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THE ECOSYSTEM APPROACH APPLIED TO FOOD AND AGRICULTURE: STATUS AND NEEDS

TABLE OF CONTENTS

		Paras.
I.	Introduction	1 - 6
II.	The ecosystem approach	7 – 17
	2.1 Benefits of applying the ecosystem approach to food and agriculture	7 - 8
	2.2 Historical background	9 - 17
III.	Specificities of applying the ecosystem approach to food and agriculture	18 – 26
IV.	Internalization of the ecosystem approach in FAO's work	27 – 49
	4.1 Examples of the internalization of the ecosystem approach in FAO's work	27 - 43
	4.2 Challenges to the internalization of the ecosystem approach in forestry, fisheries and agriculture	44 - 46
	4.3 Challenges to the internalization of the ecosystem approach in FAO's work	47 - 50
V.	Proposals for initiating coverage of the ecosystem approach in the Multi-Year Programme of Work of the Commission	51 - 60
VI.	Guidance requested from the Commission on Genetic Resources for Food and Agriculture	61 - 63

THE ECOSYSTEM APPROACH APPLIED TO FOOD AND AGRICULTURE: STATUS AND NEEDS

I. INTRODUCTION

1. At its Tenth Regular Session, the Commission on Genetic Resources for Food and Agriculture requested its Secretariat to document the status and needs of sectors of genetic resources for food and agriculture, other than plants and animals, including the various areas of biodiversity for food and agriculture, and the agro-ecosystem approach[1] to genetic resource conservation and cross-sectorial matters, identifying the responsibilities of relevant FAO Services and PAIAs in these fields, and submit this to the current session of the Commission, which would then decide on its Programme of Work, in the context of the implementation of its full mandate.

2. The Intergovernmental Working Groups on Plant and on Animal Genetic Resources have emphasized the need to include the agro-ecosystem approach to biological diversity for food and agriculture, including the integrated management of genetic resources, in the Commission's Multi-Year Programme of Work.[2] During its Third Session, the Working Group on Plant Genetic Resources specifically looked into the Global Plan of Action for the conservation and sustainable utilization of plant genetic resources for food and agriculture and the application of the ecosystem approach..[3]

3. The World Summit on Sustainable Development (WSSD) recognized that agriculture plays a crucial role in addressing the needs of a growing global population, and is inextricably linked to poverty eradication, especially in developing countries. The Summit emphasized that biodiversity plays a critical role in overall sustainable development and poverty eradication. Since biodiversity is currently being lost at unprecedented rates due to human activities, the WSSD called for actions to promote the wide implementation and further development of the ecosystem approach to reverse this trend. In order to increase food production and enhance food security and food safety in an environmentally sustainable way, an integrated approach, such as the ecosystem approach provides, is essential.

4. The ecosystem approach is widely used in food and agriculture to ensure that ecosystems continue to deliver their goods and services, including the maintenance of biodiversity, in a sustainable manner. The application of the approach has been particularly effective in forestry and fisheries and in specific areas of agriculture. Through, for example, the promotion of *in situ* conservation and sustainable farming systems, the approach has contributed to the conservation and sustainable use of genetic resources for food and agriculture.

5. This document provides background information on the ecosystem approach, and on the specificities of its application to food and agriculture. It looks at how the ecosystem approach has been internalized in FAO's work and what its benefits are for the conservation and sustainable use of biodiversity for food and agriculture. It also examines the many challenges for the effective application of the approach.

6. This document puts forward a number of proposals for initiating the coverage of the ecosystem approach in the Multi-Year Programme of Work and seeks the Commission's guidance on how the ecosystem approach could be further developed to the benefit of FAO's

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[1] Instead of using the term, "agro-ecosystem approach", this report will refer to an "ecosystem approach applied to food and agriculture".

[2] See CGRFA-11/07/3 and CGRFA-11/07/10.

[3] See CGRFA/WG-PGR-3/05/Inf. 4, at http://www.fao.org/AG/AGP/AGPS/pgr/ITWG3rd/pdf/p3i4E.pdf.

work in the conservation and sustainable management of genetic resources for food and agriculture.

