INTERNATIONAL GOVERNANCE OF AGRICULTURAL BIODIVERSITY AT THE CROSSROADS OF BIOSAFETY AND MARKET DYNAMICS[1]

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ABSTRACT

Aspects of agriculture, like development, poverty alleviation, trade, food security are regulated by several international organizations, beginning with the United Nations Food and Agriculture Fund (FAO) and progressively dominated by the World Trade Organization (WTO) and its Agreement on Agriculture (AoA). On the other hand, within the framework of the governance of the sustainable development, two multilateral environmental agreements are also dealing with agriculture: United Nations Convention on Biological Diversity (CBD) and the Cartagena Protocol on Biosafety. Thus, the conservation and sustainable use of biodiversity and the prevention and management of risks related to the transboundary movement of living modified organisms (LMO) have expanded the scope of the international governance of agriculture. At this point, two questions must be answered: Do too many international regulations paradoxically decrease the efficiency of this governance with overlappings and contradictions? Are environmental and social issues of sustainable development sacrificed for economic potentialities and trade interests?

Key words: International governance, agriculture, biodiversity, biosafety, international trade.

BİYOGÜVENLİK VE PİYASA DİNAMİKLERİNİN ETKİSİ ALTINDA TARIMSAL BİYOLOJİK ÇEŞİTLİLİĞİN ULUSLARARASI YÖNETİŞİMİ

ÖZET

Tarımın, kalkınma, yoksullukla mücadele, ticaret, gıda güvenliği gibi boyutları başta Birleşmiş Milletler Tarım ve Gıda Fonu (FAO) olmak üzere çok sayıda uluslararası örgüt tarafından düzenlenmekte olan bir alandır. Bunların içinde Dünya Ticaret Örgütü'nün (DTÖ) Tarım Anlaşması gittikçe daha etkili hale gelmektedir. Öte yandan, sürdürülebilir kalkınmanın uluslararası yönetişimi kapsamında iki çok taraflı çevre anlaşması da tarımla

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bağlantılı düzenlemeler içermektedir: Birleşmiş Milletler Biyolojik Çeşitlilik Sözleşmesi (BÇS) ve Cartagena Biyogüvenlik Protokolü. Böylece tarımsal biyolojik çeşitliliğinin korunması ve sürdürülebilir kullanımı, ayrıca genetiği değiştirilmiş organizmaların (GDO) doğal çevre ve insan sağlığı üzerinde yaratabileceği risklerin denetimi, mevcut yönetişimi daha da kapsamlı hale getirmiştir. Ancak bu noktada iki soru ortaya çıkmaktadır: Çok sayıda uluslararası düzenlemenin bulunması tarımın yönetişimini paradoksal bir biçimde karmaşık ve etkisiz mi kılmaktadır? Sürdürülebilir kalkınmanın çevresel ve toplumsal boyutları, ekonomik beklentilerin, temelde ticaret önceliklerinin gölgesinde mi kalmaktadır?

Anahtar kelimeler: Uluslararası yönetişim, tarım, biyolojik çeşitlilik, biyogüvenlik, uluslararası ticaret.

Introduction

The link between the agriculture and the protection of biodiversity was possibly one of the main incentives to conclude a global biological diversity convention. During the preliminary negotiation process of the Convention on Biological Diversity (CBD), it has been said that the text, although seeming to have an ecocentric approach putting the intrinsic value of the elements and functioning of ecosystems at the center of conservation requirements, has been, in fact, dealing primarily with the needs of humanity, based on a utilitarian concept of biodiversity. Biological diversity was necessary for the conservation of the agricultural basis for sustainable food paths and also to provide a genetic resource basis for the ongoing biotechnological innovations in agribusiness and pharmaceutics.

The main objectives of the CBD, as stated in the article 1, are reconciling some ecocentric vision and a usual anthropocentric incentive of global policy making by linking the conservation to the sustainable use of biological diversity. Moreover the use of this resource basis must guarantee a fair and equitable sharing of the benefits in order to promote sustainable development. Later, the Agricultural Biodiversity Program of the CBD, decided at the third Conference of Parties (COP 3) proves also the importance given to human needs: "… biodiversity can serve as a safety-net … to sustain productive agricultural ecosystems…" (CBD, http://www.cbd.int/decision/cop/?id=7107, 11/01/2011).

