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TRADE, ENVIRONMENT AND DEVELOPMENT

Background note by the UNCTAD secretariat[*]

Executive summary

This note focuses on selected trade, environment and development issues that have featured as salient topics both within the international debate and in UNCTAD's work, taking into account the outcome of the UNCTAD XI Mid-term Review: (i) increasingly stringent, complex and multidimensional mandatory and voluntary environmental, health and food safety requirements are affecting market access for developing country exports; (ii) the development of the organic agricultural sector may offer a win–win scenario and contribute to the attainment of the MDGs; (iii) work on environmental goods and services has identified divergences in the interests of developed and developing countries in the area of trade liberalization; (iv) the preservation, protection and sustainable use of traditional knowledge and practices require a holistic approach involving indigenous rights, preservation of biodiversity and equitable access and benefit sharing; (v) market demand for biodiversity-based products and services is growing, providing biodiversity-endowed countries, especially developing countries, with strong export opportunities.; (vi) biofuels may offer a promising low-carbon alternative to fossil fuels and be instrumental to agricultural renaissance; and (vii) the recent WTO Panel Report on the Biotech case may affect ongoing regulatory and policy discussions in all countries.

[*] This document was submitted on the above-mentioned date as a result of processing delays.

INTRODUCTION

1. At UNCTAD XI, Member States agreed that "UNCTAD should continue to provide support to developing countries on issues at the interface between trade and environment, such as market access, agriculture, transfer of environmentally sound technology, environmental goods and services, environmentally preferable products, and issues concerning eco-labelling and certification costs, and follow up on trade-related issues contained in the Johannesburg Plan of Implementation. It should strengthen work on the BIOTRADE Initiative and the UNEP–UNCTAD Capacity Building Task Force on Trade, Environment and Development (CBTF)". Information and analysis of progress made in the implementation of this mandate can be found in the following UNCTAD websites: (www.unctad.org), (www.biotrade.org) and (www.unctad.org/biofuels).

2. Growing concerns about petroleum price fluctuations, energy independence and the adverse environmental and economic effects of climate change have drawn substantial attention to biofuels as an alternative means of meeting the world's growing demand for energy. Because of rapid and irreversible biodiversity loss, consumer interest in sustainable use of biodiversity has been on the rise. In response to these interests and concerns, the UNCTAD BioFuels and BioTrade Initiatives have carried out activities on the potential risks and benefits of developing countries engaging in the emerging biofuels market and on the identification of goods and services that contribute to sound use of biodiversity. UNCTAD's work on these complex issues featuring prominently in the international development agenda has been appreciated by its membership, among other things because it contributed to the formulation of national biofuel strategies and national biotrade programmes. Issues related to biofuels and biodiversity are addressed in the second part of this document.

I. TRADE AND SUSTAINABLE DEVELOPMENT

A. Environmental requirements and market access

UNCTAD's Consultative Task Force

3. Strengthening further research and analysis as the backbone of UNCTAD's work and placing greater emphasis on practical solutions, as emphasized by the Mid-term Review of UNCTAD XI, have been at the centre of UNCTAD's Consultative Task Force on Environmental Requirements and Market Access for Developing Countries (CTF). The Task Force has focused its recent analytical activities on two sectors that are of particular export and developmental interest for developing countries: electrical and electronic equipment;[†] and fresh fruit and vegetables.[‡] CTF activities have aimed at assisting interested developing countries in moving towards proactive adjustment approaches to new environmental, health, and food safety requirements (EHFSRs) in key export markets that minimize adjustment costs and maximize developmental benefits. CTF activities have placed particular emphasis on the adjustment problems of small and medium-sized enterprises (SMEs) and the role of

[1] For an in-depth analysis of key findings and conclusions of country case studies on China, Malaysia, Philippines, and Thailand, see UNCTAD, *Trade and Environment Review 2006*, accessible at www.unctad.org/trade_env.

[2] Preliminary findings were summarized in "Food safety and environmental requirements, market access and export competitiveness: Turning challenges into opportunities for developing countries: The horticultural sector" (UNCTAD/DITC/TED/2006/2), issues note for the annual meeting of UNCTAD's CTF, Geneva, 3–4 July 2006.

voluntary, private-sector-set requirements for market access.[§] The latter has been intensively debated in several forums, including in the WTO SPS Committee, but there is a paucity of empirical studies on the subject.

4. Private sector standards, which although not legally binding in a regulatory sense can be de facto mandatory from a commercial perspective, are becoming increasingly significant for developing country exports for two main reasons. First, they tend to be more stringent, more rigorously enforced and broader in scope than Government regulations. Second, they are key to new or continued access to global supply chains. At the same time, there is concern that such requirements are not properly governed by multilateral disciplines, for example with regard to notification and consultations with potentially affected trading partners. One of the main reasons for the creation of the UNCTAD CTF was to provide a forum where key private sector standards could be discussed among a variety of stakeholders, including their potential and implications for market access.

5. Private sector standards stipulate a range of quality, safety, logistical, environmental and (sometimes) social standards with which suppliers have to comply. Compliance has to be verifiable using testing, traceability and certification methodologies specified by the standard-setter. This often requires suppliers to spend significant amounts of time and resources on implementing complex quality assurance systems and associated testing and certification methods. Consequently, new requirements tend to reinforce the existing strengths and weaknesses of competing producers and suppliers. Producers who rely on traditional modes of production and who have little technical or financial capacity to comply with complex requirements may therefore be marginalized or pushed out of the market. This applies to both countries (especially LDCs) and producers (especially SMEs and smallholders in agriculture).

6. Small-scale producers therefore face a combination of rising compliance costs from both Government regulations and private standards, tighter control over the supply chain by private standard-setters, and a shift towards supply contracts with a small number of large-scale exporters, manufacturers or retailers. These trends could result in a significant degree of industry concentration by excluding producers unable to make the necessary adjustments. This has significant development implications, as those in greatest need of the increased income offered by exports, such as smallholder farmers in LDCs and elsewhere, are the most likely to be squeezed out of the market. One impact of quality, safety and other requirements in the agricultural sector may therefore be a weakening of the link between a successful export sector and poverty reduction.

