is also the primary user of fresh water. Thus, the impacts of agricultural activities are not confined within the boundaries of farms or fields.

80. What measures could ensure that these spatial and temporal scales are compatible with the ecological and socio-economic scales? Clearly, public participation, as listed in the operational guidelines, and the ecosystem approach to management are needed. Also, sectors at each level of the product chain need to respond to both ecological and socio-economic changes in an adaptive manner. Much remains to be done to inform and raise awareness of consumers regarding the spatial scales and impacts of agricultural activities, and their compatibility with the ecological scale.

81. Principle 7 is compatible with adaptive management, the second element of the programme of work. Although the programme of work does not specifically refer to spatial or temporal scales, it does include actions to promote local participation, fostering accountability at the local level. Furthermore, both approaches require mainstreaming of biodiversity issues into other sectors in the product-chains and sectors outside of agriculture. Promotion of public awareness is another means of balancing the compatibility of the two scales, and relevant activities are listed in the fourth element of the programme of work.

1. The third national reports submitted under the Convention on Biological Diversity

82. Parties reported laws, capacity-building and institutional changes aimed at integrating environmental elements. Progress has been made, but more actions are necessary in order to comprehend the vast area and diverse sectors involved.

2. Regional workshops under the Convention on Biological Diversity

83. Participants in the African Regional Workshop on Sustainable Use of Biological Diversity requested clarification of the intent of the guideline, and it was suggested that more practical explanations could be useful when applying the principle to agricultural biological diversity. The following topics were raised as points to be taken into consideration for the application:

(a) Consider impacts of agricultural practices on neighboring ecosystems (such as cotton production and water usage);

(b) Compatibility between management and scale of resource use (utilization and capacity must be compatible);

(c) Organize stakeholder processes to optimize use of resources used by different groups and ensure involvement of all concerned groups in decision-making;

(d) Promote longer-term management plans for farmers, including pastoralists and fisherfolk, to account for seasonality and long-term strategies for example coping with drought;

(e) Implement adaptive management to address impacts of climate change and variability.

84. Participants in the Latin American and Caribbean Workshop suggested that decision-making be decentralized and users empowered, and the possible establishment of a new entity. They also pointed out that information systems should be improved by reflecting environmental performance indicators and economic valuation of environmental services.

H. Applying principle 8 to agricultural biodiversity

Practical principle 8: There should be arrangements for international cooperation where multinational decision-making and coordination are needed.

85. Principle 8 fully applies to the sustainable use of agricultural biodiversity. Transboundary movement of genetic resources, including those of agricultural biodiversity or food and nutrition, is a focus of the Convention on Biological Diversity, the International Treaty on Plant Genetic Resources and other international organizations such as Food and Agriculture Organization of the United Nations (FAO). Measures to prevent over-utilization are discussed under the auspices of the Convention and the Treaty, and technological transfer is actively promoted under both international processes.

86. Transboundary agricultural lands that are geographically shared between States and Governments are less common than are marine or forest biomes if only cultivated lands are considered. However, pasture and rangelands may also be transboundary and are often co-managed by pastoralists across the countries that share the resources. Shared ecosystem services, habitats and migratory species are common to the range of transboundary production systems, for instance, in the case of migratory birds on farmland and the hydrological regime e.g. transboundary river basins and watersheds.

87. Activities related to international cooperation are under the activities in the programme elements of adaptive management and capacity-building. Activity 2.2 is of particular relevance as it explicitly refers to "relevant international organizations". Activity 3.4 refers to benefit-sharing arrangements, which involve international cooperation for the transboundary movement of genetic resources.

1. The third national reports submitted under the Convention on Biological Diversity

88. Activities related to international cooperation reported by the Parties in the third national reports can be arranged into two categories. The first category is technology transfer. A number of activities are reported for the sustainable use of agricultural biodiversity. Lesotho reported a development project with Germany to enhance their knowledge on practices sustaining agrobiodiversity and agro-ecosystem services. Cameroon reported their international collaboration when establishing their National Biodiversity Strategy and Action Plan (NBSAP). The Czech Republic, Korea, Ghana and Guatemala, for example, reported their activities in the framework of FAO and CGIAR assessment activities of status and trends in plant and animal genetic resources.