The conservation of agricultural biodiversity, completed by a sustainable use of genetic resources, entails complementary regulation and implementation requirements for non transgenic seeds/plants and for engineered ones. Their existence is interdependent, that is why

an isolated *issue-area* regime for each vision is not possible and there is some normative and institutional difficulty to establish pertinent governance paths. Within this complex framework, several complementary and also paradoxical issues can be observed: The initial objective is to maintain existing biodiversity and wherever possible, to support it with human interference by means of modern biotechnology. The conservation of existing cultivars and seeds can be completed by new cultivars and seeds (genetically modified plants and also genetic use restriction technologies (GURTs)) and therefore help to sustain agricultural activity, disregarding the development level of populations and to create a varied human diet. The issues deriving from this process are the international plant protection (IPP), the protection of innovations obtained by modern technology by the intellectual property rights (IPRs) and the just remuneration of traditional knowledge and also the use of genetic resources within the frontiers of a sovereign state by access and benefit sharing (ABS). However, there are significant difficulties in managing together the use of natural resources and their conservation; the implementation of ABS when traditional knowledge is used for a new production and the IPRs that should be assigned for such production. Beside this problematic correlation between IPP, ABS and IPRs, food security and biosafety requirements based on the correct assessment of risks on environment in order to implement precautionary measures are complicating the governance process. Recently, the importance of agricultural biodiversity (in other terms "cultivated systems") has also been emphasized for providing fuel (CBD, http://www.cbd.int/decision/cop/?id=11644: 11/01/2011), which puts an additional pressure on food security and development needs.

This conceptual overlapping involves normative and institutional ones. The main articles and further COP decisions of the CBD recognize the crucial character of plant conservation and for the agricultural biodiversity, this concerns also the conservation of their wild relatives to be used for a sustainable food basis. The plant conservation is also the core of Food and Agriculture Organization of the United Nations' (FAO) approach to agricultural biodiversity. The International Treaty on Plant Genetic Resources for Food and Agriculture of the FAO, details how plant conservation can be implemented in conformity with the CBD's main objectives: "conservation and sustainable use of plant genetic resources for food and agriculture and the fair and equitable sharing of the benefits arising out of their use". While food security appears to be one of the targets of the United Nations' Millennium Development Goals (MDG) to be reached by 2015, trade related aspects of food safety is to be assured by the implementation of Sanitary and Phytosanitary (SPS) measures of the World Trade

Organization (WTO) and the *Codex Alimentarius* of the FAO as regards the implementation of international safety norms.

Beyond the scope of the CBD and the FAO's documents, agriculture and resources related to agriculture are also subject to other regimes, mainly the Agreement on Agriculture (AoA). Furthermore, issues concerning IPRs on genetic innovations are subject to the Trade Related Investment Measures (TRIPS) of the WTO, and also to the International Convention for the Protection of New Varieties of Plants (1961, 1978, and 1991) of the International Union for the Protection of New Varieties of Plants (UPOV), the World Intellectual Property Organization (WIPO) provisions. Also, non-harmonized specific biosafety implementations and national restrictions on their consumption may be in the scope of the Agreement on Technical Barriers to Trade (TBT) of the WTO, specific guidelines of the OECD on transgenic plants constitute the unique means of international documentation on the transboundary movement of LMOs.

On the other hand, international organizations, mainly the World Bank, the FAO, the OECD, and the UNIDO work on assistance initiatives for agricultural and rural development, capacity-building and harmonization of implementations worldwide. Non-governmental organizations and research institutions (i.e. International Fund for Agricultural Development (IFAD), Consultative Group on International Agricultural Research (CGIAR)) support these processes by acting in areas like research for achieving economies of scale in agricultural production, struggle against biopiracy, smallholder farming, poverty reduction. With the International Plant Genetic Resources Institute (IPGRI) or the Rice-Wheat Consortium of the Indo-Gangetic Plains, the CGIAR implements also research on the effects of genetic modifications of agricultural plants for developing countries. The problems of increasing food demand and security concerns are at the heart of the UNDP (via The Biodiversity Global Programme with agriculture as one of the key sectors), the UN's Secretary General's Task Force on the Global Food Security Crisis, the World Bank are taking into account new sources of pressure like changing production and consumption paths, due to the economic growth of emerging countries and the growing market of biofuels. National and regional non-governmental organizations work on the accumulation of legal, scientific and practical knowledge on biosafety implementations, i.e.- the ANBio in Brazil, Asia-Pacific Biosafety Association, African Biological Safety Association or the European Biosafety Association (EBSA).

Consequently, on the global governance level, there are a wide range of institutional structures and various action methods to handle a specific part of this multidimensional issue. The contents of related international agreements and also the activity spheres of international organizations and non-governmental organizations are also diversified but sometimes overlapping, even clashing.

Biodiversity and Agriculture: Between Development and Market Dynamics

To correlate positively the conservation of biodiversity and agriculture is a hard task, due to the fact that the continuous agricultural expansion is a major reason of biodiversity loss (Treweek et al., 2006: 300). Irreversibly, human activities "change the diversity of life on earth" and the rate of this change is greater than at any period of history. Actually, cultivated systems cover 24% of terrestrial surface (Millennium Ecosystem Assessment, 2005: 2-4) and an important part of this land is degraded, which reduces productivity and causes more land tenure/access demands from small farmers as well as from big agribusiness companies. Moreover, the establishment of larger conservation areas is not always considered as an efficient way to alleviate biodiversity depletion as it causes more intensified production activities in existing cultivated area in order to maintain yields and satisfy growing food needs and therefore adds to the soil degradation, water depletion and degradation, genetic erosion due to the intensification and specialization by plant and animal breed.