Compliance benefits and costs

7. New EHFSRs in export markets yield some direct and catalytic benefits in producing countries. In Brazil, for instance, implementation of the Integrated Fruit Production scheme for apples has resulted in an approximately three per cent increase in employment and income over the past two years. The scheme has also led to significant cuts in production costs and has resulted in reduced application of agro-toxics and lower agrochemical residues. The scheme has furthered environmental improvement, product quality and rural workers' occupational health and safety.

[3] See "Report of the Workshop on Environmental Requirements and Market Access for Developing Countries: How to Turn Challenges into Opportunities?" (UNCTAD/DITC/TED/MISC/2006/1), annual meeting of the CTF, Geneva, 3–4 July 2006.

8. The costs of complying with both public regulations and private sector standards are significant. At the national level, costs include training, development of legislation, physical infrastructure, testing and monitoring, as well as quality control systems/infrastructure. Firm-level costs are incurred for changes in producing systems, infrastructure, training, quality management systems, consultancy services, alternative agrochemicals and certification costs. In examples given by Jaffee,[**] adjustment costs are approximately the equivalent of exporters' total net profits and represent some 60 per cent of the estimated profits of smallholder farmers. Graffham and Vorley[††] estimate compliance costs in the order of 5–200 per cent of the profits of smallholders. Such high costs underline the importance of finding ways to reduce expenses while enabling producers to simultaneously capitalize on the benefits and catalytic effects of new standards.

The relationship between governmental and private requirements

9. The relationship between these two types of requirements is rarely explicit and largely unexamined. However, the regulatory and standard-setting activities of Government and the private sector are mutually supportive in important respects. Each focuses on a separate aspect of risk management. Governmental regulations aim at *outcomes*: the characteristics of the finished product are specified, and producers and exporters are responsible for ensuring that these requirements are met. Private sector standards, by contrast, focus on *processes*: requirements are set for the entire system of production and supply, with specific instructions on production methodologies and testing procedures. This separation of objectives brings benefits to both Government legislators and private sector standard-setters, to the extent that the relationship between the two could be characterized as a "tacit alliance".

10. Jaffee argues that for Governments, the benefits of this alliance primarily concern enforcement. Private sector standards are typically at least as stringent and broad in scope as mandatory regulations. Thus, if exporters meet the former, they are almost certain to be in compliance with the latter. Private sector standards free Governments from any need to interfere with overseas production processes. The process-oriented approach of private sector standards obviates any need for supervision, thus making it possible for Governments to conduct limited, inexpensive testing of import samples at the point of entry.

11. Private sector standards are not directly addressed by the WTO's TBT and SPS Agreements: Article 13 of the SPS Agreement merely states that member Governments "shall take such reasonable measures as may be available to them to ensure that non-governmental entities within their territories... comply with the relevant provisions of this agreement". The dim prospects for disciplining private standards through WTO, combined with the de facto mandatory nature of many private sector standards, necessitates proactive strategies on the part of both developing and developed countries.

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[4] Jaffee S, "Challenges, strategies and costs of compliance with international agro-food standards". Presentation at the workshop on Standards, Trade and Value Chains, Copenhagen, 5–6 September 2003; and Jaffee S, ed., "Food Safety and Agricultural Health Standards: Challenges and Opportunities for Developing Country Exports". Report No. 31207. Washington, DC, World Bank, 10 January 2005: XVII.

[5] Graffham, A and Vorley B., "Standards compliance: Experience of impact of EU private and public sector standards on fresh produce growers and exporters in sub-Saharan Africa", PowerPoint presentation at the EC informal seminar on "Private food quality standards and their implications for developing countries" (Brussels, 7 December 2005).

B. Promoting production and market access of organic products

12. Organic agriculture (OA) is one option for farmers being squeezed out of conventional markets. OA is produced in accordance with specific production standards aimed at building soil fertility, strengthening ecosystem functioning and avoiding artificial inputs such as agro-chemicals and genetically modified organisms. Certified organic products are those whose compliance with organic production standards has been verified by a third party or other guarantee system.

13. OA offers a wide range of economic, social, health and environmental benefits. The global certified organic market was estimated at some US$ 30 billion in 2005 and is growing at a rate of over 10 per cent. Over 90 per cent of sales were concentrated in North America and Europe. Production, however, is much more global, with developing countries producing and exporting a large share. Markets in developing countries are small but also very dynamic. With fast-growing demand and premium prices, organic farmers generally enjoy higher profitability than conventional farmers.

14. As discussed at an UNCTAD workshop in Bangkok in October 2006, OA can be a powerful tool for achievement of the MDGs. Through improved livelihoods and increased output and diversity of food, OA leads to improved food security and reduced rural poverty (MDG 1), as well as better health for women farmers and their children (MDGs 3, 4 and 5). It offers a wide range of environmental benefits, including increased biodiversity, increased soil fertility, less land degradation, less pollution, and improved energy and resource efficiency (MDG 7). International organic trade creates a direct mechanism for consumers to influence the environment and livelihoods of farmers around the world (MDG 8). In addition, it offers market returns on traditional knowledge and species.