II. THE ECOSYSTEM APPROACH

2.1 Benefits of applying the ecosystem approach to food and agriculture

7. Humans fully depend for their well-being on the services[4] and goods[5] provided by ecosystems, such as food, clean water, climate regulation, socio-cultural and spiritual fulfilment, and aesthetic enjoyment. Any marginal change in the delivery of such services directly affects (positively or negatively) the supply of basic needs for a good life, health, good social relations, security, and freedom of choice and action. The key is to closely monitor and manage ecosystem services, including maintaining biodiversity and producing ecosystem goods, in a sustainable manner.

8. The goal of the ecosystem approach to food and agriculture is to ensure that ecosystems continue to deliver the goods and services needed to sustain and fulfil human life. While the concept essentially focuses on the benefits that biodiversity, ecosystem services and the environment deliver to human well-being, it also links the importance of the conservation and sustainable use of these various elements to the achievement of long-term economic gains. However, there is still little available information on the economic valuation of ecosystem goods and services.

2.2 Historical background

9. The ecosystem approach is increasingly being applied, but in very different ways and contexts, and at different levels. This document will mainly address ecosystem approaches of specific relevance to the management of biodiversity in food and agriculture, but will often refer to the ecosystem approach as endorsed by the Convention on Biological Diversity (CBD).[6]

10. The ecosystem approach is not a single concept with a single definition. It has been described and presented in different ways, both in the literature and in international agreements that have formally been adopted by states. The following chronologically listed series of events therefore only represents a small selection of the many episodes in international consideration of ecosystem approaches applied to food and agriculture.

11. From the developments leading up to the first global United Nations Conference on the Human Environment in Stockholm in 1972, it became evident that a better balance was needed between socio-economic development and the conservation of the environment. In the absence of suitable approaches, widespread debates started around the need to develop integrated approaches, which would embrace conservation and environmental considerations more thoroughly.

12. Following the outcomes of a workshop convened by the Scientific Committee on Problems of the Environment, organized by the International Council for Science in 1974, one of the first results of these discussions was the formulation of the adaptive environmental

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[4] Ecosystem services are the conditions and processes through which natural ecosystems, and the species which make them up, sustain and fulfil human life. They maintain biodiversity and the production of ecosystem goods.

[5] Ecosystem goods are grouped in two broad categories: renewable and non-renewable. The non-renewable ecosystem goods can only be used up, although recycling allows for some recapture and reuse. Renewable ecosystem goods can be received in perpetuity if the stock is managed in a sustained manner.

[6] The ecosystem approach was officially endorsed in May 2000 at the fifth meeting of the Conference of the Parties to the Convention on Biological Diversity, through Decision V/6. It has been further implemented through Decision VII/11.

assessment and management approach.[7] Similar to the ecosystem approach, the adaptive management approach stresses the need for fundamental understanding of the structure and dynamics of ecosystems. It also recognizes that management needs to be adaptive in order to respond to uncertainties and to this end it contains elements of "learning-by-doing", or research feedback. Both approaches agree that measures may need to be taken even when some cause-and-effect relationships are not yet fully established scientifically.

13. The first international agreement to actually refer to the phrase, "Ecosystem Approach", was the Convention on the Conservation of Antarctic and Marine Living Resources. In 1980, it explicitly called for the adoption of the approach, to minimise potential adverse effects of fishing on other fish species and on the marine ecosystem as a whole, and to ensure overall sustainability of fisheries. The ecosystem approach was then incorporated into many fisheries-related international agreements,[8] but the concept also rapidly gained recognition in other fields, such as forestry, agriculture and biological diversity as a whole.

14. When the ecosystem approach became the underpinning concept of the Convention on Biological Diversity at the UN Conference on Environment and Development (UNCED) in Rio de Janeiro, the role and importance attributed to the concept grew considerably. While the CBD placed the approach in a broader context and defined it as a strategy for the sustainable management of biodiversity and its components in all types of ecosystems, the characteristics and yet to be defined principles of the approach were also reflected in other outcomes of the Conference, including the so-called *Forest Principles*[9] and the global plan of action for sustainable development, also referred to as *Agenda 21*.