The most concrete linkage between agriculture and biodiversity is the fact that the biodiversity based ecosystem services (nutrient cycling, rehabilitation of degraded soils, water cycle and availability, pollination) constitute vital input for production activities. Thus, animal and plant varieties are also declining due to the transformation of agriculture activities reducing local varieties of crops and breeds in favor of cost-efficient, globally marketed ones. Furthermore, the consumption paths get adapted to changes and bring out a more simplified human diet and also more simplified, uniform cultures, the loss of traditional knowledge. Consequently, the main "90% of our food energy and protein comes from only 15 plant and 8 animal species." (CBD, http://www.cbd.int/agro/Whatstheproblem.shtml: 14/11/2010).[1]

For the Conference of Parties of the CBD, agricultural biological diversity "is the result of both natural selection and human inventive developed over millennia" (CBD, http://www.cbd.int/agro/whatis.shtml: 14/11/2010) based on the following: genetic resources for food and agriculture, components that support ecosystem services, *abiotic* factors, socio-economic and cultural dimensions. Thus, the approach of the CBD seems to encompass all major stakes. A specific multi-year program on agricultural biodiversity has been established

at the COP 3 to take into account negative and positive impacts of the agricultural activities on ecosystems and promote the conservation and sustainable use of genetic resources having actual or potential value for agriculture. These objectives are also completed by the adoption of equitable and fair sharing of the benefits (CBD, http://www.cbd.int/decision/cop/?id=7107: 11/01/2011). Nevertheless, the achievement of objectives is not really efficient; several related COP decisions confirm rather a discursive conservation goal than immediate action. This part of the governance is left to the FAO. In fact, since the COP 1, the review and assessments of agricultural biodiversity was one of the issues to be considered and since, the COP has suggested to establish links with the FAO's related cooperation frameworks on the use of genetic resources (Global System for Plant Genetic Resources for Food and Agriculture and Access to Genetic Resources; Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources; Global Strategy for the Management of Farm Animal Genetic Resources).

Moreover, the instrumentalization of biodiversity (also agricultural biodiversity) for global development and economic growth purposes involves paradoxical results while underlying sustainable development priorities in the use of biodiversity. We can assert that there are two groups of actors creating such controversies: international organizations and economic actors/interest groups (i.e. agribusiness companies' representative associations). The adoption of UN Millennium Development Goals in 2000, seem to be a rationale for using biodiversity. CBD's Conference of Parties, emphasizes this contributory role of the agricultural biodiversity to poverty alleviation in its recent meetings. Decisions that have been adopted during the COP 8 and 9 reflect such a utilitarian approach. Implementation of a cross cutting initiative on food and nutrition began with the Decision VIII/23 asking for the integration of food and nutrition elements into agricultural biodiversity in partnership with the FAO. At the COP 9, the importance of the partnership with the FAO has been again underlined. "Biodiversity for Food and Agriculture" is a cross-cutting initiative within the Agricultural Biodiversity Programme and concentrates more on food security and nutrition as a "contribution to the achievement of Millennium Goals" rather than the conservation of biodiversity. Thus, as the link between the objective of reducing by half, by 2015, the proportion of people suffering from hunger, the biodiversity becomes a "safety-net to sustain productive ecosystems" (CBD, http://www.cbd.int/decision/cop/?id=7107: 11/01/2011), its use value is therefore more important than its existence value. That approach is expected to be

in conformity with the CBD's "Global Strategy for Plant Conservation", adopted by the decision VI/9 of the COP, which will be implemented via National Strategies and Plans (2002). Strategy repeated also that the agricultural biodiversity "is a vital asset to achieve Millennium Goals 1 and 7".[2] In conformity with 2010 targets, it underlined the importance of "monitoring and assessment progress" and asked a review at the COP7 but that was delayed for two years. An in-depth review of the programme of work on agricultural biodiversity was only published at the COP9 without any reliable data on agricultural biodiversity depletion or conservation paths, recalling stakeholders their responsibilities in most general terms: parties should provide information to the FAO for the achievement of State of the World's Biodiversity for Food and Agriculture (including plant, animal, forest, aquatic genetic resources). Only a new and growing role of "cultivated systems" is underlined: fuel providing. For example, the PROALCOOL Programme of Brazil launched in 1974 and continued under the Lula da Silva administration made this country one of the major biofuel producers based on its higher sugarcane-ethanol productivity. 2007 Memorandum of Understanding between the USA and Brazil "to promote greater cooperation on ethanol and other biofuels in the Western Hemisphere" (Ribado Seelke and Yacobucci, 2007) consolidated this evolution.

Moreover this utilitarian approach (contribution of agriculture to the conservation and sustainable use of biodiversity) is related to "best practices in the management of agricultural biodiversity, innovation and progress in supporting sustainable agriculture". Hence, biotechnology is once again emphasized as an instrument to reduce the negative impacts of agriculture on environment and to contribute to hunger and poverty reduction. The parties, governments and international organizations are entrusted with the development of assessment and monitoring techniques on the status and trends of agricultural biodiversity.