15. UNCTAD has engaged in activities to assist developing countries in taking advantage of the opportunities offered by growing organic markets. In 2001, it joined forces with FAO and the International Federation of Organic Agriculture Movements (IFOAM) to address market entry barriers caused by multiple organic standards, regulations and conformity assessment systems. The UNCTAD–FAO–IFOAM International Task Force on Harmonization and Equivalence has met six times to date in an effort to find solutions to these problems.[‡‡] Within the framework of the UNEP–UNCTAD CBTF, a project is being implemented on promoting production and trading opportunities in East Africa. This project has facilitated public–private partnerships at the national, regional and international levels and has catalysed policy processes to promote organic agriculture in the region. Dozens of activities have been carried out, including facilitation of the development of an East Africa Organic Standard (with IFOAM) to raise awareness, promote production, unify the regional market and enhance international market access.[§§]

C. Environmental goods and services

Conceptual issues in the WTO negotiations on environmental goods

16. Until their suspension in July 2006, the negotiations on environmental goods, provided for in paragraph 31(iii) of the Doha Ministerial Declaration (DMD), had failed, due to divergent environmental and commercial interests, to foster a compromise between the different schools of thought and to produce a consensus approach. Developed Members

[6] See the ITF website at www.unctad.org/trade_env.
[7] See the CBTF website at www.unep-unctad.org.

shared an interest in improving market access conditions, while developing Members, often dependent on tariff revenues and primarily interested in technology transfer, sought to preserve adequate policy space.

17. The negotiating approach based on listing particular environmental goods was largely considered part of the NAMA negotiations, as it posed a problem of dual use. Importantly, it had come short of the mandate to deal with non-tariff barriers (NTBs) and to link environmental goods to services trade. Limited to tariff reductions, the approach failed to place the environmental agenda and the development dimension on top of the effort, nor did it address the mutual supportiveness of trade and the environment as mandated by the *chapeau* of paragraph 31 of the DMD.

18. A series of technical information sessions, conducted by the CTESS back-to-back with the negotiations, revealed that the vast majority of the goods to be found on the various lists failed the single environmental use test. That realization was borne out by UNCTAD's analysis, which also revealed that, for the majority of the proposed goods, dual use was due to their ubiquitous nature rather than to the lack of specificity in the Harmonized System codes. This meant that these goods could not effectively be separated out from the regular NAMA negotiations even if the negotiators were to have recourse to *ex-outs*,[***] not to mention the potential problems with *ex-outs* at the implementation stage.

19. Against this backdrop, the environmental project approach (EPA), which targeted goods and services supplied for specific environmental activities, offered the advantage of coherence and focus, as it left the eclectic enumeration of a great number of randomly defined items behind. It put the achievement of progress in specific and defined environmental areas and the development dimension up front, followed by a process of implementation in relation to goods and services involved, creating an opportunity space for the transfer of environmentally sound technology and related know-how. However, the EPA was questioned on a number of grounds, prompting delegations to reflect on how that and other alternative approaches might translate into commitments in WTO terms.

20. The two main negotiating approaches – the list-based approach and the EPA – seemed to address the mandate from the supply side and the demand side respectively, which suggested the possibility of convergence in a well-balanced compromise.

Non-tariff barriers

21. The negotiations have so far focused on tariff reductions. There is a growing realization, though, that NTBs are of great importance, especially if one takes into account developing countries' exports of resource-based environmental goods.

22. In NAMA, the idea of categorizing NTBs emerged as a prerequisite for the establishment of negotiating modalities. In its compilation of proposals submitted by Members to NAMA, the WTO Secretariat identified four categories of NTBs by relating these to particular WTO Agreements or negotiating mandates.

23. Obtaining consistent and complete information on NTBs, as well as clarifying their definition and classification, are major challenges for the intergovernmental organizations that provide substantive backstopping to the negotiations. UNCTAD's ongoing analysis of NTBs affecting trade in select categories of environmental goods, as well as its more general

[8] National nomenclatures at levels below the internationally harmonized 6-digit codes

work on the methodologies, classifications, quantification and development impacts of NTBs, including within the framework of the Group of Eminent Persons on NTBs, are particularly relevant in this context.

24. As trade negotiators strive to ensure that trade rules do not constrain the ability of countries to achieve their regulatory objectives, the quality and balance of rules is absolutely crucial and may well require special and differential treatment. Any outcomes on NTBs from the Doha Round concerning environmental goods must be commercially viable for developing countries' exports, while at the same time allowing sufficient policy space for the deployment of their environmental industries and the achievement of their development goals.

Reframing issues

25. The temporary suspension of the negotiations may give the trade negotiators an opportunity to "zoom out" of the more technical issues and to look at the 31(iii) mandate from the broader perspective of sustainable development. The question of *criteria* to be used in the negotiations – be it for defining environmental goods or environmental projects – should, once again, take centre stage.

26. Some of the proposals by developing and developed WTO Members alike seek to derive such criteria from – and to link eventual concessions to – nationally and internationally defined objectives and instruments such as Multilateral Environmental Agreements (MEAs), and the MDGs. Although linking the negotiations to MEAs or MDGs may seem almost intuitive, it is not clear whether reorganizing the negotiations on the basis of agreed goals and specific regulatory areas can actually provide an answer.

27. What added value can the WTO negotiations contribute to the achievement of MDGs or MEAs? Can the MDGs or MEAs be used to guide the negotiations on environmental goods and services? Can such an approach help the WTO Members deal with technology transfer as an issue directly relevant to the negotiations on environmental goods? How to handle the different membership?

28. These and other, related questions were at the heart of a consultative meeting, Liberalization of EGS and its Contribution to Fulfilling the MDGs in Asia and the Pacific, organized by UNCTAD in cooperation with ESCAP in Bangkok, on 19 to 20 October 2006. The participants in the meeting, trade negotiators in their majority, stressed the limitations implicit in the WTO system for addressing the mandate and argued for the need to refocus the negotiations on sustainable development and to make them more representative of the importing (developing) country perspective.

Bilateral and regional agreements

29. North–South RTAs and some bilateral free-trade areas are increasingly dealing with the trade and environment interface.[†††] A variety of instruments have been deployed, ranging from environmental chapters and side agreements to consultation, cooperation and exception clauses. Some agreements feature environmental standards. The United States, the EU and to a certain extent Canada have been most active in this regard.

