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AGRICULTURAL BIODIVERSITY - BIOFUELS AND BIODIVERSITY: CONSIDERATION OF WAYS AND MEANS TO PROMOTE THE POSITIVE AND MINIMIZE THE NEGATIVE IMPACTS OF THE PRODUCTION AND USE OF BIOFUELS ON BIODIVERSITY

Note by the Executive Secretary

EXECUTIVE SUMMARY

In its decision IX/2, on biofuels and biodiversity, the Conference of the Parties called upon or invited the submission of experiences in the development and application of tools relevant to the sustainable production and use of biofuels as well as relevant information from research on, and monitoring of, the positive and negative impacts of the production and use of biofuels on biodiversity and related socio-economic aspects, including those related to indigenous and local communities. The Executive Secretary received 52 responses to his notification on this subject, including 13 from Parties to the Convention. These are accessible through the clearing-house mechanism and summarized herein. They reflect a very broad range of approaches already being undertaken or developed, including in the policy, regulatory and research arenas.

In the same decision, the Executive Secretary was also requested to convene regional workshops on the sustainable production and use of biofuels, aiming at considering ways and means to promote the positive and minimize the negative impacts on biodiversity of their production and use, taking into account relevant guidance from the Convention. Accordingly, workshops were held in October, November and December 2009, for, respectively, Latin America and the Caribbean, Asia and the Pacific, and Africa. The report of each meeting is available through the clearing-house mechanism. The workshop for Latin America and the Caribbean developed a draft conceptual framework for ways and means to minimize the negative and maximize the positive impact of biofuel production and use on biodiversity, which was subsequently developed further by the Asia and the Pacific and Africa workshops. The latter workshop called for the development of a toolkit of approaches, tools, guidance and technical support that should be developed in collaboration with competent partners.

* UNEP/CBD/SBSTTA/14/1.

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SUGGESTED RECOMMENDATIONS

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

The Conference of the Parties

1. *Expresses its gratitude* to the European Community for its financial contribution towards the regional workshops for Latin America and the Caribbean, and Asia and the Pacific, and to the Government of Germany for the regional workshop for Africa, on ways and means to promote the positive and minimize the negative impacts of biofuel production and use on biodiversity, to the Governments of Brazil, Thailand and Ghana for hosting these workshops and to the Government of Brazil for providing Spanish interpretation to facilitate active participation of the entire region;

2. *Invites* Parties, other Governments and relevant organizations and stakeholders to examine, and as appropriate, further develop and apply the conceptual frameworks for ways and means to minimize the negative and maximize the positive impact of biofuel production and use developed by the three regional workshops;

3. *Requests* the Executive Secretary, subject to financial resources, to develop, in collaboration with competent partner organizations and relevant processes, a toolkit to further assist Parties and relevant stakeholders in applying appropriate ways and means to promote biofuel production that is sustainable in relation to biodiversity.

I. INTRODUCTION

1. At its twelfth meeting, the Subsidiary Body on Scientific, Technical and Technological Advice, in its recommendation XII/7, recognized that there are potential positive and negative impacts of liquid biofuel production on biodiversity and human well-being. Consequently, the Conference of the Parties, at its ninth meeting, adopted decision IX/2, on biofuels and biodiversity, in paragraphs 1 and 2 of which the Parties to the Convention agreed that biofuel production and use should be sustainable in relation to biological diversity and recognized the need to promote the positive and minimize the negative impacts of biofuel production and its use on biodiversity and on the livelihoods of indigenous and local communities.

2. In paragraph 7 of the same decision, the Conference of the Parties further agreed that the Convention on Biological Diversity has a role in biodiversity-related aspects of the sustainable production and use of biofuels, and, in paragraph 3 (c), urged Parties and invited other Governments, in consultation with relevant organizations and stakeholders, including indigenous and local communities, to “develop and apply sound policy frameworks for the sustainable production and use of biofuels, acknowledging different national conditions, and taking into account their full life cycle as compared to other fuel types, that contribute to the conservation and sustainable use of biodiversity, making use of relevant tools and guidance under the Convention as appropriate”.

