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PROGRESS IN THE IMPLEMENTATION OF THE THEMATIC PROGRAMMES OF WORK

Forest biological diversity: elements for a possible joint work programme on fire prevention and management

Note by the Executive Secretary

I. INTRODUCTION

1. In paragraph 44 of its decision VI/22, the Conference of the Parties invited the Food and Agriculture Organization of the United Nations (FAO), the International Tropical Timber Organization (ITTO) and the Global Fire Monitoring Center (GFMC), as well as other relevant organizations, to explore possibilities for a joint work programme with the Convention on Biological Diversity, including, *inter alia*, fire impact assessments, development of guidelines on fire management, and community-based approaches to fire prevention and management.

2. The present note was prepared to identify elements that could be considered for a joint work programme among the partners mentioned in paragraph 44 of decision VI/22. Section II reviews briefly the main ongoing initiatives relating to forest fires. Section III identifies possible elements for joint activities. These elements were reviewed informally by members of FAO, ITTO and GFMC.

II. ONGOING INITIATIVES ON FOREST FIRES

A. Ongoing initiatives on fire impact assessments

3. Fire impacts on forest ecosystems range from beneficial to detrimental depending on whether fire is a natural or human-imposed disturbance, and whether appropriate management prescriptions are applied or not. For example, fires are a naturally evolved component, and therefore a necessary disturbance, for the regeneration of many plant (and animal) species in boreal, Mediterranean, and temperate forests. However, when fire suppression activities favour substantial fuel build-up in these ecosystems, naturally induced fires can become highly destructive which in turn can disturb natural

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background-level recovery processes. In temperate and boreal regions, increased severity of dry and hot weather conditions have also augmented the frequency of uncontrolled forest fires as of the last decade.

4. In most tropical forest ecosystems, particularly in equatorial moist and wet forests, fires are not part of the natural disturbance regime and therefore the biota is not very well adapted to their effects. Thus the impacts of forest fires on tropical forest biodiversity are, almost always, negative and long lasting. In tropical rain forests, fire may permanently remove and/or degrade vegetation, kill and/or displace fauna, and severely alter the hydrological cycle, which may lead to excessive flooding and further loss of biodiversity. Uncontrolled use of fire for forest conversion and agricultural activities is the main causing factor of wildfires in tropical latitudes.

5. Although millions of hectares burn annually in fire-adapted environments at infrequent intervals since historic times (e.g., grasslands and shrub lands in Africa, Mediterranean region, and Australia), international attention on forest fires has gained particular prominence as of 1990. On the one hand, because there has been an increase in unwanted fires—particularly in the tropics—and on the other, due to a parallel reduction in necessary fires—particularly in the temperate zone. As millions of hectares of forest burned in 1997 and 1998 with unprecedented biological, social, and economic consequences, the need for a global fire information system was even more evident. To this end, FAO, as part of its 2000 Global Forest Resources Assessment, and jointly with the GFMC, conducted a pioneering global forest fire assessment for the decade 1990-2000. 1/ In several cases, however, the accuracy of these estimates is not known, and the statistics are not complete for all countries. Usually, number of fires and area burned are the most common variables used in these assessments, but they are currently insufficient for fully assessing the environmental and economic consequences of uncontrolled forest fires.

6. Within the framework of the FAO Forest Resources Assessment, a study implemented by the World Conservation and Monitoring Centre of the United Nations Environment Programme (UNEP-WCMC) addressed the utility of using spatial variables as indicators of forest biotic integrity. Based on the assumption that anthropogenic forest loss (including as a result of fire) has an overall negative impact on biodiversity, monitoring temporal and spatial changes in variables such as degree of forest isolation, size of forest patches, and their degree of ecological connectivity can help to assess fire impacts on forest biodiversity in future global assessments. 2/ At the national level, FAO is currently in a process of carrying out research on fire damage and biodiversity in Portugal. However, no comprehensive involvement in fire impact assessment is presently underway by FAO. The Center for International Forestry Research (CIFOR) is undertaking biodiversity studies related to the 1997/98 fire events across East Kalimantan and southern Sumatra. Other related issues include the effect of fire on ecological resources and livelihoods, biodiversity conservation, future fire susceptibility, and the recovery potential of the various landscapes to fire.