[9] Some RTAs among developing countries have also eventually added on environmental protocols – ASEAN and MERCOSUR are two cases in point.

30. Some RTAs or their ex ante environmental impact assessments contain language related to environmental goods and services, e.g. US–DR–CAFTA, US–Morocco, Canada–Chile, Canada–Costa Rica, New Zealand–Thailand. The MERCOSUR texts refer to environmental technologies.

31. The most significant mark on history was left by the Asia–Pacific Economic Cooperation (APEC) in the late 1990s, when its members drew up a list of environmental goods for the Early Voluntary Sectoral Liberalization (EVSL). The APEC list of environmental goods provided one of the starting points – and a useful reference – in the discussion on product coverage in the CTESS. However, preoccupation with the list has obscured the fact that the progress with the EVSL, admittedly modest, has not been made in terms of trade liberalization, i.e. tariff reductions, but rather in terms of cutting transaction costs and promoting economic and technical cooperation.

32. More analysis is required in order to assess the actual and potential implications of this *multi-track* trade liberalization, especially since there is little or no correlation between the various environmental commitments entered into by countries at the bilateral, regional and multilateral levels. Apart from posing a systemic problem of managing multiple commitments, it opens up the possibility of using bilateral and regional negotiations to obtain liberalization commitments that might make the negotiations in the WTO context meaningless. In this regard, MERCOSUR's Working Group on Environmental Goods and Services, which serves as a platform for discussing and coordinating national positions in advance of the negotiations in the CTESS, sets an interesting example. CAFTA is another noteworthy case in point, as evidenced by UNCTAD's activities undertaken in the context of the project, "Building Capacity for Improved Policy Making and Negotiation on Key Trade and Environment Issues", sponsored by the United Kingdom.

D. Preservation, protection and sustainable use of traditional knowledge

33. Global biodiversity and the related traditional knowledge, innovations and practices (TK) are precious yet threatened resources. They are a main source of sustenance, livelihood, shelter, identity and health for much of the world’s population, particularly the most vulnerable segments—indigenous peoples and the rural poor. Yet these critical assets are increasingly under pressure. International, regional and national action is needed *to preserve*: to halt the erosion of these resources vibrant in living ecosystems and communities; *to protect:* to prevent the unauthorized or inappropriate use by third parties; *to promote for development*: to keep this body of knowledge alive, expanding and accessible to communities, and to help the holders of TK and biodiversity reap full benefit from these assets, including through local and international trade.

34. A holistic approach is needed, particularly at the national level. Elements of national sui generis systems to preserve, protect and promote TK for development have been explored in UNCTAD activities.[‡‡‡] At the international level, a holistic approach would also be desirable but seems less feasible at present. Different aspects are discussed in various forums, including CBD, WTO, WIPO, FAO, UNESCO and UNCTAD. Also, important and often less visible deals are being cut in regional trade agreements, which could lead to a loss of flexibility in designing policies relevant to biodiversity and TK.

[10] UNCTAD/DITC/TED/2005/18

35. One of the most contentious issues is that of preventing the misappropriation of genetic resources and associated traditional knowledge. One option is to require the disclosure of origin of genetic resources and associated traditional knowledge in patent applications based upon or derived from them. UNCTAD commissioned research on this topic in response to a request from the CBD COP.[§§§] The authors argued that such a requirement, implemented at the international level, would strengthen the intellectual property system by preventing the granting of illegitimate patents, deter misappropriation of genetic resources and associated traditional knowledge, and promote benefit sharing.

36. Some of the key events in 2006 included the following: in May, a number of developing countries proposed a text for amending the TRIPS agreement to require disclosure of origin and evidence of compliance with applicable legal requirements in the providing country for prior informed consent and benefit sharing (WT/GC/W/564). Responses from developed countries have been mixed. In the CBD, progress was made on the international regime on access to genetic resources and benefit sharing (ABS). In February, the Working Group on ABS agreed on a draft highly bracketed text. Divisions remain over issues including whether a new instrument is needed, binding versus voluntary, coverage of derivatives and disclosure requirements. The COP in March focused on process and pushed back the deadline for negotiations to 2010. In WIPO, the Intergovernmental Committee is discussing objectives and principles for the protection of TK and traditional cultural expressions. Members are divided along familiar lines regarding the need for a binding international legal regime. In July, the Declaration on Indigenous Rights was adopted by the United Nations Human Rights Council, although the United Nations General Assembly subsequently voted in November to delay action.

E. Recommendations

37. A number of policy recommendations arise from UNCTAD's work on environmental, health and food safety requirements and market access for developing countries:[****]

- New legislation has sometimes been developed in export markets without the provision of adequate and timely information to potentially affected developing countries. There is a strong need to disseminate information on new developments and to involve key trading partners in consultations concerning new/revised regulations and their impact on developing countries.

- Given the considerable impact of private sector standards on trade, there is a need for more dialogue between representatives of private sector standard-setting organizations, Governments and producers/exporters in developing countries. Simultaneously, there is a paucity of empirical studies on the implications of and adjustment approaches to private sector standards. Donors can play an important role in facilitating consultations but also funding further empirical and analytical work, including that of the CTF.

- Good Agricultural Practice (GAP) standards can play an important role in assisting developing countries to promote the sustainable production and facilitate export of fruit and vegetables. The process of designing national GAP programmes should involve the participation of all affected stakeholders, and should take account of

[11] UNCTAD/DITC/TED/2005/14.
[12] See UNCTAD Trade and Environment Review 2006, op.cit.

national circumstances and development priorities, including its key importance for small producers. Further analytical and capacity-building activities of the CTF, in close collaboration with FAO, are encouraged.

- Developing countries need to formulate proactive national strategies that will strengthen their capacity to respond to new EHRSRs. Such strategies should include the promotion of strategic alliances between Governments, the private sector, NGOs and research institutions, and support efforts by small producers to organize themselves and so minimize the risk of their marginalization in the supply chain. Proactive adjustment strategies need to go beyond costs and include benefits, catalytic effects and new export opportunities.

