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## Trade and climate change on the road to Copenhagen 2009

By Moustapha Kamal Gueye

There is now wide-spread recognition among policy-makers and the public at large that the international community must reach a global agreement on climate change that will help stabilise global greenhouse gas concentrations in the atmosphere at a level that would prevent further dangerous anthropogenic interference with the climate system.

There is also great recognition of the urgency to do so within a time-frame that will allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner - as outlined in the UN Framework Convention on Climate Change (UNFCCC). The present crisis of global food supplies and high food prices is a stark reminder of the disastrous consequences that could result from future disruptions in global agricultural production systems.

In terms of process, the UN-sponsored negotiations for finding a successor of sorts to the Kyoto Protocol are now in an intensive phase, with the deadline of December 2009 rapidly approaching.

### Economics at the heart of climate negotiations

A true wake-up call, the current global economic slowdown seems to have trapped governments into a difficult choice between rescuing the economy and imposing further sacrifices by taking the hard decisions needed to prevent further global warming. Although not entirely novel, the importance of economics in addressing climate change is

more pronounced and visible today than it has been in the recent past. Since the Stern Review on the Economics of Climate Change of 2006 and the Intergovernmental Panel on Climate Change's (IPCC's) Fourth Assessment Report in 2007, economics has been at the heart of climate negotiations.

It is now clear to all that climate change mitigation and adaptation come at a cost. But exactly what the cost is, and how it will be distributed across countries and sectors under different policy scenarios remains uncertain. The international distribution of that cost is, and has always been, at the centre of the climate change negotiations. The UNFCCC recognises that the industrialised world is responsible for mitigating past emissions, and that developing countries have contributed little to the current problem. The international community has also acknowledged the limited capacity of developing countries to adapt to the consequences of climate change - hence the cornerstone principle of "common but differentiated responsibilities and respective capabilities" underlying the Convention.

Things have changed, however, since the first international agreement on climate change was adopted in 1992. Some developing countries have become major players in the



world economy - as well as significant sources of greenhouse gas (GHG) emissions. Indeed, China became the leading emitter of climate-changing gases last year.

The compromise agreement reached in December 2007 at the Bali climate talks in part reflects this reality. The Bali plan includes a delicately negotiated set of obligations for developed countries to cut their emissions in quantifiable manner, as well as requirements that they help developing countries reduce the growth of their emissions while pursuing their sustainable development objectives. The commitment made by developing countries to implement nationally appropriate mitigation actions is made contingent on the provision, by industrialised countries, of technology, financing and capacity-building, in a measurable, reportable and verifiable manner.

### Economic and trade-related concerns in the run-up to Copenhagen

As the international community embarks on the road to climate talks in Copenhagen in December 2009, when a new global agreement on climate change is expected to be forged, three categories of economic and trade-related concerns are likely to influence the process and outcomes of the negotiations: incentives for developing country participation; leakage and competitiveness concerns of industrialised countries; and trade and development concerns that developing countries have raised.

The first relates to incentives aimed at encouraging participation by developing countries, in particular through transfer of technologies and provision of financial resources to support action on mitigation and adaptation. Developing countries have stated clearly that financing and technology transfer will be essential if they are going to be able to mitigate their emissions and adapt to warming temperatures.

At the latest climate change talks held in Ghana in August this year, the G-77 group of developing countries and China called for the creation of an international financing mechanism under the Convention. Under the G-77 and China proposal, funding would come from a contribution ranging from 0.5 percent to 1 percent of the gross national product of Annex I Parties (industrialised countries), to finance technology transfer, including the cost of patents. Ghana put forward a proposal to create an international framework agreement for technology development and transfer, and to establish a multilateral technology fund, to cover, among other, the licenses to support access to and transfer of low-carbon technologies and knowhow. Financing the access of proprietary technology has been the subject of controversial discussions. While it remains unclear whether, and to what extent, intellectual property might act as a barrier for developing country access to necessary mitigation and adaptation technologies, the question remains the subject of divergent views. Clearly identifying barriers to the development, transfer and diffusion of technology is thus one of the key analytical processes to be completed before relevant approaches to financing for technology can be considered in an informed manner.