7. GFMC, 3/ through its Fire Ecology Research Group, has been working since the early 1980s on assessing ecological impacts of forest fires at the global level. 4/ GFMC is currently chairing the Working Group on Wildland Fire under the United Nations International Strategy for Disaster Reduction (ISDR) with the aim of facilitating the creation of mechanisms of information and task sharing, in order both to prevent and reduce the negative impacts of vegetation fires on the environment. 5/ This is being done in line with the strategic goals of the Convention on Biological Diversity, and other United Nations bodies such as the United Nations Convention to Combat Desertification, the United Nations Framework Convention on Climate Change, and the United Nations Forum on Forests. GFMC is serving as a

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1/ FAO. 2000. Global forest fire assessment 1990-2000. FRA Working Paper no. 55. http://www.fire.uni-freiburg.de/programmes/un/fao/Wp55_eng.pdf

2/ Working towards validating the usefulness of these spatial indicators is warranted, as both the degree of forest fragmentation and the incidence of wildfires, at least in tropical forests, are positively correlated. See, for example, M. A. 2001. Synergistic interactions between habitat fragmentation and fire in evergreen tropical forests. Conservation Biology 15(6).

3/ http://www.fire.uni-freiburg.de

4/ Goldammer, J.G. (ed.) 1990. Fire in the tropical biota. Ecosystem processes and global challenges. Ecological Studies 84. Springer-Verlag.

5/ http://www.unisdr.org/unisdr/WGroup4.htm

facilitator for the preparation and follow up of the first International Wildland Fire Summit to be held in Australia, in October 2003. 6/

8. The Association of South East Asian Nations (ASEAN) Regional Centre for Biodiversity Conservation (ARCBC) has recently reviewed information on impacts of forest fires on protected areas and on biodiversity for each of the ASEAN countries to help minimizing fire risk and species extinctions. At the upcoming ARCBC Regional Policy Forum on Biodiversity to be held in Thailand in January 2004, participants are expected to discuss planning and management of trans-border forest conservation areas, including mitigating the impact of forest fires on biodiversity.

9. The Guidelines for the integration of biological diversity in impact assessment procedures being developed by the Conference of the Parties to the Convention on Biological Diversity (decision VI/7 A) can be useful in assessing forest fire impacts.

B. Progress made in the development of existing guidelines on forest fires management

10. One outcome of the current work of the ASEAN Regional Centre for Biodiversity Conservation mentioned above is a set of proposed ecological guidelines calling for efforts at documenting fire risk on the basis of different vegetation cover types, as well as the vulnerability/tolerance of local biodiversity to fire, in order to prioritize specific areas to fire protection7. Actions directed at restoring biodiversity in fire damaged forest ecosystems as part of post-fire assessments have also been proposed by the ASEAN Regional Center, in particular, on elaborating plans to rescue key plant and animal resources and local vegetation types.

11. Restoring key forest ecosystem functions and services while addressing the causes of forest loss and degradation, including fire, is part of the mission of the Global Partnership on Forest Landscape Restoration—launched in March 2003 at the FAO Committee on Forestry by the World Wildlife Fund (WWF), the World Conservation Union (IUCN), and the United Kingdom Forestry Commission, in partnership with the Center for International Forestry Research (CIFOR), the International Tropical Timber Organization (ITTO), UNEP-WCMC, the Government of Kenya, the secretariats of the United Nations Forum on Forests and the Convention on Biological Diversity, and CARE International. Although not strictly related to fire impacts, the recent ITTO Guidelines for the Restoration, Management, and Rehabilitation of Degraded and Secondary Tropical Forests 8/ are directly applicable to forest ecosystems that have been damaged by fire and are in need of human-assisted regeneration.

12. In 1997, ITTO published the Guidelines on Fire Management in Tropical Forests. 9/ These guidelines comprise a set of principles and recommended actions that are designed to provide a base for policy makers and managers in order to develop programs and projects that adjust to specific national, socio-economic, and natural conditions in relation to fire in tropical forests. Recommended actions addressing biodiversity include the rehabilitation of forests damaged by fire, as well as assessing fire effects on forest ecosystem functioning. The guidelines further acknowledge that relevant ecological background is important to both the prevention and control of wildfires in prescribed burning activities. At its thirty-third session, in November 2002, ITTO decided to strengthen its assistance to ITTO member countries experiencing forest fire problems, in particular, to help them in forest fire prevention and management strategies, and in developing project proposals related to the implementation of the strategies. Given the rapid development of many international initiatives on forest prevention and management during the last few years, including recent assessments of the status and trends of wildland

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6/ http://www.fire.uni-freiburg.de/summit-2003/introduction.htm

7/ Proceedings on the Workshop on Minimizing the Impact of Forest Fire on Biodiversity in ASEAN. http://www.arcbc.org

8/ ITTO Policy Development Series No. 13. (2002).