89. The second category is collaboration in *ex situ* conservation. In northern Europe, the Nordic Gene Bank has been established, and international cooperation has been promoted. Similar projects are underway in Africa. Myanmar reported their collaboration with Japan in establishing their gene bank, which is also an example of technology transfer.

2. Regional workshops under the Convention on Biological Diversity

90. In the Latin American and Caribbean Workshop**,** it was pointed out that the concept of cross-border resources in principle 8 could be interpreted differently in the context of agricultural biodiversity, mainly because conservation is local, whereas benefits are global. The arrangements for international cooperation need to reflect this discrepancy in a comprehensive manner.

I. Applying principle 9 to agricultural biodiversity

Practical principle 9: An interdisciplinary, participatory approach should be applied at the appropriate levels of management and governance related to the use.

91. Principle 9 generally applies to the sustainable use of agricultural biodiversity. Interdisciplinary approaches, in both practice and research, have been regarded as necessary to cover the comprehensive nature of agricultural biodiversity. As outlined in the programme of work on agricultural biodiversity, there are multiple ecosystem services provided by agricultural biodiversity. These include (but are not limited to):

(i) Nutrient cycling, decomposition of organic matter and maintenance of soil fertility;

(ii) Pest and disease regulation;

(iii) Pollination;

(iv) Maintenance and enhancement of local wildlife and habitats in their landscape;

(v) Maintenance of the hydrological cycle;

(vi) Erosion control; and

(vii) Climate regulation and carbon sequestration.

92. In addition to these direct ecosystem services there are also socio-economic and cultural dimensions related to agricultural biodiversity as well as issues related to traditional knowledge. Therefore a participatory and interdisciplinary approach, as outlined in principle 9, is needed to maintain these various ecosystem services.

93. Participatory approaches, at the local and traditional level, are outlined in the operational guidelines of the programme of work on agricultural biodiversity. As such, principle 9 is compatible with the programme of work on agricultural biodiversity.

1. The third national reports submitted under the Convention on Biological Diversity

94. There are a number of activities reported in the third national reports regarding interdisciplinary and participatory activities implemented by the Parties. As an example of an interdisciplinary and participatory approach, Brazil reported on its resolution to obtain an agreement with indigenous and local communities to access a component of the genetic heritage of their lands.

J. Applying Principle 10 to agricultural biodiversity

Practical principle 10: International, national policies should take into account:

- ***Current and potential values derived from the use of biological diversity;***
- ***Intrinsic and other non-economic values of biological diversity and***
- ***Market forces affecting the values and use.***

95. Principle 10 applies to agricultural biodiversity but requires specific considerations. The current and potential value of agricultural biodiversity is not limited to the agricultural product values as set by current agricultural markets, but also entails ecological services related to nutrient cycling, pest and

disease control, genetic resource conservation, resilience of agricultural production systems, pollination, erosion control and other elements, as seen in principle 9.

96. Since a significant share of the output from agricultural ecosystems is sold and valued through agricultural marketing channels, market forces affect agricultural biodiversity significantly. Non-market benefits of agricultural biodiversity are not accounted for in these exchanges and therefore some public sector intervention is needed to obtain sustainable use. International and national policies need to take the benefits and values of biodiversity into consideration. Further below-ground biodiversity plays a critical role in supporting production however this value may not be fully reflected in economic terms. Managing markets to promote sustainable use is a key means of promoting it. For example, conservation of underutilized crops may be supported by the development of markets for the products. The focus on a limited number of commercial crops is driven by market forces and efforts to expand consumer demands for diverse products can help offset this effect.

97. Market forces affect agricultural biodiversity significantly. Therefore international and national policies need to take the benefits and values of biodiversity into consideration. Furthermore, below-ground biodiversity plays a critical role in supporting production; however this value may not be fully reflected in economic terms. As pointed out in the operational guidelines of principle 10, it is important to "recognize that market forces are not always sufficient to improve living conditions or increase sustainability in the use of components of biological diversity." Maintenance of wild relatives and under-utilized crops often depends upon farmers' access to markets. Furthermore, the focus on a limited number of commercial crops is driven by market forces. As discussed in regard to principle 3, the Conference of the Parties requested that the effects of trade be considered and that reports be published on such matters. 14/

98. Principle 10 is compatible with the elements in the programme of work on agriculture biodiversity, which includes a wide range of activities related to research, management methods, and awareness-raising. Activities for awareness-raising are focused on multiple goods and services provided by agricultural biodiversity. International organizations, Parties and Governments are encouraged to implement policies and activities that reflect the intrinsic and other non-economic values of agricultural biodiversity.