Leakage and competitiveness in industrialised countries is another vital trade-related question. Industry and policy-makers in industrialised countries worry that efforts to reduce GHG emissions would negatively affect their carbon-intensive manufacturing sectors, which may be unable to cope with competition from industries in developing countries

that do not have comparable obligations imposed on them. Subsequently, concerns about competitiveness loss often also extend to relocation of industries from countries with obligations to those without. Industries generally concerned are: iron and steel; aluminium and copper; cement and glass; paper and pulp; and basic chemicals.

Unilateral trade measures, while not formally part of climate negotiations, could also disrupt or complicate the climate negotiations. Such provisions could include border measures - trade barriers that target economies that lack specific emissions reductions obligations - or requirements that countries purchase carbon offsetting allowances. This is already visible in discussions on sectoral approaches to mitigation, which developing countries see as a backdoor to address developed countries' competitiveness concerns. It is critical that these concerns be addressed promptly in the relevant fora, including through informal diplomacy, before they emerge as critically disruptive factors in the end-game towards Copenhagen.

The third set of issues relates to the trade and development concerns of developing countries in certain economic sectors that are likely to be negatively affected by either the physical impacts of climate change or the socio-economic consequences of response measures. Related to that are their adaptation needs and modalities of their financing.

The IPCC projects that climate change will result in the decline of rain-fed agricultural productivity by up to 50 percent in certain parts of the world, mainly in developing countries. Tourism, a key economic sector in many small islands and developing states, is expected to suffer from climate impacts on the one hand, and from response measures such as a regulation of emissions from international marine and air transport, on the other. These are likely to result in a decline of tourism-related employment and contribution to gross domestic product.

Finally, certain developing countries have found themselves caught in the middle of a fight over whether certain agricultural products should have their 'carbon footprint' emblazoned on their labels. Generally referred to as the 'food miles' debate, the labelling of certain products on the basis on the air shipment puts an economic cost on producers from poor countries - the very countries that have been recognised under the climate convention as having a minimal contribution to the problem and that have been virtually exempted from mandatory emissions cuts.

These are the concerns that developing countries have raised in the climate negotiations, as highlighted in their Technology Needs Assessments, and that may feature in their National Adaptation Programmes of Action (NAPA). Seeking appropriate responses to these anxieties in the trading system, and defining adjustment mechanisms that would help economies adapt to the physical and socio-economic impacts of climate change are likely to be key priorities for positive engagement of developing countries on the way to Copenhagen.

The next 16 months will be crucial in building global consensus towards a new climate agreement. The economic architecture of such an agreement, which could have far-reaching impacts on markets the world over, is absolutely essential.

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# Trade and development responses to climate adaptation challenges

By Vicente Paolo B. Yu III

Least-developed countries (LDCs) and small and vulnerable economies (SVEs), including Small Island Developing States (SIDS), face particularly difficult climate change and trade challenges. Their economies are often underdeveloped and reliant on a few key sectors and commodities, heightening their vulnerability to the impacts of climate change. For these countries to successfully adapt to, and develop in the face of climate change, their trade and other economic policies should be adjusted to support effective adaptation and development through measures such as economic diversification. Developed country trading partners, for their part, should support adaptation through financing and technology transfer, and by removing distortive measures such as export barriers and unfair subsidies.

Relative to developed countries, populations in developing nations are more vulnerable to and will be more adversely affected by climate change. Their development conditions and economic resource constraints often exacerbate their economic and climate change vulnerabilities and inhibit their ability to adapt to climate change in social, technological and financial terms. The impacts of climate change will have far-reaching effects on the sustainable development of developing countries, including their attainment of the Millennium Development Goals and other internationally agreed development objectives by 2015 and in decreasing the ever-widening development gap.

The global projected impacts of climate change are severe and vary by region. Africa, where the majority of least-developed countries (LDCs) are located, is projected to be hard hit by increased water-related stresses such as droughts in large parts of the continent, which will severely compromise food production and security. Projected sea level rise likely will affect low lying coastal areas with large populations. Many parts of developing Asia will likely see decreased freshwater availability, and many low-lying coastal areas with large populations are likely to face increased flooding from sea surges or flooding rivers.