15. From the Rio Earth Summit onwards, the ecosystem approach, as defined by the CBD, was further shaped according to the needs of the Convention. The approach officially became the CBD's primary framework for action in May 2000, when it was formally endorsed, together with its twelve governing principles (also referred to as the "*Malawi Principles*") and five operational guidelines,[10] at the fifth meeting of the Conference of the Parties to the CBD. Through Decision VII/11, further guidance on the implementation of the approach was provided.

16. In parallel, other forms of ecosystem approaches developed in different and often more specialized contexts. In the field of food and agriculture, major ecosystem-approach-related initiatives that developed prior and after UNCED include: Integrated Pest Management; the 1995 FAO Code of Conduct for Responsible Fisheries; Integrated Coastal Zone Management; Sustainable Forest Management, and Integrated River Basin Management. Some of these initiatives will be described in more detail in the next section.

17. As the examples in the previous paragraph show, experience with the application of the ecosystem approach differs widely across organizations and institutions. FAO has substantial practical experience with the application of the approach, for example in the area of Integrated Pest Management, the groundwork for which dates back to the mid-1960s.

III. SPECIFICITIES OF APPLYING THE ECOSYSTEM APPROACH TO FOOD AND AGRICULTURE

18. It is important to realize that the existing ecosystems approaches are complementary and not competitive. In one form or another, they all work towards the management, conservation and

[7] Holling, C.S., editor. (1978). *Adaptive environmental assessment and management*. London, John Wiley & Sons.

[8] Including the 1992 Convention for the Conservation of Anadromous Stocks in the North Pacific Ocean, the 1995 FAO Code of Conduct for Responsible Fisheries and the 2000 Reykjavik Declaration on Responsible Fisheries.

[9] See http://www.un.org/documents/ga/conf151/aconf15126-3annex3.htm.

[10] See http://www.biodiv.org/decisions/default.aspx?lg=0&dec=V/6.

sustainable use of renewable, natural resources. However, comparing the various approaches is not always easy, since they have been developed at different times and with different objectives.

19. In its various forms, the ecosystem approach is a holistic and integrated approach, which strongly promotes the involvement and participation of multiple stakeholders. It is also a flexible approach, since it is designed to be applied at different levels (*e.g.*, community level, sector level, biome level, *etc.*).

20. Whereas all forms of the ecosystem approach consider people as an integral component of ecosystems, ecosystem approaches applied to food and agriculture tend to place humans more explicitly at the centre of the management strategy and give greater emphasis to goals related directly to human well-being, and on the social and economic advantages that result from their application. Amongst environmental interest groups, greater emphasis may be given to goals related to ecosystem well-being. Both of these emphases fall within an ecosystem approach and the challenge is to reconcile any conflicts in goals and to identify strategies that will achieve an optimal balance between any conflicting goals and objectives.

21. A further specificity is that approaches such as Sustainable Forest Management (SFM) and the Ecosystem Approach applied to Fisheries (EAF) are respectively designed to deal specifically with the conservation and sustainable production of goods and services of all types of forests and of production systems in aquatic ecosystems. SFM and EAF do acknowledge that for their application to be successful, they also need to collaborate with actors that operate outside the boundaries of "their" ecosystems, but who manage activities that have an impact on their ecosystems (*e.g.*, offshore mining and oil and gas extraction in the case of fisheries). The application of the ecosystem approach in agriculture has proven to be very effective in specific areas, such as integrated pest management.

22. The application of the ecosystem approach in food and agriculture aims to manage biodiversity in a wider context. With this approach, users will have to look both into the effects of the interventions on other areas and adjacent ecosystems and the dynamics between them.