9/ http://www.itto.or.jp/policy/pds6/index.html.

fire events by the ISDR Working Group on Wildland Fire, 10/ the ITTO guidelines, however, may need updating.

13. Addressing inappropriate land use policies and lack of cross-sectoral integration in fire management and prevention strategies in many countries may help to reduce biological and economic losses due to forest fires. To this end, many organizations have targeted their actions within tropical localities where lack of cross-sectoral articulation is usually prominent. With an emphasis on preventive approaches and analysis of underlying causes of forest fires, CIFOR and the World Agroforestry Centre (ICRAF) are currently working to providing policy recommendations that are expected to address the underlying causes of forest fires in several Indonesian provinces after the devastating forest fire events of 1997/98.

C. Community-based approaches to forest fire prevention and management

14. Highly linked to the above initiatives on fire management, IUCN and WWF's Global FireFight Programme aims at strengthening national, regional, and international networks for forest fire prevention and management, but with a clear focus on community involvement. To this end, Project FireFight South East Asia was developed in 2000. After documenting and analysing examples of community-based fire management in the region, it was concluded that management strategies become more effective when included as part of a locally based management initiative. IUCN and WWF now plan to use the South East Asia experience as a basis to extend the Global FireFight Programme to other regions. 11/ To date, the Programme has made progress in involving communities in fire management in Thailand, Cambodia, and Indonesia, by revisiting traditional forest fire management regimes that emphasize prescribed burning as well as prevention. The project found that a community's motivation to manage fire will depend to a large extent on the degree to which it has clear land tenure rights.

15. The 2002 FAO guidelines on fire management in temperate and boreal forests (prepared in collaboration with GFMC, the Economic Commission for Europe and the International Labour Organization) also contain information on participatory fire management in these ecosystems.

D. Activities relating to forest fires in the programme of work on forest biological diversity under the Convention on Biological Diversity

16. Activities aimed at preventing and integrating the negative impacts of forest fires, and fire suppression are contained in programme element 1, goal 2, objective 4 of the programme of work on forest biological diversity (decision VI/22, annex) and are reproduced in the annex to the present note.

III. ELEMENTS FOR POSSIBLE JOINT ACTIVITIES ON FOREST FIRES AND BIODIVERSITY

17. As reviewed above, FAO, ITTO, and GFMC—as well as other relevant institutions—have explicitly included forest biodiversity in their recent and/or ongoing initiatives on assessing fire impacts, as well as their prevention and management. The reviewed activities largely converge with those aimed at both preventing and mitigating the adverse effects of fires included in the expanded programme of work on forest biological diversity of the Convention. More generally, the expanded programme of work on forest biological diversity also includes in its goals and objectives, issues from where proposed elements for joint activities could be extracted: (i) atmospheric pollution; 12/ (ii) climate change; 13/ (iii) restoration; 14/ (iv) protected areas; 15/ (v) development of community-management systems; 16/

10/ Working Group on Wildland Fire of the United Nations International Strategy for Disaster Reduction. An overview of vegetation fires globally. Background paper for the International Wildland Fire Summit, Australia, 8 October 2003.

11/ WWF International / The World Conservation Union. 2003. Future fires: perpetuating problems of the past.

12/ Programme element 1, goal 2, objective 2.

13/ Programme element 1, goal 2, objective 3

14/ Programme element 1, goal 3, objective 1

15/ Programme element 1, goal 3, objective 3.

16/ Programme element 1, goal 4, objective 3.

(v) cross-sectoral integration; 17/ (vi) underlying socio-economic causes of forest biodiversity loss; 18/ (vii) public education and training; 19/ and (viii) assessment on status and trends of forest biological diversity. 20/ A set of proposed elements for developing joint work programmes on those areas mentioned in paragraph 44 of decision VI/22 are described below as a potential basis for possible inter-agency collaborative activities with the Convention.