- Greater assistance from private standard-setters and developed country Governments is needed for upgrading the capacities of developing country exporters to meet requirements, including a sound quality management and assurance system, infrastructure and related institutions.

38. To maximize the contribution of organic agriculture, policymakers can take a number of steps:

- Play an enabling role to promote sector development, rather than a controlling one.

- Mainstream OA promotion into overall agriculture, poverty alleviation, trade and other policies.

- Dialogue with organic sector operators to identify their needs.

- Raise awareness of OA among consumers and producers to build domestic markets.

- Strengthen domestic supply capacities by increasing farmers' knowledge of organic techniques through extension services, training and school curricula; supporting farmers particularly in initial conversion periods through tax incentives, subsidies or special credit funds; identifying and taking action to alleviate production bottlenecks by removing or compensating policy biases against organics.

- Promote exports by including organic products in export promotion strategies, providing market information and helping farmers organize and meet export market requirements.

- Embrace the recommendations of the ITF, including accepting organic imports based on equivalence to international organic production standards.[††††]

39. The Commission may explore the desirability of holding sessions of UNCTAD's Consultative Task Force on Environmental Requirements and Market Access for Developing Countries as expert meetings on a multi-year basis, given that TBT and SPS measures account for more than half of all recent NTB notifications to NAMA (a picture also

[13] See Rundgren (2007). Best practices for organic policy: What developing country governments can do to promote the organic sector (www.unep-unctad.org).

confirmed by recent business surveys on the most important NTBs), and that these figures do not even include voluntary requirements of the private sector and NGOs.[‡‡‡‡]

40. The Commission may wish to guide the secretariat in its work relating to environmental goods, services and technologies in terms of the issues to be addressed as a matter of priority; preferred modes of delivery of substantive and technical assistance services, and the most relevant multilateral, regional and national fora.

II. BIOLOGICAL DIVERSITY AND DEVELOPMENT

A. UNCTAD'S Biotrade Initiative

41. The conservation and sustainable use of biodiversity have an important role to play in achieving the MDGs. In his 2006 Report on the work of the United Nations, the Secretary-General asked the United Nations General Assembly to expressly incorporate international commitments to reduce the rate of biodiversity loss into the framework of the MDGs.

42. The majority of the planet's biodiversity is located in developing countries, where it remains a fundamental source of food supply, shelter, medicines and energy. Biodiversity in developing countries also represents an immense opportunity in terms of economic development, given the growing economy associated with the use of biological and genetic resources. Its strategic, economic and social value, however, remains largely untapped due to lack of resources, supportive policy and institutional frameworks, and relevant information on market access and sustainability issues.

43. Since 1996, UNCTAD, through its BioTrade Initiative, has taken the lead in promoting trade and investment in biological resources under the criteria of environmental, social and economic sustainability, thus enhancing developing countries' capabilities to compete in emerging markets for biological resources and providing critical incentives for the conservation and sustainable use of biodiversity. The BioTrade Initiative helps developing countries formulate and implement regional and national BioTrade programmes, focusing on countries which are rich in biodiversity and have a clear interest in developing national capacities to encourage biotrade.

44. The BioTrade Facilitation Programme (BTFP) supports and complements the work developed by the national and regional programmes. Its activities seek to enhance sustainable management of resources, product development, value-added processing and marketing. For example, the BTFP supports products that have market potential and can be produced without harming biodiversity through the formulation and implementation of export plans and other practical trade promotion services, including market information collection, product development, quality improvement, certification, labelling, trade fair participation and matchmaking.

45. Given that BioTrade activities take place in a complex and evolving international legal and policy environment, another significant contribution of the BioTrade Initiative and the BTFP has been their role in fostering international policies that facilitate and enhance BioTrade activities. Their activities geared to providing a platform in which trade and biodiversity strategies and experiences can be discussed and experience on issues such as the

[14] Fliess, B and Lejarraga, I, Analysis of non-tariff barriers of concern to developing countries, OECD Trade Policy Working Paper No. 16, 14 April 2005 (TD/TC//WP(2004)47/ FINAL).

regulation on “novel” products and the use of market-based incentives for sustainable development can be shared, have received positive feedback from a range of actors, including the Secretariats and Conference of the Parties of MEAs, which recognize UNCTAD's efforts to help shape a more coherent framework for trade, biodiversity and sustainable development.

46. In this regard, several activities of the BioTrade Initiative and BTFP during 2006 are worth highlighting.

47. Supporting the development of the BioTrade Verification Framework. On the basis of the BioTrade Principles and Criteria, which are based on the objectives of the CBD, the BioTrade Initiative has supported discussion on the BioTrade Verification Framework. With biodiversity increasingly making the headlines and growing consumer interest in biodiversity-sensitive products, market instruments, such as verification and labelling, may play a positive role in rewarding producers who make efforts to promote economic, social and environmental sustainability and help it find a place in the market. Additionally, the proposed framework must not conflict with WTO rules and must ensure the expected development gains. The BioTrade verification framework will be managed by the Union for Ethical BioTrade, an association that will encompass BioTrade companies and other stakeholders, providing technical assistance and working to increase demand for BioTrade products. The framework will ensure that sustainability goals are achieved without imposing unnecessary costs and requirements on producers.

48. Elaborating guidelines for equitable benefit sharing. Benefit sharing is a critical element under the CBD and is also a fundamental tenet of the BioTrade Principles and Criteria. Few concrete mechanisms, however, are available to guide implementation of equitable sharing of benefits. Consequently, the BTFP, through a participatory process which includes public and private sectors, is elaborating practical guidelines to facilitate the equitable sharing of benefits arising from the use of biological resources in BioTrade activities. These guidelines will seek to build trust between actors in the value chain; enhance the business and legal skills of producers and communities; promote fair and equitable commercial relationships; encourage broader cooperation and benefit sharing; and increase recognition of the value of TK.