23. One of the most important characteristics of ecosystem approaches in food and agriculture is that they are for the most part outcomes-driven. FAO has, for example, put substantial effort into refining ecosystem approaches applied to food and agriculture, to make them operational at field level. Much work has gone into the development of criteria, indicators (at gene, species, and ecosystem levels), practical guidelines and supportive initiatives, to improve the implementation of the ecosystem approach, and to monitor its effect on food security, poverty alleviation and on the status and trends of biodiversity in the different production systems concerned.

24. In contrast, other forums have placed much emphasis on reviewing the content and comprehensiveness of the principles of the ecosystem approach. The CBD, for instance, developed the *Addis Ababa* principles and operational guidelines in 2004, to facilitate the application of the ecosystem approach. The future will show to what extent these principles and guidelines have contributed to operationalizing the ecosystem approach concept.

25. Both the *Malawi* and the *Addis Ababa* principles and operational guidelines cover the range of ideas in all the Ecosystem Approaches in a structured, succinct and comprehensive manner. However, to address specific issues in specific ecosystems more precise operational frameworks need to be elaborated. It will be up to each sector to define operational principles for their goals and areas of interest.

26. In summary, the practical application of the ecosystem approach to food and agriculture has proven to be very effective across forestry, fisheries and in specific areas of agriculture. The various forms of ecosystem approaches involved are primarily focus-specific and outcome-oriented. They have been developed on the basis of years of practical experience and learning by

doing. Continued collaboration and dialogue amongst international organizations, in particular the exchange of experience, will improve the further development and operationalization of the ecosystem approach in food and agriculture.

IV. INTERNALIZATION OF THE ECOSYSTEM APPROACH IN FAO'S WORK

4.1 Examples of the internalization of the ecosystem approach in FAO's work

27. FAO has both implicitly and explicitly internalized the ecosystem approach in a large number of its programmes and activities to conserve and manage ecosystem services for sustainable agriculture, food security and poverty reduction.

28. As illustrated by the following paragraphs, the organization's experience with the approach is particularly well developed in the areas of forestry and fisheries, but has also been applied successfully in various contexts and at various scales across agricultural sectors.

The ecosystem approach from a forestry perspective

29. Sustainable Forest Management (SFM) represents one of the most developed approaches to the conservation and sustainable use of natural resources. Its main objectives are to contribute to the management, conservation and sustainable development of forests, and to provide for their multiple and complementary functions and uses.

30. It was developed largely in response to criticisms about the apparent unsustainability of the tropical timber trade, but subsequently received support from UNCED in 1992, through its adoption of the Non-legally Binding Authoritative Statement of *Forest Principles*.

31. The concept continued to evolve through the international forest policy dialogue and through a large number of country-led and eco-regional initiatives to translate the concept into practice. In this context, FAO has been particularly active in the development of criteria and indicators of sustainable forest management, together with the International Tropical Timber Organisation (ITTO), the United Nations Environment Programme, and other members of the Collaborative Partnership on Forests (CPF), which is led by FAO, and of which the CBD is a member).

32. Several international and regional initiatives have emerged, with the aim of developing criteria and indicators for sustainable forest management. These include the Ministerial Conference on the Protection of Forests in Europe (MCPFE), also known as the "Helsinki Process"), a Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests (known more simply as the "Montreal Process"), the Tarapoto Proposal for the Amazon, and regional initiatives for Dry-Zone Africa, the Near East and Central America (the latter is also known as the "Lepaterique Process").

33. In February 1997, the Intergovernmental Panel on Forests of the UN Commission on Sustainable Development endorsed the use of criteria and indicators to operationalize the concept of SFM, and called on all countries to become involved in developing and implementing them. Overall, more than 100 countries are now involved in initiating SFM, and an international programme of certification of forestry operations, under the auspices of the Forestry Stewardship Council, has been developed and is being applied.

The ecosystem approach from a fisheries perspective

34. FAO is the main driver behind the progress in advancing the Ecosystem Approach applied to Fisheries (EAF).[11] The 1995 FAO Code of Conduct for Responsible Fisheries, which has largely been built upon an ecosystem approach, is one of the major international instruments to stress the need to generalise the adoption of ecosystem-based management approaches, for the conservation and sustainable management of fish genetic resources. The Code has established principles and standards applicable to the conservation, management and development of all fisheries.[12] Along with many other international agreements and conferences, it has also served to highlight the benefits of an ecosystem approach to fisheries.