1. The third national reports submitted under the Convention on Biological Diversity

99. A number of Parties reported that the current and potential value of agricultural biodiversity was being incorporated into their policies in order to improve the impacts of agriculture on biodiversity, enhance productivity and increase the capacity to sustain livelihoods.

100. Cambodia undertook a socio-economic analysis of agricultural farming systems, the analysis and monitoring of small-scale irrigation investments, and conducted a comparative financial and market analysis of existing farming technologies. Mauritius implemented policies that reflected the various ecosystem services of agricultural biodiversity, such as hydroponic culture, integrated pest management, low tillage practices, and use of greenhouses. In Portugal, farmers receiving direct payments for agricultural production are required to maintain their agricultural land in good agricultural and environmental condition, in order to avoid land abandonment and deterioration of habitats. In order to sustain the livelihoods of local people, Hungary has promoted agricultural practices based on the conservation of biological diversity and the sustainable use of natural resources by combining production and habitat development.

14/ See document UNEP/CBD/COP/7/INF/14, an updated version of which was subsequently published as CBD Technical Series No. 16.

101. As described above, Parties have been implementing policies that reflect current and potential economic, intrinsic and other non-economic values of agricultural biodiversity.

2. Regional workshops under the Convention on Biological Diversity

102. In the Latin American and Caribbean Workshop, participants suggested that minor amendments were needed to include agricultural ecosystems in addition to the implied assessments on "natural" systems or ecosystems. In general, however, agricultural biodiversity should be considered applicable, without need for further amendments. The Workshop also suggested promoting the creation of an environmental information system including environmental performance indicators and economic valuation of environmental services regarding this principle.

K. Applying principle 11 to agricultural biodiversity

***Practical principle 11:** Users of biodiversity components should seek to minimize waste and adverse environmental impact and optimize benefits from uses.*

103. Principle 11 applies to the sustainable use of agricultural biodiversity and other ecosystems. Waste from agricultural practices takes many forms, including waste water, plant remains and manure from intensive agricultural practices. It is critical to minimize the adverse environmental impacts of these wastes for the sustainable use of agricultural biodiversity and other ecosystems, including inland waters, forests and marine areas. It is important to note that reducing and decomposing waste from agricultural activities is one of the functions of agricultural biological diversity e.g. detoxification of pollutants in soils, composting of crop residues and other organic materials for soil organic matter restoration and control of diseases.

104. In the operational guidelines of principle 11, economic measures, such as the elimination of perverse incentives, are listed as means to promote the sustainable use of agricultural biodiversity. These largely overlap with principle 3.

105. The compatibility focuses on minimizing waste and its impact on agricultural biological diversity. Agricultural wastes are a part of the nutrient cycle, where below-ground biodiversity plays a critical role. The programme of work includes a cross-cutting initiative for the conservation and sustainable use of soil biodiversity. The Food and Agriculture Organization of the United Nations (FAO) is managing an important programme on livestock and the environment (LEAD) to reduce negative impacts of intensive livestock systems such as efficient waste use and management.

1. The third national reports submitted under the Convention on Biological Diversity

106. Israel reported that its financial incentives and infrastructure investment are designed to protect the environment from cowshed waste. Lebanon and Slovenia have also implemented soil and water resource management, recognizing the importance of below-ground biodiversity for the nutrient cycle. Benin conducted research on the impact of pesticides (DDT) on wild fauna in one of its national parks as a part of its commitment to research and develop improved methods to minimize waste and adverse environmental impacts. Turkey implemented a project in collaboration with the private sector, in order to prevent or minimize impacts on the environment. This collaboration had various participants, including farmers, staff of the Ministry of Agriculture and Rural Affairs, and representatives of fertilizer and pesticide companies.

107. There are number of incentive and fiscal measures in the operational guideline of the principle. Fewer comments were found in this respect, and it is one of the areas in need of further discussion and implementation.