3. In order to advance consideration of ways and means to promote the positive and minimize the negative impacts of the production and use of biofuels on biodiversity, the Conference of the Parties, in paragraph 5 of the decision, called upon Parties, other Governments and the research community, and invited other relevant organizations, to continue to investigate and monitor the positive and negative impacts of the production and use of biofuels on biodiversity and related socio-economic aspects, including those related to indigenous and local communities, and requested the Executive Secretary to further compile this evidence and to make it available through the clearing-house mechanism of the Convention and other appropriate means.

4. In paragraph 6 of the decision, the Conference of the Parties further urged Parties and other Governments to strengthen development cooperation with a view to promote the sustainable production and use of biofuels through, *inter alia*, the transfer of environmentally sound technologies and an exchange of information concerning best practices.

5. In paragraph 12 of the decision, the Conference of the Parties requested the Executive Secretary to convene regional workshops on the sustainable production and use of biofuels, aiming at considering ways and means to promote the positive and minimize the negative impacts of the production and use of biofuels on biodiversity, taking into account relevant guidance from the Convention.

6. Section II of this document summarizes the submissions received from Parties and other Governments, indigenous and local communities, and relevant stakeholders and organizations. Section III describes the outcomes of the three regional workshops on ways and means to promote the positive and minimize the negative impacts of the production and use of biofuels on biodiversity.

II. WAYS AND MEANS FOR PROMOTING THE SUSTAINABLE PRODUCTION AND USE OF BIOFUELS REPORTED BY PARTIES AND OTHER GOVERNMENTS, INDIGENOUS AND LOCAL COMMUNITIES, AND RELEVANT STAKEHOLDERS AND ORGANIZATIONS

7. Through notification 2008-100 of 6 August 2008, Parties and other Governments, indigenous and local communities, and relevant stakeholders and organizations were invited to share their experiences on the development and application of tools relevant to the sustainable production and use of biofuels as well

as relevant information from research on, and monitoring of, the positive and negative impacts of the production and use of biofuels on biodiversity and related socio-economic aspects, including those related to indigenous and local communities. A total of 52 submissions were received by 22 December 2009. The full submissions are accessible at <http://www.cbd.int/agro/biofuelresources>. The following summarizes some of the key elements that are most relevant to considerations of ways and means to promote the sustainable production and use of biofuels but do not reflect the multitude of experiences submitted.

A. Experiences reported by Parties and other Governments

8. In response to notification 2008-100, the Executive Secretary received submissions from Australia, Belgium, Brazil, Colombia, the Czech Republic, the European Community, Finland, France, Germany, the Netherlands, Portugal, the United Kingdom and the United States of America.

9. Australia stated that countries should have the flexibility to respond to sustainability issues in accordance with their national circumstances. Australia currently has no policy, rules or regulations relating specifically to biofuel production with regard to protection of biodiversity or environmental sustainability. As with any land use in Australia, growing feedstock for biofuels, or using residual resources from agricultural crops or wood production must meet legislation and regulations governing land use, water use and environmental impacts more broadly.

10. Brazil provided information on the development of its biofuels, focusing on developments of the domestic market, the different biofuels and feedstocks required for their production, as well as social, environmental, economic and regulatory aspects guiding private sector decisions on biofuel-related investments. Brazil also referred to voluntary best practices established by local governments. This includes the Government of São Paulo State as the largest producer in the country, which involves: the progressive elimination of burning in sugarcane fields by 2017; the preservation of riparian forests; the protection of water springs located in areas where crops are cultivated and the recovery of vegetation around them; combating erosion; encouraging reuse of water from the industrial phase of biofuel production; and optimizing recycling and promoting the reuse of residues.