18. Some of the initiatives reviewed in this note (for example, the Global Partnership on Forest Landscape Restoration 21/described in paragraph 11 above) already include the Convention Secretariat as a collaborator in support of joint activities related to forest fire impacts and biodiversity. Paragraph 38 of decision VI/22 also provides the basis for broad collaboration in support of the implementation of the expanded programme of work on forest biological diversity through the Collaborative Partnership on Forests, which includes FAO and ITTO as members. Finally, the Convention Secretariat has been appointed in 2003 as a member of the International Strategy for Disaster Reduction Working Group on Wildland Fire. Both GFMC and FAO, among others, are the core members of the Group.

19. The elements for possible joint activities identified below largely reflects current needs and information gaps on integrated fire management, drawing from a recent assessment by the Group. 22/

(a) *Fire impact assessments*:

(i) Development of improved systems of fire data collection that meet the requirements of a growing number of stakeholders, and that permit integrated assessments of both the environmental and socio-economic consequences of uncontrolled forest fires;

(ii) Development of improved fire prediction tools that assess the susceptibility of forest ecosystems to ignite, particularly those based on current distribution of land use systems and changes over time in biophysical variables at the regional level (e.g., RisQue98, a map of fire risk for the Brazilian Amazon 23/);

(iii) Development of standardized reporting systems, for national reporting and adequate to feed regional or global assessments;

(b) *Management guidelines*:

(i) Refinement of fire management guidelines through *inter alia* the promotion of intersectoral coordination of land use policies and practices in order to prevent, reduce, and mitigate the negative effects of uncontrolled forest fires. Implementation of guidelines may require appropriate transfer of technologies for fire prevention and management;

(ii) Systematic collection and dissemination of analysis of experiences, case studies, and projects worldwide—addressing lessons learned—in order to identify common principles that guide the design and/or improvement of institutional and cross-sector arrangements on fire management;

17/ Programme element 2, goal 1, objective 2.

18/ Programme element 2, goal 2, objective 1.

19/ Programme element 2, goal 3, objective 1.

20/ Programme element 3, goals 2 and 4, and related objectives.

21/ http://www.iucn.org/themes/fcp/activities/flr1.html.

22/ Working Group on Wildland Fire of the United Nations International Strategy for Disaster Reduction. An overview of vegetation fires globally. Background paper presented at the International Wildland Fire Summit, Australia, 8 October 2003.

23/ Nepstad, D. et al. 1998. Forest fire prediction and prevention in the Brazilian Amazon. Conservation Biology 12: 951-953.

(iii) Greater international and regional co-operation in sharing information to promote more effective fire management that explicitly integrates institutional, policy, and scientific aspects;

(c) *Community-based approaches to fire prevention and management*. Systematic collection and further dissemination among communities of examples where sustainable land use practices and local participation in integrated forest management systems are being employed, including, among others, land right issues, incentive measures and institutional structure at the community level.

Annex

SPECIFIC CONSIDERATION OF FIRES WITHIN THE EXPANDED PROGRAMME OF WORK ON FOREST BIOLOGICAL DIVERSITY (DECISION VI/22, ANNEX)

PROGRAMME ELEMENT 1. CONSERVATION, SUSTAINABLE USE AND BENEFIT-SHARING

GOAL 2

To reduce the threats and mitigate the impacts of threatening processes on forest biological diversity

Objective 4

To prevent and mitigate the adverse effects of forest fires and fire suppression

Activities

(a) Identify policies, practices and measures aimed at addressing the causes and reducing impacts on forest biological diversity resulting from human-induced uncontrolled/unwanted fires, often associated with land clearing and other land use activities.

(b) Promote understanding of the role of human-induced fires on forest ecosystems and on species, and of the underlying causes.

(c) Develop and promote the use of fire management tools for maintaining and enhancing forest biological diversity, especially when there has been a shift in fire regimes.

(d) To promote practices of fire prevention and control to mitigate the impacts of unwanted fires on forest biological diversity.

(e) Promote development of systems for risk assessment and early warning, monitoring and control, and enhance capacity for prevention and post-fire forest biodiversity restoration at the community, national and regional levels.

(f) To advise on fire-risk prediction systems, surveillance, public education and other methods to minimise human-induced uncontrolled/unwanted fires.

(g) Develop strategies to avoid the negative effects of sectoral programmes and policies which could induce uncontrolled forest fires.

(h) Develop prevention plans against devastating fires and integrate them into national plans targeting the biological diversity of forests.

(i) Develop mechanisms, including early warning systems, for exchange of information related to the causes of forest biodiversity loss, including fires, pests and diseases, and invasive species.