In Latin America, projections are that the Amazon river basin will start drying out by mid-century, turning from tropical forest to savannah. Agricultural productivity is projected to decrease, and water availability could also be significantly affected. Small island developing states (SIDS) are expected to be most adversely affected by sea level rise exacerbating inundation, storm surges, erosion and other coastal hazards, threatening vital infrastructure and the livelihoods of island communities. The availability of coastal resources (such as fisheries) is projected to be adversely affected due to, inter alia, beach erosion and coral bleaching. Water availability in many small islands in the Caribbean and the

Pacific is also expected to become insufficient to meet demand during low-rainfall periods by mid-century.

## LDCs' trade profiles and potential climate change effects

Many LDCs are being left behind other countries in terms of trade growth and competitiveness, and the quality of trade growth is neither sustainable nor equitable. LDCs' export profiles are typically characterised by high degrees of export concentration, with only a few product tariff lines, such as mineral fuels, oil and clothing being exported. These profiles render them highly vulnerable to market demand-side volatility and other shocks - such as climate shocks - in relation to their main export products.

Climate change impacts on LDCs' trade capacity and competitiveness are likely to vary depending on the product and the country concerned. While LDC oil exporters may benefit from the current high fuel prices, possible oil price adjustments by oil importing countries as a result of climate change-related policies may lower demand for fossil fuels and thereby reduce these LDC oil exporters' future export earnings.

Other commodity exports of LDCs that are highly dependent on climate conditions, such as fisheries and agricultural products (e.g. cotton, coffee, tea, mate and spices, tobacco, vegetables, see oils, fruits, animal skins) could also be adversely affected due to, for example, the reduction of growing seasons, drought, and ecosystem loss.

Furthermore, the development and maintenance of trade-related infrastructure, such as roads, railways, and ports, might also become more difficult as countries struggle to match increasingly scarce resources with increasing climate adaptation demands.

**Table 1: Summary of Trade and Trade-Related Climate Challenges to Development and Adaptation for LDCs**

Key Characteristics of current trade profile	Some project major climate risks
<p>Low global trade share (1% in 2005)</p> <p>High level of commodity export dependence</p> <p>High levels of export concentration (mineral fuels and oil; commodity agriculture such as coffee, cotton, bananas, sugar, fish; textiles and clothing); low economic diversification and resilience</p> <p>Supply-side constraints (infrastructure, trade logistics, finance, information)</p> <p>Low levels of preference utilization due to supply-side constraints, tariff peaks and escalations, and demand-side NTMs</p> <p>Still highly reliant on EU + US markets</p>	<p>Water stress (drought in Africa; excessive precipitation in Asia)</p> <p>Sea level rise (especially affecting low coastal areas in Africa and small island LDCs)</p> <p>Overall warming (land and water) resulting in changes in crop growth cycles and crops that can be grown; fish stocks in rivers, lakes and seas</p> <p>Increased human health hazards due to changing disease patterns and vectors</p>

## Some potential climate change impacts on trade competitiveness, prospects and development

Water stress impacts on agricultural productivity (especially small farmer production) may affect current commodity agricultural export performance

Flooding and desertification may adversely affect production and export activities due to damage to productive and transport infrastructure

Sea level rise may result in damage or loss of coastal infrastructure, including ports and roads (especially in many island LDCs), hampering trade transport logistics and increasing transport costs

Human health impacts may affect labour force availability and productivity adversely, affecting export performance and economic diversification potential

Climate pressure may spur diversification to other crops, products or services for export that are more appropriate to new climate conditions

### SVE's trade profiles and potential climate change effects

Their limited physical size and constrained natural resource and labour endowments often mean that the domestic markets of SVEs cannot support the location of large-scale industries or the production of goods subject to economies of scale at competitive prices. This means that the range of products produced in SVEs is often limited or products are not priced competitively. SVEs hence often "show a very high dependence on imports and exports and, consequently, on foreign market conditions" with trade to GDP ratios "usually much larger than the average" for other developing countries and with exports generally relying "on a very narrow

range of goods and services ... concentrated on the markets of a few countries." These factors create in many SVEs a high degree of trade dependence and economic instability that both affects and is affected by their vulnerability to climate change.