The Millennium Development Goals are also an incentive used by agriculture companies to justify their biotech productions, growing land demands, and their critics about restrictive national environmental preservation legislations. For example, according to the International Service for the Acquisition of Agri-Biotech Applications (ISAAA), the worldwide accumulated biotech area reached 800 million hectares and, the total *hectarage* will exceed 4 billion in 2015, "target year of the Millennium Development Goals", and therefore the increasing production will be able to respond to food security and poverty problems.

Structural adjustment programs (SAP) conceived by the International Monetary Fund (IMF) and the World Bank and implemented in African and Latin American countries during the 1980s and 1990s have been also a source of pressure on biodiversity and agricultural

biodiversity. The accomplishment of these SAPs, requiring national income rise by the increase of export receipts may be a reason of higher natural depletion rate in the developing world. Mostly deforestation and desertification are such negative externalities of pro-trade agricultural policies through an extensive cultivation. For example, Latin American countries, mainly Brazil and Argentina have increased their use of land and relied on agricultural productivity in order to ensure an income raise. However, these countries were also encouraged by the global rise of commodity prices, beginning from the 2003, due to other conjectural features of the global market. Such intensive use of existing agriculture areas and land demand caused remarkable destruction of Brazilian biomes, mainly the *Cerrado* and Amazonian forest, remembering that the Fernando Henrique Cardoso administration had declared in 1998, a ten year moratorium on environmental law enforcement, postponing the penalties for environmental crimes or allowing agreements with the IBAMA, federal environmental agency (Schwartzman, 2009: http://www.globalpolicy.org/component/article/212/45460.html: 18/06/2010). However, existing land potential that will not be used due to the current government's efforts to combat deforestation and the environmental legislation may be somehow seen as an "economic opportunity loss" for the Brazilian agriculture (Nassar, 2009: 73-76)[3] within the global framework of high food prices.

Once, agricultural products bear the character of commodities, they become also a trade issue. Hence, there are also other causes of biodiversity loss resulting from economic policy choices-internal interest groups interaction, mainly as in the case of subsidies rising production capacity. These strategies have adverse effects on environment, on the agricultural biodiversity itself. This is one of the reasons why the EU has been reforming its common agriculture policy since 1992 (due to the subsidies disputes with the USA) into a "multifunctional" one. On the other hand "box" strategies within the WTO's AoA, on the coordination and rationalization of agricultural subside practices, may have also both negative and positive impacts on the conservation and sustainable use of agricultural biodiversity (WTO, 2003: 10-13). [4] For example unrestricted subsidies for food security or the agricultural and rural development requirements may be incentive for more "efficient" (intensive) production on the same surface of land. This may have positive impacts, such as preventing more deforestation to create cultivable lands but also negative ones, affecting probably soil fertility and ecosystem equilibrium or transforming land appeared after deforestation "with no

alternative use" into "cultivable" instead of being reforested. Within this framework, the COP recommended collaboration and consultation with the WTO. At the COP4, Parties proposed that the Executive Secretary to acquire an observer status in the WTO Committee on Agriculture to report the COP on the impact of trade liberalization on the conservation and sustainable use of agricultural biological diversity. In fact, such impact assessment of trade agreements is being made up by organisms like the Overseas Development Institute (ODI), the Impact Assessment Research Center (IARC) and also the UNEP. For example, the latter, via its Initiative on Capacity Building for Integrated Assessment and Planning for Sustainable Development, accomplishes studies on the impacts of national agricultural policies related to the trade liberalization on the loss of biodiversity (UNEP, http://www.unep.ch/etb/areas/IAPcountryProject.php: 19/06/2011).[5]

During the COP6, the link between trade liberalization and genetic use restriction technologies (GURTs) has been underlined as a cross-cutting issue between biodiversity and agricultural activities. An *ad hoc* Technical Expert Group on "the impacts of GURTs on smallholder farmers, indigenous and local communities and farmers' rights" has been created on that purpose. Although the use of modern technology is considered as a potentially positive way to sustain biodiversity, this technology, known also as "terminator technology" limits the productivity of a seed to only one harvest, preventing especially small farmers to make a second planting. For the CBD, this is the source of socio-economic concern for rural development and poverty alleviation. Furthermore, the impacts of such techniques on the conservation and the sustainable use of genetic resources should be assessed. The discussion is also about the consequences of intellectual property rights on GURTs without finding yet a pertinent solution for the questions raised. The initiative is assisted by the FAO and its Commission on Genetic Resources on Food and Agriculture, UNESCO, UNEP and other members of the Ecosystem Conservation Group[6]. However, reports of UNEP show that, in several countries, there is a lack of policy harmonization between the three pillars of the sustainable development (economic, social, ecologic) and therefore may be difficult to make a quantitative evaluation of the impact of liberalization policies on agricultural biodiversity conservation. More qualitative methods (mainly the Delphi method[7]) are used to conceive scenarios leading either to a land tenure increase or to the abandon of cultivated areas in function of the competitiveness capacity of the country; however these scenarios do not conclude on how such consequences on land use would really affect the biodiversity.