35. The World Summit on Sustainable Development encouraged countries to implement the EAF by 2010,[13] and agreed that FAO should play a leading role in facilitating the process of adoption of the ecosystem approach. In 2001, more than 50 countries participating in a conference jointly organised by FAO and the Government of Iceland issued the Reykjavik Declaration in which they pledged to begin immediately to introduce ecosystem considerations into fisheries management. In 2003, FAO's Committee on Fisheries noted that many countries were addressing several aspects of EAF, including the impact on associated species, by-catch (*e.g.*, turtles, seabirds and sharks) and selectivity of fishing gear, stakeholder involvement in fisheries management, restocking and restoring of critical habitats and species interactions.

36. To promote the implementation of the ecosystem approach applied to fisheries, FAO undertakes numerous activities, including the implementation of projects that involve the application of the EAF, the organization, support to, or participation in international meetings and conferences and the development and publication of guidelines, such as:

- *The FAO Technical Guideline for Responsible Fisheries No.4, Supplement 2 – The ecosystem approach to fisheries*,[14] published in 2003, which directly addresses the issue of EAF implementation, by providing guidance on how to translate the economic, social and ecological policy goals and aspirations of the sustainable development of EAF into operational objectives, indicators and performance measures; and
- *Putting into practice the ecosystem approach to fisheries*,[15] which presents operational guidelines for the application of the approach to marine capture fisheries, and was published in 2005.

Integrated Pest Management (IPM)

37. Since the mid 1960s, FAO has advocated Integrated Pest Management, as the preferred pest control strategy. IPM means the careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimize risks to human health and the environment. IPM emphasizes the growth

[11] Since 2003, FAO has adopted the following working definition of the ecosystem approach to fisheries: "An Ecosystem Approach to Fisheries strives to balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic, and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries".

[12] Inland fisheries, aquaculture and marine capture fisheries.

[13] Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August- 4 September 2002, Resolution 2/Chapter IV/paragraph 30 (d).

[14] See http://www.fao.org/DOCREP/005/Y4470E/Y4470E00.HTM

[15] See ftp://ftp.fao.org/docrep/fao/008/a0191e/a0191e00.pdf.

of a healthy crop with the least possible disruption to agro-ecosystems and encourages natural pest control mechanisms.[16]

38. IPM increases the sustainability of farming systems, because it improves ecological sustainability, by relying primarily on understanding and enhancing ecosystem services such as pest population regulation, through strategies that include the use of pest-resistant varieties, the conservation and augmentation of natural enemies and cultural controls. It improves social sustainability because it is institutionalized at the level of the farming community and local government. Finally, IPM programmes are economically sustainable, as they reduce farmers' dependence on procured inputs.

39. FAO's IPM programme, including the Global IPM Facility based at FAO Headquarters in Rome since 1997:

- Raises questions about unsustainable pest management practices and helps increase awareness of IPM alternatives to strengthen the ecological and policy foundations of national IPM programmes;
- Facilitates collaboration and exchange of information among IPM programmes;
- Stimulates dialogue to encourage policy reform;
- Advises governments, international organizations, NGOs and donors on pest management programmes and policies.

40. FAO also promotes IPM through farmers' field schools, a concept that can also be used to address other farming situations and extension problems.

Farmers' Field Schools (Box 1)

41. The farmer field school (FFS) is a participatory methodology, originally developed by FAO in Asia to introduce rice farmers to the benefits of integrated pest management. Its use has subsequently been broadened to include a wide range of farming-related topics (from IPM to small-scale poultry production), and the approach has spread through Asia, Africa, Central and South America and the Near East. Millions of farmers have participated in FFS groups and the approach is widely acknowledged to have made a positive contribution to sustainable livelihoods.