11. Colombia provided the report of a strategic environmental assessment of national biofuel production. This includes for the four major crops used (oil palm, sugarcane, cassava and maize), recommendations on how to make expanded biofuel production sustainable and a comprehensive analysis of planning needs and action required on the part of different actors to ensure nutritional security, minimize negative impacts on biodiversity, and promote beneficial effects on local populations.

12. The European Commission reported on the two successive European Union directives that promote biofuel use as a way to reduce the dependence of the European Union on imported oil and to reduce greenhouse-gas emissions from the transport sector since 2003. The European Union Directive on Renewable Energy and Fuel Quality, which will enter into force in 2011, contains a sustainability scheme for biofuels, which will oblige all EU biofuel producers or importers to comply with clear environmental criteria, and to report on a number of additional impacts, including possible economic and social impacts within the European Union and in other countries. Article 17 of the Directive sets out the following biodiversity criteria:

“Biofuels and bioliquids (...) shall not be made from raw material obtained from land with high biodiversity value, namely land that had one of the following statuses in or after January 2008, whether or not the land continues to have that status:

“(a) Primary forest and other wooded land, namely forest and other wooded land of native species, where there is no clearly visible indication of human activity and the ecological processes are not significantly disturbed;

“(b) Areas designated:

“(i) By law or by the relevant competent authority for nature protection purposes; or

“(ii) for the protection of rare, threatened or endangered ecosystems or species recognized by international agreements or included in lists drawn up by intergovernmental organizations or the International Union for the Conservation of Nature, subject to their recognition in accordance with the second subparagraph of Article 18(4);

“unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes;

“(c) Highly biodiverse grassland that is:

“(i) Natural, namely grassland that would remain grassland in the absence of human intervention and which maintains the natural species composition and ecological characteristics and processes; or

“(ii) Non-natural, namely grassland that would cease to be grassland in the absence of human intervention and which is species-rich and not degraded, unless evidence is provided that the harvesting of the raw material is necessary to preserve its grassland status.”

13. Belgium reported on the way in which the two EU directives are implemented and the relevant tax changes that have been introduced to provide incentives for ensuring that manufacturers offer the fuel qualities required. Belgium also reported on the focus and results of a number of research projects associated with the growing biofuel demand.

14. The Czech Republic reported on the content and implications of the decree of the Ministry of the Environment No. 482/2005 Coll.: “On the determination of biomass types, methods of use and parameters in supporting the generation of electric energy from biomass.” The decree contains in its annex II a list of alien invasive species of higher plants that could harm ecosystems and cause economic problems in the Czech Republic. Biofuels generated on the basis of these species are excluded from economic subsidies. Current research focuses on the biodiversity impacts of biofuel production and the development of second generation biofuels.

15. Finland reported that biofuels make up 25 per cent of the country’s primary energy supply, and are produced within the country. The proportion of imported second-generation biofuel for transport is not reported. The long-term climate and energy strategy of Finland aims to increase the share of renewable energy to 38 per cent by 2020, in accordance with the obligation for Finland set by the European Commission. In Finland, national sustainability criteria have not been defined. On the other hand, various kinds of indicators have been developed to concretize the social dimension of sustainable development. Finnish development policy (2007) is based on a consensus that all development must be ecologically sustainable. A report of the Finnish Environment Institute (SYKE) applies an interdisciplinary research framework to bioenergy-biodiversity linkages.

16. In France, the same criteria are applied to agricultural production for food and for biofuel. Measures have been taken to evaluate the conformity of biofuel production with the European Union sustainability criteria. The submission of France focuses on biofuels produced nationally and makes reference to other measures aimed at protecting biodiversity, national parks and threatened species within the Natura 2000 network.