Biotechnology and Agricultural Biodiversity: Between Biosafety and Trade

The CBD defined biotechnology in its article 2: "any technological application that uses biological systems, living organisms or derivatives thereof, to make or modify products or processes for specific uses". Although some argue that this is not a new sector, but rather an instrument to manipulate DNA (isolation, amplification, modification and recombination), biotechnology has changed production and consumption paths directly related to the human well-being: agriculture (genetically engineered plants) and pharmaceutics (Coleman and Gabler, 2002: 482). Concerning its positive and/or negative impacts on the agricultural biodiversity, we will concentrate our review on the biosafety issues raised by genetically engineered plants/crops.

In 2010, according to the ISAAA's Brief on the Global Status of Commercialized Biotech/GM Crops (James, 2010: http://www.isaaa.org/resources/publications/briefs/42/executivesummary/pdf/Brief%2042%20-%20Executive%20Summary%20-%20English.pdf: 17/07/2011), the number of countries planting biotech crops reached 29 and this is a continuous trend, integrating lately Africa together with North America (USA, the world leader, Canada), South America (Argentina, Brazil, 2nd and 3d ranks in world production of biotech crops), Asia (China and India), Europe (Spain, Portugal, Germany, Romania, Slovakia, Czech Republic, Poland) and Australia. The majority of these countries are specialized in the production of one type of biotech crop, only few countries are planting more than two biotech crops: the USA, China, Argentina, Brazil, Canada, South Africa, Australia and Chile. In fact, the criterion to evaluate the biotech capacity of countries is the amount of cultivated area: countries having 50000 hectares and more are considered as "bio-tech mega countries".

Due to continuous R&D within public and private institutions in these countries (which are known as champions of national agricultural research/Super NARs (da Silveira and de Carvalho Borges, 2005: 3) more innovated crop varieties and new biotech crops are commercialized, like the recent RR sugar beet[8] planted in the USA and Canada, which is expected to have "positive" genetic modification implications on sugarcane (remembering its vital role for bio-ethanol production). However, transgenic soybean and maize remain the most planted crop in the world; (soybean plantation is occupying 53% of global biotech area) and constitute the most debated ones in the framework biosafety, transboundary movements of living modified organisms (LMO[9]), their intentional and non intentional release in the

environment. Still, biotech agribusiness defends positive impacts of such production on human and natural well-being: contribution to food security with lower prices, conservation of biodiversity, more environment-friendly agriculture, mitigation of climate change and recently cost-effective production of biofuels. Within this framework, it asks for "strong political will" from governments and political leaders to encourage biotech agriculture ... possibly to face biosafety concerns raised by NGOs.

International governance on biosafety accepts this irreversible production trend and tries to find how to manage the transboundary movement of LMOs and to achieve an efficient risk assessment when it comes to their intentional and non-intentional release to the environment. This requirement appeared first in the Agenda 21, adopted at the UNCED in 1992. Chapter 16 deals with environmentally sound management of biotechnology. Article 8(g) and 19 (paragraphs 3 and 4) are about the safe transfer, handling and use of LMOs.[10] Within the Cartagena Protocol on Biosafety[11], the handling, transport, packaging and identification of the LMOs represent also the central debate issue. The clear adoption of the precautionary principle (Article 11, paragraph 8), has been considered as a major step environmental responsibilities of states, however, the Protocol does not imply any limitation of LMO production, consumption and trade. Even during the negotiations of the Protocol, the Miami Group formed by agro-biotech exporter countries (the United States, Argentina, Australia, Canada, Chile and Uruguay) refused that "advanced prior agreements" would be implied for LMOs for direct use for food or feed and processing (LMOs-FFPs) because of the supplementary charges that would harm competition and penalize agricultural commodities (Garton et al., 2006: 1). Consequently, only the exporter country has to provide detailed identification information before the transboundary movement of the product, but this information will be addressed to the Biosafety-Clearing House. In other words, there is no need for a direct agreement between the exporter and the importer. The latter has also the right to make unilateral risk assessment by invoking the precautionary principle. In fact, the initial/crucial question is whether the LMO in question must be approved or not by the importing country. Therefore, the Protocol has a flexible approach about such requirements allowing a country to have zero tolerance legislation on unapproved and illegal contamination of LMOs.

Beyond the environmental protection against invasive and alien species by the adoption of precautionary measures, biosafety involves more preoccupations concerning its probable distorting effects on trade. Since the beginning of negotiations, global market tendencies, growth expectation of biotech countries and food security concerns of importing

countries has major impact on the prevention methods of risks that may derive from the use and transfer of LMOs (Smith, 2000: 2). Criticism has been made about the risk of considering biosafety as a human health issue rather than its environmental impacts and therefore considered as overlapping with the content of SPS measures and TBT agreement of the WTO. Moreover some argue that in fact the Cartagena Protocol is a trade agreement on LMOs and not a multilateral environmental agreement.