Box 1. Farmer Field Schools in practice in rice

Farmers' field school (FFS) is a group of about 25 farmers who agree to meet once a week for an entire crop season; this means 12 to 16 meetings of at least half a day each. The farmers break into five small field teams and spend one to two hours in their study field(s) making observations, counting population densities of different rice ecosystem species, assessing crop physiological conditions and recording observations. Each team then reassembles outside the field and discusses, analyzes and interprets its data. The interpreted data are then summarized, often in a drawing of the agro-ecosystem, and presented to the whole field school. These drawings include a picture of the rice plant at the stage of growth for that week. Insects that damage the rice plant and disease symptoms are drawn on one side of the plant, while predators that destroy the rice insect pests are drawn on the other side. The farmers' first-hand observations validate the concept of the balance of nature and of population regulation. The individual teams then discuss their observations with the other teams and come to decisions on pest control and on the need for other agronomic practices.

Farmers increase their understanding further by carrying out experiments, such as studies of the effects of pesticides on natural enemies and the artificial simulation of insect damage to show that a crop can sustain some insect damage without a yield decrease.

[16] *International Code of Conduct on the Distribution and Use of Pesticides* (Revised Version) (adopted by the Hundred and Twenty-third Session of the FAO Council in November 2002) Article 2.

IPM from a livestock perspective

42. Traditionally, IPM has exclusively been applied to crops. Given the heavy use of anthelmintics, insecticides and acaricides in animal husbandry, the IPM approach to the use of veterinary drugs in livestock, and in particular in ruminants, is being developed to avoid their mis-use and reduce residues in meat and milk and environmental contamination. This activity has been carried out since 1997 with the advice of the FAO-Working Group on Parasite Resistance (WGPR).

The Global Plan of Action and the ecosystem approach

43. FAO produced an information paper for the Third Session of the Working Group on Plant Genetic Resources, highlighting areas in agriculture where the ecosystem approach can be used in achieving the goals of international instruments related to the conservation and sustainable utilization of agricultural biodiversity. The paper emphasizes specifically the synergies between the ecosystem approach of the Convention on Biological Diversity and the Global Plan of Action for the conservation and sustainable utilization of plant genetic resources for food and agriculture.

4.2 Challenges to the internalization of the ecosystem approach in forestry, fisheries and agriculture

44. One of the main advantages, but also complications, of the ecosystem approach, is that it has been developed to be applied at different scales. Especially at a larger scale (*e.g.*, across an entire province or nation), the system dynamics mostly become increasingly complex for the use of the ecosystem approach to be effective. The number of stakeholders tends to increase to such a level that the proper involvement of all of them, and reaching consensus on objectives and management strategies, may present substantial logistical problems. Nevertheless, to the extent that there are significant interactions between different sub-systems at larger scales, it is important to take those interactions into account in an ecosystem approach.

45. At whatever level or scale the ecosystem approach is applied, it needs institutional support to be successful. Institutional cooperation is more likely when the involved decision-makers are well-informed as to what the approach aims to achieve, and as to whether the expected benefits of the application of the approach are in some way of interest to them. In this context, it is particularly important to link the importance of the conservation and sustainable use of the ecosystem services and goods to the achievement of long-term economic gains. There is still relatively little information in this area, and much work remains to be done, in terms of the economic valuation of ecosystem goods and services and of genetic resources for food and agriculture in particular.

46. Ecosystems are dynamic and continuously subject to change. Approaches such as the ecosystem approach, which aim to manage ecosystem services and goods, need therefore to be flexible and adaptive. This also implies that continuous work is required in developing and readjusting tools.

4.3 Challenges to the internalization of the ecosystem approach in FAO's work

47. Countries, in particular developing countries, are facing tremendous challenges to enhance food security for the growing global population in an environmentally sustainable way. The international community has widely recognized that biodiversity plays a critical role in overall sustainable development, and has praised the importance of applying the ecosystem approach, in particular to agriculture, fisheries and forestry.

48. Still, many countries lack the necessary information and planning tools to develop an integrated management system for biodiversity for food and agriculture, including the ecosystem

approach, in these sectors. Countries increasingly request support from FAO to mainstream the ecosystem approach into their national frameworks.