17. Germany's draft Biofuel Sustainability Ordinance (2007) formulates binding sustainability requirements for biofuels to be credited against the biofuel quota and these must make allowance for the conservation of biodiversity. Germany provided comprehensive information on completed and ongoing research activities related to the sustainable production and use of biofuels. The German Advisory Council on Global Change (WBGU) argues that use should be made of the global sustainable potential of bioenergy, provided that risks to sustainability, including food security, nature conservation goals and climate protection objectives, can be excluded. A study commissioned by the Federal Ministry of the Environment, Nature Conservation and Nuclear Safety recommended that biofuel production should aim to contribute to the following objectives/principles:

- (a) Significant contribution to greenhouse-gas reduction;
- (b) Minimization of negative consequences of indirect land-use changes and compensation of competing land use;
- (c) Exclusion of the loss of biospheres with high natural value (HNV);
- (d) Exclusion of the loss of biodiversity;
- (e) Minimization of negative effects on soil, water and air;
- (f) No disadvantages suffered by the local population, and participation in the opportunities of biomass cultivation ensured; and
- (g) Observation of internationally recognized standards for working conditions.

18. The Netherlands developed a Biomass Action Plan for their international engagement. This action plan fully takes into consideration the respective European Union policy development and the Netherlands ambition to invest in the sustainability of biofuels. The action plan details the cooperation with developing countries in drafting policies on sustainable biofuels and the development of implementation capacity. At the request of the Government, the project group "Sustainable production of biomass" prepared a "Testing Framework for Sustainable Biomass" including a set of sustainability criteria (the "Cramer Criteria"), as follows:

- (a) *Greenhouse gas emissions*: (i) calculated over the whole chain, the use of biomass must produce fewer net greenhouse-gas emissions on average than fossil fuel; (ii) the development of new acreage for the planting of biomass for energy must not lead to the long-term release of large quantities of carbon that had been stored there (in soil or vegetation);
- (b) *Competition with food or other local applications*: the production of biomass for energy must not endanger the food supply and other local applications (such as for medicines or building materials);
- (c) *Biodiversity*: biomass production must not affect protected or vulnerable biodiversity and will, where possible, have to strengthen biodiversity;
- (d) *Environment*: in the production and processing of biomass, the quality of soil, surface and ground water and air must be retained or even increased;
- (e) *Prosperity*: the production of biomass must contribute towards local prosperity; and
- (f) *Social well-being*: the production of biomass must contribute towards the social well-being of the employees and the local population.

19. In Portugal, EU directive 2003/30/EC on the promotion and use of biofuels has been transposed to national legislation. Portugal has also developed a set of instruments that determine, from the environmental point of view, the conditions of production of biofuels and biomass and ensure that it is done within the framework of sustainable development and respect for biodiversity conservation. For example, the operational level guidelines of the process of Ministerial Conference on the Protection of Forests in Europe (MCPFE) and has been adapted to the national level.

20. The report of the United Kingdom emphasizes current research. The Global Impacts Programme is centered on developing a database and website to provide access to a range of information that is relevant to global biodiversity issues, including a review of potential impacts of use of biomass for energy on biodiversity. At the request of the Government, the United Kingdom Renewable Fuels Agency carried out a study of the indirect effects of biofuels production. The “Gallagher Review” concludes that, while a genuinely sustainable industry is possible, the introduction of biofuels should be significantly slowed until adequate controls to address displacement effects are implemented and are demonstrated to be effective, thereby reducing the impact of biofuels on food commodity prices. The report called for the following principles:

- (a) Feedstock production for biofuels must avoid agricultural land that would otherwise be used for food production;
 - (b) Biofuel production must target idle and marginal land and use of wastes and residues;
- and
- (c) Specific incentives must stimulate advanced technology.

B. Experiences and efforts undertaken by organizations and other stakeholders

21. As of 22 December 2009, 39 submissions in response to notification 2008-100 had been received from organizations and individual researchers. Some of the main points raised are summarized below.

22. A policy brief of the United Nations Educational, Scientific and Cultural Organization (UNESCO), Scientific Committee on Problems of the Environment (SCOPE) and the United Nations Environment Programme (UNEP) argues that biofuel policies will be most successful if integrated in comprehensive plans for climate change, biodiversity protection and food and energy security and that these plans should address energy conservation and efficiency as well as new sources of energy.