L. Applying principle 12 to agricultural biodiversity

***Practical principle* 12: The needs of indigenous and local communities who live with and are affected by the use and conservation of biological diversity, along with their contributions to its conservation and sustainable use, should be reflected in the equitable distribution of the benefits from the use of those resources.**

108. In general, principle 12 applies to agricultural biodiversity. Farmers and indigenous and local communities have historically contributed to conservation by improving animal breeds and by maintaining the diverse species of crops, plants and animals. As discussed in regard to principle 2, relevant discussions are ongoing under the Convention on Biological Diversity, particularly with respect to Article 8(j) and the provisions on access and benefit-sharing, and the International Treaty on Plant Genetic Resources, in particular with regard to Article 6 and Farmers' Rights.

109. The principle applies at various levels and components of agricultural biodiversity. At the genetic level, farmers, and indigenous and local communities have been modifying and selecting plant, germplasm and animal breeds for generations. At the ecosystem level, various agricultural practices and methods have been adapted to local landscape and socioeconomic contexts.

110. The principle and the programme of work on agricultural biodiversity are compatible, and a similar expression of the "needs of farmers and indigenous and local communities" appears in the programme of work (activity 2.3). The benefit-sharing aspects are considered as an integral part in management of agricultural biodiversity (*Rationale* capacity-building). Relevant activities are found in the majority of the programme elements, assessments, adaptive management, and capacity–building, reflecting the wide applications in various contexts.

1. The third national reports submitted under the Convention on Biological Diversity

111. Malawi reported that their national decision-making process with respect to agricultural biodiversity conservation uses local knowledge. They conducted a project that collected indigenous crops based on local perspectives, assessed their genetic status and variation, promoted local women's participation in problem analysis, and identified crop improvement priorities. The project demonstrated the importance of insights from local and indigenous communities. It further illustrated the importance of gender balance in benefit-sharing. Gambia has implemented similar measures, with a policy meant to ensure that the knowledge, innovation and practices of indigenous and local communities that embody traditional lifestyles relevant for the conservation and sustainable use of biodiversity are respected, preserved and maintained.

112. In summary, the principle has recognized the importance of reflecting the needs of indigenous and local communities. Furthermore, gender and other social issues are taken into consideration when policies are implemented.

2. Regional workshops under the Convention on Biological Diversity

113. In the Latin American and Caribbean Workshop, it was suggested that alternatives for supporting the internalization of management costs should also include economic instruments, such as subsidies on sustainable practices, technical support, resources for the start-up of businesses, acknowledgement of ownership rights, labelling and certification (sustainability, organic products, etc), particularly for operational guideline 5. In addition, it was pointed out that decentralized decision-making and empowering users, including farmers, was a necessary step forward.

M. Applying principle 13 to agricultural biodiversity

***Practical principle 13:** The costs of management and conservation of biological diversity should be internalized within the area of management and reflected in the distribution of the benefits from the use.*

114. Principle 13 applies to agricultural biodiversity but the relationship will vary depending on whether conservation is *ex situ* or *in situ* and the agricultural biodiversity components being considered. In most cases farmers, herders and livestock managers are the guardians of agricultural biodiversity and as such they are the ones who will bear the costs of management and conservation, even though many of the benefits are realized outside of agro-ecosystems. Ways of recognizing and rewarding these non-market ecosystem services provided by agricultural producers is a critical component of achieving sustainable use. In some cases the public sector will be needed to mobilize the necessary funds, while in other cases the private sector, including consumers can be a viable source of funding.

115. The principle is largely compatible with the programme of work on agricultural biodiversity. The need to balance the costs and benefits is noted in element 3 of the programme of work, which states that:

> *"... management of agricultural biodiversity involves many stakeholders and often implies transfers of costs and benefits between stakeholder groups. It is therefore essential that mechanisms be developed not only to consult stakeholder groups, but also to facilitate their genuine participation in decision-making and in the sharing of benefits.*

116. The internalization of costs is more geographically focused in the principle, which refers to "within the area of management", while it is more socio-economically oriented in the context of the programme of work. For the sustainable use of agricultural biodiversity, it is necessary to take both geographic and socio-economic aspects into consideration.

117. Principle 13, in short, calls upon biodiversity managers to secure the funds needed for effective management and conservation, and suggests that the benefits arising should be used to cover the costs.