49. In 2002, FAO took an important step towards internalizing the integrated management of biodiversity, with an ecosystem approach, when it created the Priority Area for Inter-Disciplinary Action on Integrated Management of Biological Diversity for Food and Agriculture. It was included in the Medium Term Plan to address corporate strategy D, which aims at "supporting the conservation, improvement and sustainable use of natural resources for food and agriculture." In the last decade, an inter-departmental working group has been the main mechanism for the coordination of activities on biological diversity of interest to food and agriculture.

50. Although forestry, fisheries and agriculture all promote the conservation and sustainable use of biodiversity for food and agriculture, the most difficult issue remains how to address policies and actions in one area that inevitably have an effect in another.

V. PROPOSALS FOR INITIATING COVERAGE OF THE ECOSYSTEM APPROACH IN THE MULTI-YEAR PROGRAMME OF WORK OF THE COMMISSION

51. The forestry and fisheries sectors have developed their own models for the application of the ecosystem approach. In the ecosystem approaches applied to these two sectors, integrated biodiversity management should particularly be emphasized. The future work of the Commission, as discussed in the documents, *The World's Aquatic Genetic Resources: Status and Needs*[17] and *The World's Forest Genetic Resources: Status and Needs*,[18] can complement and strengthen on-going work of the Forestry and Fisheries Departments in improving the effective application of the ecosystem approach to these sectors.

52. FAO has played a critical role at international level with respect to most components of agricultural biodiversity, in both policy and technical terms. The Commission has led the development of international instruments for two key components of agricultural biodiversity, namely animal and plant genetic resources. In addition, FAO has played a substantial role in mainstreaming integrated pest management at national level, including through the conservation and sustainable use of biodiversity for biological control. FAO also facilitates the implementation of international initiatives on soil biodiversity and pollinators, and has a history of supporting participatory approaches for the community-based management of natural resources.

53. This set of international instruments, initiatives and actions is part of an emerging paradigm for the integrated management of biodiversity in agriculture, which still reflects the historically sectorial approach to work in this area.

54. Nonetheless, the whole is not only the sum of its parts. There is a growing recognition that agricultural biodiversity work will profit from a more integrated approach. Countries with small economies and limited capacity often cannot afford traditional sector-oriented approaches, which are often ill-adapted to their means and circumstances. Farmers in many agro-ecosystems have to manage a number of components of agricultural biodiversity simultaneously, to continuously adapt to changing needs, managing risks and ensure the maintenance of ecosystem services. They need appropriate cross-sectorial and inter-disciplinary support. Closer cooperation among institutions, where appropriate, will in particular be of benefit to developing countries and countries with economies in transition.

55. One of the elements of this emerging framework that needs to be explored is the elaboration of principles or operational guidelines to facilitate the sustainable use of agricultural

[17] CGRFA-11/07/15.2.

[18] CGRFA-11/07/15.1.

biodiversity. The Addis Ababa principles and operational guidelines, which the CBD developed to facilitate the application of the ecosystem approach for the sustainable use of biodiversity, are not specific to agricultural biodiversity. The CBD recognized that agricultural biodiversity was not fully addressed in the process leading to the development of these principles and guidelines, and that there is a need for their further elaboration, specifically with respect to domesticated species, breeds and varieties, in the context of the programme of work on agricultural biodiversity.[19]

56. At its Tenth Session, the Commission supported FAO in taking a lead in the further elaboration of the principles and guidelines, in cooperation with the CBD Secretariat, and to that effect, FAO participated in the African Regional Workshop on Sustainable Use of Biological Diversity in 2006 in Nairobi, Kenya. A first step in the internalization of the ecosystem approach in the Commission's MYPOW could be for the Commission to support the development of principles and guidelines for the sustainable use of agricultural biodiversity. As the lead, FAO could further define such principles and guidelines, but should build on the already thoroughly discussed normative principles. This exercise could be coupled to a brief overview of how existing instruments developed by FAO may contribute not only to this emerging framework, but also to a more coherent application of the ecosystem approach in agriculture. The preparation of such documents, in consultation, where appropriate, with other organizations, could be a short-term priority for the MYPOW, and could be presented for information to the Twelfth Session of the Commission.