23. UNEP prepared a report to assist countries and stakeholders in assessing the sustainable production and use of biofuels. The report intends to provide policy relevant information on the assessment of the environmental and social costs and benefits of biofuels. It examines both the concerns of critical developments, and describes the options for a more sustainable use of biomass and measures to increase resource productivity. The focus is on first-generation biofuels.

24. The Roundtable on Sustainable Biofuels (RSB) prepared, on the basis of a several rounds of consultations, a set of highly aspirational principles, criteria and indicators and recognizes that very few biofuel supply chains currently fulfil these principles. The RSB version zero results include the following principles:

- (a) Biofuel production shall follow all applicable laws of the country in which they occur, and shall endeavour to follow all international treaties relevant to biofuels production to which the relevant country is a Party;
- (b) Biofuel projects shall be designed and operated under appropriate, comprehensive, transparent, consultative, and participatory processes that involve all relevant stakeholders;

- (c) Biofuel shall contribute to climate-change mitigation by significantly reducing greenhouse-gas emissions as compared to fossil fuels;
- (d) Biofuel production shall not violate human rights or labour rights, and shall ensure decent work and the well-being of workers;
- (e) Biofuel production shall contribute to the social and economic development of local, rural and indigenous peoples and communities;
- (f) Biofuel production shall not impair food security;
- (g) Biofuel production shall avoid negative impacts on biodiversity, ecosystems, and areas of High Conservation Value;
- (h) Biofuel production shall promote practices that seek to improve soil health and minimize degradation;
- (i) Biofuel production shall optimize surface and groundwater resource use, including minimizing contamination or depletion of these resources, and shall not violate existing formal and customary water rights. Air pollution from biofuel production and processing shall be minimized along the supply chain;
- (j) Biofuel shall be produced in the most cost-effective way. The use of technology must improve production efficiency and social and environmental performance in all stages of the biofuel value chain; and
- (k) Biofuel production shall not violate land rights.

25. The International Risk Governance Council (IRGC) concluded that current policies, and economic incentives that accompany them, do not enable a balanced resolution of the trade-offs that need to be made between: (i) biomass for fuel *versus* food; (ii) energy security and independence *versus* climate change mitigation; (iii) different uses of land, with direct and indirect impact on greenhouse-gas emissions, soil degradation and water resources; and (iv) local, regional and global needs. In view of the complexity of the issue, IRGC proposes policy options, with clear-cut targets, summarized as follows:

- (a) Industrialized countries and major exporters of bioenergy among developing countries should encourage the development of bioenergy only where it can be demonstrated that doing so will reduce greenhouse-gas emissions throughout the entire life-cycle; and
- (b) Other developing countries and countries with economies in transition should develop bioenergy that primarily benefits local livelihoods through the provision of affordable, safe and more efficient heat, electricity and fuel for transportation, and to support wider sustainable development goals that do not, in doing so, jeopardize food security.

26. A study commissioned by WWF Germany and led by the Öko-Institut proposes the following biomass sustainability standards:

- (a) Clarification of land ownership;
- (b) Avoiding negative impacts from bioenergy-driven changes in land use;
- (c) Priorities for food supply and food security;
- (d) No additional negative biodiversity impacts;

- (e) Minimization of greenhouse gas emissions;
- (f) Minimization of soil erosion and degradation;
- (g) Minimization of water use and avoidance of water contamination;
- (h) Improvement of worker conditions and worker rights;
- (i) Ensuring a share of proceeds; and
- (j) Avoiding human health impacts.

27. IUCN provided a compilation of example principles, frameworks and tools already in use in the conservation community which may be applied to bioenergy production to identify and reduce environmental as well as socio-economic risks and promote opportunities. The aim is to provide the range of stakeholders who are engaged in the bioenergy agenda (Governments, businesses, communities, land owners, and individuals) the tools to achieve more sustainable outcomes in relation to ecosystems and livelihoods.