49. Promoting collaboration among the Secretariats of the biodiversity-related MEAs, particularly with respect to issues related to the global market economy. The world economy presents both advantages and disadvantages for the conservation and sustainable use of biodiversity. Failing to consider these advantages and disadvantages when developing and implementing international environmental law and policy would thus have negative implications for sustainable development objectives. The BioTrade Initiative has provided an informal forum for the Secretariats of biodiversity-related MEAs to exchange experiences and strategies in relation to issues such as private sector engagement, the use of incentive measures, and international trade. Additionally, the BioTrade Initiative also presents an interesting experience for other international organizations. Traditionally, the focus of trade and biodiversity discussions has been on the potential impacts of trade on sustainable development, but, as the BioTrade Initiative demonstrates, trade also generates opportunities for the conservation and sustainable use of biodiversity.

B. Climate change and development

The economics of climate change and the trade linkages

50. The Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) marks the first international step to limit emissions of greenhouse gases.[§§§§] The Protocol sets legally binding reduction targets for countries listed in its Annex I (industrialized countries and economies in transition). To meet their emissions commitments, Annex I countries have considerable flexibility in their choice of domestic policies. The Protocol also introduces three international flexibility mechanisms, namely international emissions trading, joint implementation, and the clean development mechanism (CDM) that can also be used for meeting emission reduction targets. The CDM in particular opens new avenues to attract sustainable development investments in developing countries.

51. Unlike other MEAs, the Kyoto Protocol does not include trade-restrictive measures. But many of the actions that countries may take to implement the Protocol could have significant trade implications, such as the implementation of energy efficiency standards, energy taxes, subsidies, or the use of specific environmentally sound technologies, eco-labels, and Government procurement policies. Implementation of the Kyoto Protocol will create new markets for specific goods (e.g. energy-efficient goods and technologies) and services (e.g. services related to the trading of emissions rights).

52. In October 2006, a thorough study of the economics of climate change – the Stern Review – was published.[*****] The Review estimates that if no action is taken, the overall costs and risks of climate change will be equivalent to losing at least five per cent of global GDP each year, now and forever. If a wider range of risks and impacts is taken into account, the estimates of damage could rise to 20 per cent of GDP or more. In contrast, the costs of action – reducing greenhouse gas emissions – can be limited to around one per cent of global GDP each year; therefore, the benefits of strong and early action far outweigh the economic costs of inaction. Because climate change is a global problem, the Review calls for an international response. It stresses that sound scientific analysis shows that impacts and risks will affect all countries, but it is the poorest countries located along the Equator that will suffer earliest and most, even though they have contributed least to the causes of climate change. The Review also points to the high correlation of climate change impacts and energy consumption and use, concluding that climate change problems are essentially an economic issue rather than a solely environmental concern.

53. Moving to a low-carbon economy implies costs but also opportunities. The CDM under the Kyoto Protocol and other carbon emission offsetting projects and financial mechanisms are expected to achieve sizeable market significance, and emissions trading as a whole is expected to become one of the largest commodity markets in coming years. Action on climate change will also create significant business opportunities, as new markets are created in low-carbon energy technologies, goods and services and new jobs are created.

54. In the context of the debate on climate change and of a parallel but related debate on the growing difficulties faced by developing countries in affording fossil fuel imports,

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[15] The Protocol entered into force on 16 February 2005; as of 13 December 2006, 169 States and regional economic integration organizations had ratified it.

[16] *Stern Review Report on the Economics of Climate Change*, found at: http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm, visited on 12 December 2006.

UNCTAD held an expert meeting in late 2006 to discuss several aspects of recent changes in the global energy economy, including trade, regulatory, financing, rural development and environmental and technology aspects.[†††††] Several possible ways of addressing the problems facing developing countries were discussed. Rising oil prices tend to have a positive impact on the development of alternative sources of energy, particularly renewable forms of energy such as biofuels.

The BioFuels Initiative and its relevance to UNCTAD membership

55. During 2006, UNCTAD responded to the request by Member States "to assist developing countries in seizing trade and investment opportunities arising from the Kyoto Protocol"[‡‡‡‡‡] by giving special impetus to activities on biofuels. UNCTAD's BioFuels Initiative published four studies on biofuels[§§§§§] and organized two meetings[******]. It also established partnerships with other relevant UN and non-UN partners, such as FAO, UNEP, OECD, and the G8 Global Bioenergy Partnership, as well as with NGOs and think tanks such as the Earth Council, the World Economic Forum, IISD, and the Brazilian Reference Center on Biomass.

56. Among the products emerging from the search of a new economic model based on low-carbon emissions are biofuels - fuels derived from biomass. While a range of estimates exist, most studies have found that throughout their life cycle, biofuels can provide significant reductions in greenhouse gas emissions as compared with mineral fuels. In addition, they might provide an opportunity for developing countries to diversify agriculture production, raise rural incomes and improve quality of life. They might enhance energy security and reduce expenditure on imported fossil energy. They might boost technological development.

57. Ethanol – an alcohol produced from grains and sugar crops – features today as a very dynamic commodity with production and international trade recording strong growth. World production of ethanol increased from less than 20 billion litres in 2000 to over 40 billion litres in 2005, and is expected to double again by 2010. Brazil is the world's largest ethanol producer, followed by the United States. China and India come in a distant third and fourth. The production of biodiesel – a synthetic fuel produced from vegetable oils, animal fats or recycled cooking grease – outside the EU is still limited, which is why there has been no significant international trade. Recent investments in several countries indicate that production and international trade are poised to grow. Trade in biodiesel feedstocks is on the rise, indicating that raw agriculture materials, rather than industrialized finished products, are being traded internationally.