57. The second step, and a medium- to long-term priority, would be for the Commission to develop guidance for the application of the ecosystem approach to biodiversity management in agriculture. The aim would be to develop a framework that integrates the different sectors and maximizes the role of agricultural biodiversity in providing ecosystem services. This would help mainstream biodiversity in national food and agriculture planning, and facilitate cooperation with the CBD. A framework for the application of the ecosystem approach to biodiversity in agriculture, fisheries and forestry, would then be submitted for consideration to the Fourteenth Session of the Commission.

58. Such a framework would aim to provide a range of basic tools needed for national planning. To date, separate global assessments have been made of the status and trends of two components of agricultural biodiversity, through the *State of the World's Plant Genetic Resources* and the *State of the World's Animal Genetic Resources*. These global assessments have enabled countries to better understand the status and trends of animal and plant genetic resources, but they have been conducted separately and countries still have relatively little integrated information on the status and trends of agricultural biological diversity as a whole, which could contribute to the effective application of the ecosystem approach to food and agriculture. The Commission and the Conference of the Parties to the CBD have in the past envisaged the preparation of such a global assessment, but no steps have yet been taken for its realization.

59. Such an assessment would include a review of the interactions between farming practices, sustainable agriculture, and the conservation and sustainable use of the components of agricultural biodiversity, as well as an overview of the multiple goods and services delivered by the different levels and functions of agricultural biodiversity. It would help understand the underlying causes of the loss of agricultural biodiversity, an understanding of which is still limited, as is understanding of the consequences of such loss for the functioning of agricultural ecosystems.

60. A long term goal would therefore be the development of an authoritative report on *The State of the World's Biodiversity for Food and Agriculture*, to show the overall status of biodiversity within agriculture and the contribution of agriculture to the maintenance of

[19] http://www.biodiv.org/doc/publications/addis-gdl-en.pdf.

ecosystem services within the wider environment. It would synthesize the findings of assessments in each component of biodiversity for food and agriculture and deal with cross-sectorial and common themes, such as climate change. The aim would be to finalize the first *State of World's Biodiversity for Food and Agriculture* by the Sixteenth Session of the Commission.

VI. GUIDANCE SOUGHT FROM THE COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

61. This document seeks the Commission's guidance on how FAO can respond to the growing demand from the international community for tools to assist countries in the application of the ecosystem approach to agriculture, forestry and fisheries. It notes that in the latter two areas, and in areas of agriculture such as IPM, FAO has already internalized the application of the ecosystem approach, with considerable success, and with direct benefits for, in particular, developing countries.

62. The Commission may accordingly wish to advice FAO on ways to strengthen the application of the ecosystem approach across its areas of work in order to improve the sustainable management of the totality of biodiversity for food and agriculture and its contribution to the maintenance of ecosystem services.

63. It may, in particular, consider the integration of the ecosystem approach to the management of genetic resources for food and agriculture within its Multi-Year Programme of Work, to better address cross-sectorial matters and environmental sustainability concerns, within its international policy efforts, and:

- Request the Secretariat to prepare a brief overview of how existing instruments developed by the Commission may contribute to a more coherent application of the ecosystem approach in agriculture, to be presented for information to its Twelfth Session (paragraph 53);
- Consider a framework for the application of the ecosystem approach to biodiversity in agriculture, fisheries and forestry, which integrates the different sectors, and maximizes the role of agricultural biodiversity in providing ecosystem services, in order to help mainstream biodiversity in national food and agriculture planning, and facilitate cooperation with the CBD, at its Fourteenth Session (paragraphs 54-56).
- Feed the results of the above process into the development of an authoritative report on *The State of the World's Biodiversity for Food and Agriculture*, to be finalized at its Sixteenth Session (paragraph 57).