The services sector, especially tourism, has become a major source for economic activity in many SVEs. Some SVEs, especially among the SIDS, have sought to overcome economic instability and their associated trade-related challenges by pursuing economic diversification strategies to become knowledge and service-based economies. For other SVEs, however, agriculture remains the dominant economic activity to supply both domestic and export markets.

**Table 2: Summary of Trade and Trade-Related Climate Challenges to Development and Adaptation for SVEs, including SIDS**

Characteristics of current trade profile	Some project major climate risks
<p>SVEs = &lt;0.16% of global goods trade (&lt;0.1% of NAMA and &lt;0.4% of ag)</p> <p>SIDS = &lt;0.2% of global goods trade; 0.7% of global services trade (mostly in tourism and financial services)</p> <p>SVEs, including SIDS, have generally low levels of trade competitiveness arising from specific circumstances</p> <p>Generally:</p> <ul style="list-style-type: none"> <li>- small in land area and population</li> <li>- highly reliant on external trade</li> <li>- limited natural resource base</li> <li>- higher vulnerability to natural disasters</li> <li>- small domestic markets</li> <li>- many are geographically isolated or remote from main markets (island or landlocked)</li> </ul> <p>High levels of export concentration (commodity agriculture especially sugar and bananas; oil; mineral ores; tourism and financial services); low economic diversification and resilience</p> <p>Highly reliant on few markets (primarily EU and US)</p>	<p>Sea level rise (especially affecting SIDS), affecting physical integrity and infrastructure</p> <p>Greater frequency of extreme weather events (cyclones, hurricanes, typhoons, storms)</p> <p>Water stress (arising from de-glaciation and drying up of rivers, desertification, or salination of freshwater lenses and sources)</p> <p>Overall warming (land and water) resulting in changes in crop growth cycles and crops that can be grown; fish stocks in rivers, lakes and seas</p> <p>Increased human health hazards due to changing disease patterns and vectors</p>

### Adapting to climate change: The role of development-oriented trade policy for LDCs and SVEs, including SIDS

Adapting to climate change entails taking the right measures to reduce the negative effects of climate change (or exploit the positive ones) by making the appropriate adjustments and changes. There are many options and opportunities to adapt, ranging from technological options to behavioural changes at the individual level, all of which would depend on the policy choices taken by individual countries whether unilaterally or in the context of their international commitments and obligations.

The concept of adaptation to climate change is closely linked to the development of adaptive capacity, which refers to changes in processes, practices, or structures to moderate or offset potential damages or to take advantage of opportunities associated with changes in climate. National-level adaptation by developing countries will require a strong component of international cooperation from developed countries for support in meeting

the costs of adaptation, as provided for in the UNFCCC.2 Finally, effective climate adaptation by developing countries cannot take place unless other climate-adaptive changes are also effected in other areas of international policy, such as trade and intellectual property, to make these fully supportive of developing countries' efforts to undertake sustainable development. In short, effective climate adaptation is premised on the achievement by developing countries of their first and overriding priorities of economic and social development and poverty eradication.

With respect to ensuring the appropriate adaptation of trade policy to climate change impacts and constraints that may arise in a developing country context, especially for LDCs and SVEs including SIDS, it will be necessary for policymakers to rethink their current macroeconomic development and trade policy. The trade challenges that these vulnerable countries face stem in large part from the confluence of economic and trade liberalisation policy reforms undertaken in the past three decades, which have to a great extent exacerbated these countries' vulnerabilities to both economic volatility and climate change.



## Rethinking trade policy approaches in light of the climate change and development challenges

In light of their trade-related challenges, and the impacts that climate change is having and will have on the trade competitiveness and economic development prospects of LDCs and SVEs, including SIDS, it is clear that the key towards effective climate change adaptation by these countries lies in building domestic economies that are resilient, diversified, and more productive especially in sectors that are not as vulnerable to climate change impacts.