These economic priorities and interests are such that protocol parties discuss still the terms that will be used in accompanying documents of LMO containing shipments and stress documentation requirements more than identification mechanisms. The Cartagena Protocol's article 18 on the handling, transport, packaging and identification stipulates that the LMOs-FFPs, for contained use and for intentional introduction into the environment should be identified in the accompanying documentation (paragraph 2). In fact, the use of "known through means such as identity preservation systems (Muth et al., 2003: 44)[12]" is also problematic whereas it is not clear whether it will lead to an efficient control or much more uncertainty. The question is if this expression is broad enough to cover different ways of ensuring that the identity of the shipment is preserved or just laxist enough to allow slight free riding.

However, further negotiations during the COP-MOPs on identification problem showed that bureaucratic part of the issue was more important than technical evaluation difficulties although paragraph 3 asks for "possible development standards with regard to practices in the *identification*, handling, packaging and transporting of LMO's". Identification techniques are not developed in all the Protocol parties and transparent information about techniques applied is lacking. This is the reason why an Open-Ended Technical Expert Group has been set up at the COP-MOP1 (2004) to follow, beside the documentation practices, the determination of thresholds for adventitious and unintentional presence of LMOs and also the harmonization of sampling and detection techniques (CBD, http://www.cbd.int/decision/mop/?id=8288: 27/09/2010).[13] However, during the COP-MOP3, consideration of sampling and detection techniques has been scheduled for the 4th meeting. Importing countries "will still have to carry out "random sampling and detection for LMO content in the shipments".

On the other hand, "identity preservation techniques" that have been underlined in the Protocol and in subsequent COP-MOP decisions may be used for restrictive use of seeds by

farmers, create discrimination between GMO and non-GMO products. Such techniques consist of testing (and auditing) agricultural products at several stages from the planting to the export and the main objective is to certificate the "purity" of the product (Sundstrom et al., 2002: http://ucanr.org/freepubs/docs/8077.pdf, 09/092010). Biotech production increases the demand for this evaluation method but developing countries do not usually have similar institutions and scientific knowledge to certify products. In that case, mainly the small farmers in developing countries may be penalized by the limitation of seed saving in order to respect the seed purity and a non-GMO market mainly available for consumers of developed countries may be created in parallel with organic product certification.

In fact the discussions on the type of document and the criteria have begun at the first COP/MOP. The decision BS-I/6, urged parties to develop proposals on the details of the identification requirements for LMO-FFPs and invited them to use "unique identifiers for transgenic plants" adopted by the OECD. However, the type of the document has not been decided yet. There are possibilities of using a stand-alone document only about the LMO content of the shipment, a "commercial invoice" that would also comprise a rubric about LMO identification or other existing document for incorporating the information provided for by the Protocol.[14] Actually parties of the Protocol use the OECD guidelines (OECD, 2006: 11-12) to assign the category of LMO based on unique identification codes and such identifiers must be notified to the Biosafety Clearing-House acting as the coordination mechanism of the Cartagena Protocol.

Another ongoing debate is about the use of the term "contains" or "may contain" of the same article 18, paragraph 2 (a), whatever the type of document used would be. Positions held by states during the COP-MOPs prove that precautionary principle succumbs to trade interests. At the first and second COP-MOPs, Brazil, Mexico (initially from the Compromise Group[15] (Cosbey and Burgiel, 2000: http://www.iisd.org/pdf/biosafety.pdf, 22/06/2009) and New Zealand defended the use of "may contain", which helps to maintain a legal uncertainty that leaves part for flexible implementation and thus tried to limit the restriction measures on the transport of LMOs like traceability requirement or product recall. Essentially Brazil has changed its position although remaining a member of the "like-minded mega-diverse countries"[16] to get closer to the Miami Group[17] as its export incomes from agro-biotech products were growing. Some also claim that Brazil was also successful to limit the documentation requirements with the use of a standard commercial invoice and to avoid that the LMO *containing* agricultural commodities necessitate specific documentation, which means additional transaction costs and causes discrimination in trade.

The most important outcome of the third meeting was the discussions about the use of specific terms in the article 18 on the identification of LMOs in trade shipments. Brazil's efficient role appeared during also this meeting, when its representatives urged others to consider a more adaptative use of "may contain"/"contains" terms in the accompanying document through proposal of a two stage approach: If the identity of the LMO is known through means such as "identity preservation systems" "contains" should be the appropriate term to use. If the identity is not known, "may contain" suits more to inform importing countries on the content of the shipment. This proposition has not been finalized and further review and assessment has been required to be done during the 5th meeting of the parties (2010) "with a view to considering" a decision at the 6th meeting (2012) on the use of "contains". It should be noted that the draft was "with a view to adopting" (Lin and Ching, 2007: http://www.biosafety-info.net/file_dir/8533488565e4dd420.pdf, 17/07/2011). Thus, no substantial progress has been made at the COP-MOP5.