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[17] Report of the Expert Meeting on Participation of Developing Countries in New Dynamic Sectors of World Trade: Review of the Energy Sector - Adjusting to the New Energy Economy, Geneva, 29 November - 1 December 2006, TD/B/COM.1/EM.31/3.

[18] Report of the ninth session of the UNCTAD Commission on Trade in Goods and Services, and Commodities

[19] The Emerging Biofuels Market: Regulatory, Trade and Development Implications, UNCTAD/DITC/TED/2006/4; An Assessment of Projects on the Clean Development Mechanism (CDM) in India, UNCTAD/DITC/TED/2006/5; An Assessment of the Biofuels Industry in India, UNCTAD/DITC/TED/2006/6; An Assessment of the Biofuels Industry in Thailand, UNCTAD/DITC/TED/2006/7.

[20] An informal brainstorming session on biofuels was held on 22 June 2006 and a full-day discussion on biofuels was organized during the expert meeting on review of the energy sector, 29 November – 1 December 2006. See www.unctad.org/biofuels for the programmes, background documentation and presentations for the events.

58. International trade in ethanol has undergone strong expansion. Today, Brazil exports some 2.5 billion litres of ethanol and has an approximately 50 per cent market share of global ethanol exports. Other developing countries have benefited from the dynamism of the sector, including by taking advantage of existing preferential trade arrangements. South–South trade and transfer of technology are taking place. Conversely, there appears to be little international trade in ethanol feedstocks. Subsidies are likely to contribute to the expansion of domestically produced feedstocks in developed countries.

59. International trade in biofuels faces tariff and non-tariff measures. Moreover, developed countries provide different kinds of subsidies and incentives to support nascent biofuel industries. All these measures have the effect of partially nullifying lower production costs in developing countries. International trade, however, could provide win–win opportunities to all countries: for several importing countries, it is a necessary precondition for meeting self-imposed fuel blending targets; for exporting countries, especially small and medium-sized developing countries, export markets are necessary to initiate their industries. The establishment of a level playing field for the production and trade of biofuels would facilitate the achievement of development-oriented results. This would include reducing and eliminating trade barriers and phasing out trade-distorting subsidies. Investors in prospective biofuels export facilities in developing countries need to be assured that markets are going to be open and that there will be scope for exports, allowing them to exploit economies of scale.

60. Biofuels will, however, provide different options to different countries, and the achievement of sustainable development results may depend on several elements. Some countries, but not all, may have large areas to devote to energy crops cultivation without impinging on other land uses. Non-edible plants, such as jatropha trees which grow on marginal and degraded soils, may increasingly be used for biodiesel production, though current experience with large-scale jatropha cultivation is limited. Development-oriented results may depend on small farmers' involvement in biofuel production and on the mechanisms put in place to facilitate it.

61. Before implementing national biofuel strategies, Governments have to take some crucial decisions, e.g. whether biofuel production is intended for transportation or for broader energy replacement; what are the land requirements, which conversion technology scale is desirable. The economic and environmental impacts, the compatibility of biofuels with existing fuel delivery/use infrastructures, and competing uses for biomass also have to be assessed.

62. With more than 800 million undernourished people in the world, a major preoccupation in the context of the debate on biofuels is whether rapid growth in demand for energy feedstocks – such as corn, sugar cane and oil beans – could divert too much cropland to fuel crops and imperil food security. Energy prices above US$ 30-35/bbl directly affect agricultural prices and make a number of agricultural feedstocks economically viable sources of energy supply; however, there are significant differences in competitiveness across countries and feedstocks. Increased use of crops for energy production would have impacts on food security and there would be winners and losers, depending on the trade balance and net effects on energy and food prices. Improvements would depend on land ownership, institutional support, creation of rural employment, land and labour intensity of bioenergy use and technologies. Ultimately, the key policy challenge remains harnessing productivity increases and benefits for agriculture renaissance without harming food security.

63. A related issue is the impact of increasing agricultural commodity prices, due to their use as energy feedstocks, on different segments of the population in developing countries. While the increase in agricultural prices could potentially benefit 2.5 billion people whose livelihood depends on the agricultural sector, small landholders, rural landless workers and the urban poor could be at significant risk, at least in the short term. Implementation rules and temporary compensation measures may need to be considered. Governments should continue to invest in distribution infrastructure to reduce transactions costs between farmers and the end market. In the case of small landholders, the absence of clear property rights and enforcement mechanisms could lead to their displacement by large and powerful agribusiness interests. It is necessary that farmers and rural areas benefit from increased commodity prices, as the resulting additional income from such increases may improve general conditions for producing other crops. Enhanced opportunities for local ownership and emphasis on sustainable development are key elements for ensuring the participation of rural entrepreneurs. Government incentives, if implemented, should benefit small producers and help them safeguard their presence in the market.

64. At the heart of the sustainability of biofuels production is the financing of biofuel projects, especially in developing countries. Despite growing interest in leveraging the CDM of the Kyoto Protocol towards the financing of modern bioenergy for sustainable development, many challenges need to be addressed to realize this opportunity. There is an almost complete absence of CDM projects involving liquid biofuels in the transport sector or the replacement of non-renewable energy by renewable biofuels in the household sector. This gap is largely due to the absence of approved CDM methodologies for such bioenergy project activities. Developing the appropriate methodologies would allow investments in bioenergy and increase opportunities for developing countries to participate in the global carbon market.