Further trade liberalisation by LDCs and SVEs in the sense of further increasing levels of tariff openness to imports may not necessarily be the appropriate “climate-adapted” trade policy response to climate change. Rather, adjustments are needed on the trade policies and measures of their trading partners in order to adequately reflect and respond to the trade, development, and climate change challenges that LDCs and SVEs, including SIDS, face.

In short, broadly what would be required by both LDCs and SVEs, including SIDS, with respect to ensuring that their trade and development policies and measures are climate-adapted are (i) domestic sustainable development policies that incorporate trade and other economic measures designed to build up domestic productive capacity and promote economic diversification to sectors and activities that are less vulnerable to climate change than current ones; and (ii) an enabling and coherent international policy environment (in both the trade and climate regimes), which includes economic and climate policy space and flexibility, new and additional financial flows to support climate adaptation and development, research and transfer of climate friendly technologies, and external support aimed at improving these countries’ trade competitiveness and long-term climate-adapted sustainable development.

With respect to trade in goods, climate-adapted trade-related policymaking that is oriented towards sustainable development could imply a rethinking of LDCs and SVEs agricultural development policy and programmes in order to take into account climate change-related impacts. This could involve promoting shifts in both crops grown and production processes used to factor in climate change-related stressors. Domestic policy shifts may need to be effected - e.g. prioritising agricultural production for food security and industrial production of manufactured goods for domestic consumption over export-oriented production and as a means to lessen vulnerabilities to external trade, economic and environmental shocks.

Attention should be paid to the ancillary agricultural and industrial policy and infrastructure shifts that may need to be made to support diversification away from the current agricultural commodities being primarily exported by LDCs and SVEs, including SIDS. Adapting to climate change impacts on infrastructure and settlements could include scientific services to assess vulnerabilities, retrofitting buildings, raising awareness, and establishing resettlement programmes.

Climate adaptation will also require that trade-related infrastructure (such as ports, roads, etc.) be built or strengthened in preparation for climate impacts. Adaptation should include, where appropriate, the development of alternative infrastructure if existing ones cannot be climate-adapted.

As with LDCs and SVEs primarily dependent on the agricultural commodities export sector, LDCs and SVEs that are dependent on their oil and other mineral commodity exports will need to ensure that income gains coming from the current high prices for oil commodities are invested into improving the diversification level of their economies. This could be achieved by their investing in other productive economic sectors and providing sufficient resources to implement a strategic industrial development policy.

For many SIDS (both LDCs and SVEs), trade in products from their coastal zones and fisheries are major components of their economic and trade profiles. Climate change impacts on these

fragile ecosystems, while difficult to combat, could be better addressed through more robust domestic regimes of resource access, control and management.

Climate-adapted agricultural and industrial diversification will also require securing adequate sources of energy to fuel existing production and expansion into new economic activities while, at the same time, not contributing more than is necessary to global greenhouse gas emissions<sup>3</sup>. The development of domestically-sourced, clean, renewable, sustainable energy sources and infrastructure is therefore an important component of climate-adapted agricultural and industrial diversification.

Economic diversification into the services sectors for LDCs and SVEs, including SIDS, may provide many climate-adaptation and development benefits. Services sector expansion and diversification in a manner that is climate-adapted will, however, require not only increased domestic public and private sector investment into upgrading the country’s human resources but also investments in improving and climate-proofing the associated infrastructure for specific services sub-sectors and their various modes of supply.

## Climate change adaptation of the trade-related policies of major trading partners with respect to LDCs and SVEs, including SIDS

The major trading partners of LDCs and SVEs, including SIDS, should support climate-adapted agricultural and industrial sector diversification by LDCs and SVEs, including SIDS, including but not limited to the provision of financial and technology transfer assistance for such diversification in the context of adaptation consistent with developed countries’ obligations to do under the UNFCCC and immediate action to remove barriers (both tariff and non-tariff) to these countries’ exports.

Developed country subsidies that support unfair competition with the products or production capacity of LDCs and SVEs, whether in agriculture, industrial goods, or even fisheries, should be reduced or eliminated.

Support should also be provided in terms of recognising and allowing for LDCs and SVEs’ needs for flexibility with respect to policy shifts and measures within agricultural and industrial diversification programmes. Any market access opening that LDCs and SVEs, including SIDS, may wish to undertake should be voluntary and flexible to take into account possible changing economic and climatic conditions.