1. The third national reports submitted under the Convention on Biological Diversity

118. Zimbabwe reported that its pricing policies were structured to maintain local agricultural variety to reflect the high cost of agricultural inputs and prevalence of droughts. Turkey reported being alarmed by the dominance of hybrid seeds in markets, which force farmers to renew their seeds every year, causing an unnecessary increase of production costs as well as the loss of genetic diversity. This is a particular concern in adaptation and quality-related genes in local varieties. Canada reported its Environmental Health Program has developed knowledge and technologies that minimize the impact of agricultural production on soil, air, water and biodiversity while maintaining the sustainability of the sector.

119. Reports from the Parties highlighted the multidimensionality and different scales of the measures required to internalize costs and reflect the true costs of management.

2. Regional workshops under the Convention on Biological Diversity

120. Participants in the Latin American and Caribbean Workshop had reserved views regarding the applicability of principle 13 to agricultural biodiversity. This principle states that management and conservation costs should be borne within the relevant area, and this is hardly applicable to agricultural biodiversity. Participants stated that this principle calls for careful reflection in connection with the use

of biological resources in general, and agricultural biodiversity in particular, because the global benefits of its conservation have not been considered.

N. Applying principle 14 to agricultural biodiversity

Practical principle 14: Education and public awareness programmes on conservation and sustainable use should be implemented and more effective methods of communications should be developed between and among stakeholders and managers.

121. Principle 14 applies to agricultural biodiversity. Furthermore, it is one of the areas where implementation is needed. As discussed in previous principles, the stakeholders are local and indigenous communities, farmers, researchers, policy-makers, resource managers, business sectors and others. The focus will differ depending on the stakeholder.

122. The topic of the 2008 International Day for Biological Diversity is agriculture and biodiversity, and a number of education and public awareness activities, including the distributions of materials, and school visits by researchers and policy-makers, are scheduled globally.

123. Principle 14 is compatible with the programme of work. Education and public awareness-raising are central to capacity-building and mainstreaming agricultural biodiversity. The programme of work has a number of relevant activities.

124. Programme element 3 of the programme of work, capacity-building, includes the following: "Promote awareness about the value of agricultural biodiversity and the multiple goods and services provided by its different levels and functions" (activity 3.5).

1. The third national reports submitted under the Convention on Biological Diversity

125. Comoros reported on the importance of a multi-sectoral approach for public awareness-raising activities. For a successful campaign, it enlisted the education, health, agriculture, water, tourism, urban, and energy sectors as partners. Mexico emphasized the importance of collaborating with universities, education centres, research centres, civil organizations, and producers' organizations for successful mainstreaming. With views to strengthen the legal framework, vocational training has been implemented in Australia. Pakistan integrated public awareness-raising elements in its National Conservation Strategy, along with *ex situ* conservation.

126. It is clear from the reports that education and public awareness-raising activities are required in different sectors and contexts. The multi-sectoral approach is key to ensuring the sustainable use of agricultural biodiversity. Besides general education and public awareness-raising, experts and scientists were targeted for operational activities such as *ex situ* conservation.

IV. CONCLUSION

127. Based on the discussions above, it is concluded that all 14 Principles of the Addis Ababa Principles and Guidelines for the Sustainable use of Biodiversity apply to the sustainable use of agricultural biodiversity to some extent. However the specificity of agrobiodiversity needs to be addressed and this will require more operational guidelines for the application of the principles to agrobiodiversity. Food and Agriculture Organization of the United Nations (FAO) should be invited by the Executive Secretary of the Convention on Biological Diversity to further develop these operational guidelines. According to the participants of the regional workshops, principles 1 to 6, 8, 9, 11, 12, 14 are applicable without changes. Principles 7, 10, 13 require specific considerations under the following conditions:

- Principle 7 applies to agricultural biodiversity but requires special consideration since agricultural land covers a vast area and its cycle is conventionally less than a year (cf. paragraphs 78-84 above for a full discussion);

- Principle 10 applies to agricultural biodiversity. When applying to agricultural biodiversity, participants of workshops suggested that the first bullet point should "Current and potential values derived from the use of biological diversity, including natural and agricultural systems";

- Participants of the workshop had concerns on the application of Principle 13 on the full scale as many components of agricultural biodiversity (*ex situ* conservation in genebanks, maintenance of traditional and wild relatives of crops, management of ecosystem services that are supported and maintained through agrobiodiversity such as nutrient cycling, carbon sequestration and maintenance of the hydrological regime) require larger scale policies and management strategies.