65. The switch to a less carbon-intensive economy is creating new markets for technologies that facilitate the process. "First-generation" biofuels are biodiesel from oil seeds and recycled cooking oil, and bioethanol from grains and from sugar crops. The technology used to produce first-generation biofuels is a rather simple and well-known technology. "Second-generation" biofuels, which will use lignocellulose contained in crop residues, grasses and woody crops, are ethanol via enzymatic hydrolysis, and thermochemical fuels via gasification. The production of second-generation biofuels implies much more complex and expensive technologies, but the switch may bring several benefits. First-generation biofuels have many limitations: they compete with food uses; only part of the plant is converted into biofuel; they bring only modest greenhouse emissions mitigation benefits, except for sugarcane ethanol. Also, they bear relatively high costs – except for sugarcane ethanol in Brazil – due to high feedstock costs. Second-generation biofuels have some clear advantages: plants can be bred for energy characteristics and a larger fraction of the plant can be converted to fuel. The “biorefinery” maximizes plant utilization. There are substantial energy/environment benefits. These fuels have greater capital-intensity than first-generation biofuels but lower feedstock costs. There are differences between thermochemical and biological second-generation biofuels. Thermochemical fuels allow for complete utilization of biomass and offer a high degree of feedstock flexibility. Conversion technologies are available today in the market. Biological second-generation fuels feature different characteristics: a limited fraction of the biomass can be converted with known enzymatic technology today. Such fuels have limited feedstock flexibility because micro-organisms must be tailored to the specific feedstock. R&D breakthroughs are needed to improve conversion and reduce costs. Ensuring that developing countries can access the technologies needed to produce second-generation biofuels may be problematic.

66. The search for low-carbon emission models has spurred the production of flex-fuel cars.[††††††] Gasoline–ethanol flex-fuel technology was created in the 1980s in the United States and further developed in Brazil using the alcohol engine as a base. The first flex-fuel model was introduced in Brazil in 2003. Nowadays, almost 1.8 million vehicles are able to run on flex-fuel. The share of flex-fuel cars reached 22 per cent in 2004, 40 per cent in 2005, and is expected to rise to 60 per cent in 2006. By 2010, all new light vehicles sold in Brazil are expected to operate on flex-fuel.

C. Recommendations

67. The international dialogue has identified four concrete areas where UNCTAD could play a significant role, namely (i) country-based assessments that will help in singling out those countries that are best placed to engage in biofuels and assist them in setting up domestic frameworks aimed at sustainable development; (ii) the establishment of a system of consultation and coordination among the different existing labelling/certification initiatives for feedstocks and biofuels[‡‡‡‡‡‡] to ensure overall coherence and transparency and avoid unnecessary burdens and costs for producers; (iii) the development of baseline methodologies to assist CDM project development for liquid biofuels, in cooperation with relevant international organizations (UNEP, FAO, UNFCCC secretariat); and (iv) the establishment of a dedicated website with information and analysis on the biofuels industry and market. Such an instrument, to be developed in cooperation with other relevant initiatives, should help to overcome some of the existing knowledge gaps.

68. Growing use and consumption of and international trade in biofuels will increasingly have implications for trade, energy, climate change and agricultural and development policies. The cross-sectoral nature of the rapid expansion in biofuels explains why this new and dynamic sector will feature prominently in the UNCTAD XII discussions.

D. Agro-biotechnology and international trade

69. UNCTAD has continued to carry out analytical activities on agro-biotechnology and international trade and has analysed the recent WTO EC-Biotech case, focusing on its possible implications for developing countries.[§§§§§§]

70. In its report, the WTO Panel addressed the various categories of challenged EC and EC Member State measures and found that each of these types of measures was inconsistent with WTO rules – in particular the Agreement on Sanitary and Phytosanitary Measures (SPS Agreement). First, the Panel concluded that the general de facto moratorium and product–specific measures affecting product approval had resulted in a failure to complete individual approval procedures without undue delay, hence giving rise to an inconsistency with Article 8 and Annex C of the SPS Agreement. Second, the Panel found that the measures taken by some EC Member States to restrict the import, use and marketing of certain biotech products – safeguard measures taken in relation to products already approved at the EC level – failed

[21] Flexi-fuel vehicles are cars that can run on two sources of fuel, such as gasoline and ethanol or gasoline and natural gas.

[22] Those initiatives are aimed at ensuring sustainable production of biofuels and feedstocks and proving the realization of environmental benefits.

[23] *European Communities – Measures Affecting the Approval and Marketing of Biotech Products*, WT/DS291/R, WT/DS292/R, WT/DS293/R, 29 September 2006. The EC-Biotech case was launched in May 2003 by the United States, Canada, and Argentina. A Panel was established in August of that year, with a range of countries constituting themselves as third parties.

to meet the requirements of the SPS Agreement. In particular, the safeguard measures were found to be inconsistent with the obligation for SPS measures to be based on a risk assessment. The Panel found that the safeguard measures fell outside the scope of Article 5.7 of the SPS Agreement, which allows members to adopt provisional SPS measures where relevant scientific evidence is insufficient.

71. As in any WTO case, the EC-Biotech Panel report addresses a very particular set of facts and is primarily relevant to them. As the first interpretation of how WTO provisions apply in the context of biotechnology and biosafety, however, the Panel report will not only have an impact on the challenged measures but will likely affect ongoing regulatory and policy discussions in other WTO Member States, especially developing countries.

72. WTO Members will need to give close consideration to the manner in which risk assessments are conducted, particularly as the Panel seems to have opted for a more restrictive interpretation of the SPS Agreement. In determining whether there was "undue delay" or "unjustifiable loss of time" in the completion of the approval procedure concerning biotech products, the Panel found that the reason for a delay was more relevant than its exact duration, and while stating that Members had to act "expeditiously", it also added that this was only "as could be expected of it in the circumstances". The flexibility allowed by the Panel is critical, particularly for developing countries with insufficient human and financial resources for swift yet effective implementation of their SPS procedures. Finally, on the relevance of other rules of international law to the interpretation of WTO agreements and more specifically on the relationship between the trade rules included in MEAs and WTO rights and obligations, the conclusions reached by the Panel seem to reduce the relevance that the former may have and depart from the general preference to address environmental concerns multilaterally. How the obligations that countries have subscribed by becoming parties to different multilateral instruments may be harmoniously fulfilled will require further close examination.

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