As parties do not have similar scientific knowledge, production and regulatory capacities, mainly a standardized identification level is required to implement the Cartagena Protocol efficiently. This is the reason why at the COP-MOP1, parties also decided to conduct a workshop on capacity-building and exchange of experiences. At the COP-MOP3 (2006), parties decided (CBD, http://www.cbd.int/decision/mop/?id=11064: 27/09/2010)[18] to consider at their fourth meeting a report on the experience gained with the use of a commercial invoice or other documents (in existing documentation systems) and also agreed on the future consideration of a stand-alone document. The parties, other governments and relevant international organizations were asked to submit to the executive secretary views and information on the adequacy of existing rules and standards for the identification, handling, production and transport concerning existing gaps in order to develop new rules and standards. The assessment of the experience gained within the implementation of the agreed documentation requirements should be completed by capacity-building[19] (UNEP, 2007: http://www.unep.ch/biosafety/old_site/files/UNEPGEFBiosafety_Interim_Biosafety_Update131107d.pdf, 19/12/2010) efforts for developing countries on documentation, sampling and detection techniques. At the COP-MOP4 (2008), the decision BS-IV/8 asked for the review of the article 18.2b at the 6th meeting of the COP-MOP and also for the contribution of the *Codex Alimentarius* Commission of the FAO and the International Organization for Standardization to that process. Furthermore, the decision BS-IV/10 suggested to "continue to

gain experience" in the implementation of the Protocol's provisions regarding handling, transport, packaging and identification and encouraged parties to participate to ongoing work on standards concerning these issues.

Some issues were left directly to the COP - MOP 5 as the stand-alone document, the capacity-building to help developing countries to use at least "may contain" label based on appropriate identification systems. Within this framework, international grain trading companies should also have their share of responsibility while defining the roles and needs of LMO exporting developing countries. The trade between parties and non-parties should be consistent with the objective of the Protocol, but specific requirements for the documentation do not apply to such transboundary movements.

The COP-MOP 5 held in October 2010 at Nagoya did not concretize elements about the evolution identification and documentation. Only, the national focal points of the parties succeeded to provide their first regular national reports on their regulatory framework and the Ad Hoc Technical Expert Group on Risk Assessment and Risk Management (decided at the COP-MOP 4) gathered for the first time in April 2009. The Group prepared a draft on the roadmap for risk assessment (based on the Annex III of the Protocol) that would be useful for capacity-building in countries that do not have such evaluation techniques. It should be noted that the most important outcome of COP-MOP 5 has been the adoption of the Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress, stressing the responsibility of operators, based on civil liability, in case of damage caused by the transboundary movement of LMOs.[20] The main characteristic of this additional document is the preponderant role of national legislations as for the identification of damage and the implementation of liability mechanisms.

Consequently, negotiations on biosafety carry out progressively some precision on the commitments that would be adopted by parties although identification mechanisms are not established at the international level and commonly applied in all exporter/importer countries. However, major transformations may have concrete impacts on the evolution of Parties' responsibilities: the initial power distribution and country groupings are not actually similar. The Miami Group, the European Union, the Like-minded Mega-diverse Group and the developing countries at the initial discussion stage have either changed their position in time due to the development of their production capacity, as in the case of Brazil, or compromised for their trade interests as in the case of the European Union.[21] The most important transformation is that another group has emerged in time, which is composed of emerging countries having both the particularity of being mega-diverse ones and also agri-biotech

producers. Brazil and Mexico's resolute yet flexible positions during the COP-MOPs may be understood by their increasing production and trade capacity and competitive advantage but also by their experience in biodiversity conservation policies/compromises. Hence, they can adapt dynamically their positions to the ongoing multidimensional negotiations according to their interests and shape the future of the transboundary movements of the LMOs. This looks like the most efficient policy choice, with regards to the current uncertain character of the rules declared in the Cartagena Protocol.

Conclusion

In fact, the coexistence of global and imprecise discourse on agricultural biodiversity, safe production and trade of agri-biotech products and also multiple and focused initiatives make it nearly impossible to conclude any substantial implementation evolution of the CBD and the Cartagena Protocol. Their actual implementation creates a less visible milieu and allows compromise, free-riding and perhaps a qualitative change in the use of agricultural biodiversity without limiting the quantitative pressure on it. At the institutional level, the CBD and the Protocol do not have enough structural depth to coordinate related issues and need to cooperate with *executor agents* like the FAO, the World Bank, the UNDP, the UNEP and also with the WTO and the OECD. Thus, the initial environmental character of these multilateral cooperation frameworks turns out to be an economic one based on socio-economic development priorities and the functioning of global market.

It seems also that the CBD's approach on biotechnology as having "great potential for human well-being if developed and used with adequate safety measures for the environment and human health" wins over its potential to contribute to the conservation of biodiversity and agricultural biodiversity as one of its components. The Cartagena Protocol has actually a lighter regulatory weight and is of a lesser concern compared to the CBD's impact on international negotiations. Its intermediary position between an environmental and trade agreement, either gives it a potential to have an independent structure and effectiveness in time or signifies that this loose spirit will gradually lead to the weal of the WTO in the governance of plant genetic resources through the interface between the Protocol and the SPS measures.