28. A report prepared for the United States Agency for International Development (USAID) analyses the sustainability options for biofuel production in Asia by summarizing the benefits and risks of biofuels development in Asia, and examines the distribution and use of biofuels through the lenses of: global climate change; biodiversity conservation; energy alternatives; food security; economic development; and local livelihoods. It maintains that countries and stakeholders should: carefully evaluate the sustainability prospects of different biofuels in Asia; assess international best practices that can help realize the full potential of biofuels; and design and implement appropriate policies to enable sustainable biofuel production and use.

29. Some submissions provide an overview of the range of issues related to the sustainable production and use of biofuels (e.g., Red de Desarrollo Sostenible y Medio Ambiente). Others emphasize specific points such as the need to study the carbon balance of biofuel production (e.g., Wetlands International; International Mire Conservation Group; Greenpeace), its implications on biota (European Forest Institute; European Centre for Nature Conservation), land-use and conservation activities (the World Conservation Monitoring Centre of the United Nations (UNEP-WCMC); Econexus; Plieninger) and water use (e.g. International Water Management Institute), trade-offs between food and energy production (International Federation of Organic Agriculture Movements; the Consultative Group on International Agricultural Research (CGIAR) Livestock Programme; the International Maize and Wheat Improvement Center (CIMMYT), the International Crops Research Institute for the Semi Arid tropics (ICRISAT)) including associated incentive measures (Center for Advanced Studies on Applied Economics of the University of São Paulo; Econexus), the use of living modified organisms (Gressel) and invasive alien species as feedstock (Global Invasive Species Programme) and implications for indigenous and local communities (Econexus) and gender equality (UNDP/GEF-SGP).

III. REGIONAL WORKSHOPS ON WAYS AND MEANS TO PROMOTE THE POSITIVE AND MINIMIZE THE NEGATIVE IMPACTS OF BIOFUEL PRODUCTION AND ITS USE ON BIODIVERSITY

30. In paragraph 12 of decision IX/2, the Conference of the Parties requested the Executive Secretary to convene regional workshops on the sustainable production and use of biofuels aiming at considering ways and means to promote the positive and minimize the negative impacts of the production and use of biofuels on biodiversity, taking into account relevant guidance from the Convention.

31. With the financial support from the European Community and the Government of Germany, the following workshops were held:

- (a) Regional workshop for Latin America and the Caribbean: Louveira, São Paulo, Brazil, 28-30 September 2009;
- (b) Regional workshop for Asia and the Pacific: Bangkok, 25-27 November 2009; and
- (c) Regional workshop for Africa: Accra, 8-10 December 2009.

32. The three workshops brought together a total of 89 experts representing 55 Parties to the Convention who welcomed the opportunity to exchange information on ways and means to promote the positive and minimize the negative impacts of the production and use of biofuels on biodiversity in their respective countries. Presentations on the status and considerations of their biofuel activities were made by 39 country representatives.

33. The workshop for Latin America and the Caribbean developed a draft conceptual framework for ways and means to minimize the negative and maximize the positive impact of biofuel production and use on biodiversity contained in the annex to the report of that meeting (UNEP/CBD/RW-SPU-BIO/1/3). The workshops for Asia and the Pacific and for Africa decided to use that draft framework as a basis for their discussions and developed it further (UNEP/CBD/RW-SPU-BIO-AP-01-03 and UNEP/CBD/RW-SPU-BIO-03-03).

34. Participants recognized that there is a significant amount of relevant guidance and several ongoing processes relevant to the promotion of the sustainable production and use of biofuels. As a contribution to support Parties, as appropriate, in making informed decisions, the Africa workshop called for the development of a toolkit of approaches, tools, guidance and technical support that should be developed in collaboration with competent partners.