128. Based on information from the third national reports and from the regional workshops, concrete implemented activities and policies are listed below to illustrate the range of use options and management practices covered by the term agricultural biodiversity, in response to the request in decision VII/12, including its footnote. . The list partially addresses the activities in the programme of work on agricultural biological diversity (i.e., programme element 2, activity 2.2), which calls for identification and promotion of information on cost-effective practices and technology.

- Adoption of methods for low tillage, organic farming methods, integrated pest control, pollination

- Involvement of different levels of Governments and organizations to create synergy in various sectors

- Recognition and promotion of the efforts by farmers (including pastoralists), and local and indigenous communities in maintaining agricultural biodiversity, in particular for seed, varieties and breed improvement

- Regulation of uncontrolled and unsustainable intensification of agricultural practices

- Reduction of Amber Box supported policies, which can contribute to easing the pressure on agricultural biodiversity

- Knowledge-based management in production and control of invasive alien species

- Stewardship of indigenous crops, breeds and products by providing incentives and maintaining access to markets to sell the products in order to promote in situ conservation in a sustainable manner

- Integration of agricultural management into broader spatial (landscape, ecosystem) and temporal contexts (short-term cycle in agriculture versus longer-term cycle in other biomes)

Appendix

DEFINING CONCEPTS AND USE OF TERMS

A. Principles/Guidelines

1. The majority of the elements in the Principles and Guidelines are clear enough be used as the basis for reasoning or taking action for implementation, particularly with the accompanying rationale and operational guidelines. From the case-studies presented in the national reports and other sources, it is clear that there is no "one-size-fits-all solution", and that the context need to be taken into consideration when applying the Principles and Guidelines.

B. Scope of agricultural biodiversity

2. The scope of the term agricultural biodiversity is stated in the annex to decision V/5:

> *"Agricultural biodiversity is a broad term that includes all components of biological diversity of relevance to food and agriculture, and all components of biological diversity that constitute the agro-ecosystem: the variety and variability of animals, plants and micro-organisms, at the genetic, species and ecosystem levels, which are necessary to sustain key functions of the agro-ecosystem, its structure and processes, in accordance with annex I of decision III/11 of the Conference of the Parties to the Convention on Biological Diversity."*

3. Agricultural biodiversity is indeed a broad term. The nature of its components at the genetic level differs largely from the species and ecosystem levels. In examining the applicability of the Principles and Guidelines to agricultural biodiversity, such differences are given specific consideration by discussing the components at the different levels separately.

4. Regarding the definition of the term agricultural biodiversity, various perspectives exist. For example, nine different definitions of agricultural biodiversity and agrobiodiversity are listed in the Multilingual Glossary on Forest Genetic Resources by the Food and Agriculture Organization of the United Nations (FAO) and International Union of Forest Research Organizations (IUFRO). Given the purpose of this paper to examine the applicability of the Principles and Guidelines, discussions in the following sections focus on policy and management options for implementation, rather than conceptual discussions.

C. Breeds and varieties

5. Breeds and varieties are amongst key terms in understanding the agricultural biological diversity, along with various other components. The Food and Agriculture Organization of the United Nations (FAO) defined the term "breed" as following: 15/

> *"Either a subspecific group of domestic livestock with definable and identifiable external characteristics that enable it to be separated by visual appraisal from other similarly defined groups within the same species or a group for which geographical and/or cultural separation from phenotypically similar groups has led to acceptance of its separate identity."*

15/ FAO (1999) The global strategy for the management of farm animal genetic resources. Executive Brief. Rome.

6. At the African Regional Workshop on Sustainable Use of Biological Diversity, it was repeatedly pointed out that breeds and their diversities are an integral part of rural societies, including those of pastoralists.

7. The term "variety" is defined in two ways by the Food and Agriculture Organization of the United Nations (FAO): 16/

- *"*A naturally occurring subdivision of a species, with distinct morphological characters.

- A defined strain of a crop plant, selected on the basis of phenotypic (sometimes genotypic) homogeneity.*"*

16/ FAO (2006) Glossary of Biotechnology for Food and Agriculture