Finally, "emerging countries" are eager to be more active in discussion for becoming new players and transforming, if possible, the rules of the game. While "common interests"

on agriculture are reviewed during the COPs and COP-MOPs, the continuous differentiation between country groups affects their position towards multilateral environmental agreements and causes uncertainty. However, emerging countries build intermediary policies satisfying both international commitments and national priorities and appear to be new major elements in the evolution of global environmental governance. In this sense, can the emerging countries be considered as contributing to the emergence of more efficient outcomes in economic and ecological terms for both developed countries and the developing world?

END NOTES

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[1] "…Wheat, rice and maize alone provide more than 50% of the global plant-based energy intake…"

[2] 1: Eradicate extreme poverty and hunger (1c: Reduce by half the proportion of people who suffer from hunger).

7: Ensure environmental sustainability (7c: Reduce biodiversity loss acheiving by 2010, a significant reduction in the rate of loss).

[3] For example, the Director-General of the ICONE Brazil (Institute for International Trade Negotiations), André Meloni Nassar, "… few countries have such stringent environmental regulations affecting the agricultural sector …"; "… Will production potential be undermined by the concern about carbon emissions and the continuing crisis of Amazonian deforestation?"

[4] Article 6, paragraph 5 of the AoA on the blue box, concerning domestic supports that will incite farmers to limit production (payments on fixed areas and yield or a fixed number of livestock) or the payment decoupling from production levels, food security, environmental protection, encouragement of agricultural and rural development programmes in the green box.

[5] Studies on Brazil, Chile, Columbia, Czech Republic, Indonesia, Kenya, Lebanon, Russia, Uganda.

[6] Established in 1974, within the UNEP structure.

[7] A forecasting method based on questionnaires answered by experts in other words "panel evaluations".

[8] Roundup Ready is brand name given by the company Monsanto to its biotech crops resistant to *glyphosate* (herbicide ingredient used in the production of Roundup, brand name of a herbicide produced also by Monsanto).

[9] The use of the term living modified organisms (LMOs) limits the scope of the Protocol as regards intentional or non-intentional release of the genetically modified crops to the environment, while the use of the term GMO would affect all processed LMO based food.

[10] 8(g): Establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts that could affect the conservation and sustainable use of biological diversity, taking also into account the risks to human health; 19, §3: The Parties shall consider the need for and modalities of a protocol setting out appropriate procedures, including, in particular, advance informed agreement, in the field of the safe transfer, handling and use of any living modified organism resulting

from biotechnology that may have adverse effect on the conservation and sustainable use of biological diversity.

§4: Each Contracting Party shall, directly or by requiring any natural or legal person under its jurisdiction providing the organisms referred to in paragraph 3 above, provide any available information about the use and safety regulations required by that Contracting Party in handling such organisms, as well as any available information on the potential adverse impact of the specific organisms concerned to the Contracting Party into which those organisms are to be introduced.

[11] Concluded January 29, 2000 in Montréal and entered into force in September 11, 2003.

[12] Identity preservation is a strict form of grain segregation, requiring recorded information and test activities for foods that will be marketed as non-transgenic especially when "bioengineered" traits are used as inputs in their production. Such products have the "IP" label in the USA.

[13] Decision BS-I/6 on "Handling, transport, packaging and identification of living modified organisms (Article 18).

[14] This single document is expected to include common, scientific and where available, commercial names and also the transformation event codes of the LMOs, on the basis of the OECD unique identifier code.

[15] The group of countries that has emerged at the end of the negotiations of the Cartagena Protocol intenting to bridge the major gaps between other negotiating groups by developing compromise positions and alternative formulations, Mexico, Norway, Singapore, South Korea, Switzerland joined by New Zealand in Montreal.

[16] Developing countries asking for a strong protocol.

[17] Major countries exporting GM seeds and crops and prioritizing the free trade of such products.

[18] Decision BS-III/8 on "Handling, transport, packaging and identification of living modified organisms: paragraphs 2 (b) and 2 (c) of Article 18".

[19] The capacity-building for biosafety became also one of the frameworks for which the UNEP, the UNDP and the World Bank began to provide assistance through the Global Environment Facility (GEF) within the framework of "Strategy for financing biosafety", especially for developing countries and economies in transition. The GEF assists them to implement their national biosafety frameworks. Another project approved is on "Building Capacity for Effective Participation in the Biosafety-Clearing House".

[20] For the text of the Supplementary Protocol, see Secretariat of the Convention on Biological Diversity, *The Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety*, Montreal, Quebec, Canada, 2011.

[21] Regulation (EC) No 1946/2003 of the European Parliament and of the Council of 15 July 2003 on transboundary movements of genetically modified organisms.

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