The trade-related actions above should cohere with and enhance the mandatory actions that need to be taken by developed countries under the UNFCCC with respect to the provision of mandatory financing and technology transfers to developing countries (see Arts. 4.3, 4.4, 4.5, 4.8 and 4.9 of the UNFCCC). Such actions will determine the extent to which developing countries, including LDCs and SVEs, will be able to effectively implement their own UNFCCC commitments (see Art. 4.7 of the UNFCCC)

Finally, in relation to the WTO negotiations, a genuine effort to contribute on trade and climate issues would involve responding effectively to developing country proposals for an integrated and development-oriented approach in determining the negotiated outcomes of the Doha Development Agenda.

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<sup>1</sup> UNFCCC, Climate Change: Small Island Developing States (2005), p.23.

<sup>2</sup> See UNFCCC, art. 4.4. For example, the IPCC has pointed out that the cost of adaptation to climate change for Africa “could amount to at least 5 to 10% of GDP.” See IPCC 4AR Synthesis Report, p. 50.

<sup>3</sup> LDCs and SVEs, including SIDS, are currently among the lowest per capita greenhouse gas emitters, with an average of less than 1 ton of carbon dioxide equivalent per year.

# Impact of climate change on food security in times of high food and energy prices

By Joachim von Braun

Climate change and the drive to produce biofuels are two major factors redefining the world food equation and having an enormous impact on the food security of poor people. Attributed directly or indirectly to human activity, climate change puts additional pressure on already overexploited natural resources, negatively affecting crop yields, stability of food supplies, and the ability of people to access and utilise food in many parts of the developing world. Biofuels development can be a double-edged sword, especially from the perspective of small and vulnerable farmers in developing countries.

Emissions of greenhouse gas emissions (GHGs) between 2000 and 2006 increased on average by 3.1 percent per annum, compared to 1.1 percent in the previous decade, and are likely to continue to grow rapidly in view of high economic growth and lack of effective mitigation strategies. The impacts of climate change—such as rising temperatures and increased frequency of extreme weather events—puts severe pressure on food availability, stability, access, and utilisation.

Although rich countries are responsible for most GHGs, the impact of climate change is expected to be most severe in developing countries and on the poorest populations. Many low-income countries are located in tropical and subtropical regions, which are particularly vulnerable to rising temperatures, and in semi-desert zones, which are threatened by decreasing water availability. By 2080, agricultural output in developing countries may decline by 20 percent due to climate change, compared to 6 percent in industrialised nations. Also due to climate change, yields in developing countries could further decrease by 15 percent on average by 2080. Taking into account the effects of climate change, the number of undernourished people in Sub-Saharan Africa may triple between 1990 and 2080. Climate change shocks also erode the long-term opportunities for human development and could exacerbate inequalities within countries.

The higher susceptibility of the poor is also due to limited adaptive capacities. Low-income communities depend directly on agriculture, forestry, fisheries, aquaculture, and other climate-sensitive resources. Their vulnerability is exacerbated by inadequate complementary services, such as health, education, and insurance services, and lacking agricultural extension.

The risks climate change poses on food security are particularly pressing at a time of high oil prices. High fuel prices make agricultural production more expensive by raising the cost of fertilizers, irrigation, and transportation. This increased level and volatility of agricultural prices is negatively impacting the purchasing power and the food security of the poor. The decline of food commodity prices in the context of the financial crisis is probably only temporary. The access to capital for sustainable agricultural and water development investments is further constrained by the financial crisis.

The availability of agricultural products is also affected by climate change directly through its impacts on crop yields,

crop pests and diseases, soil fertility and water-holding properties, and variable weather conditions. Last but not least, food utilisation is threatened by climate change through effects on human health and the spread of diseases in geographical areas not previously affected. As agricultural production declines, food prices rise, and purchasing power decreases, physical, economic, and social access to food is severely affected. For the poor, climate change impacts the four key dimensions of food security - availability, stability, access, and utilisation.

## The problem or the solution?

While agriculture is part of the climate change problem, it is also part of the solution. However, the expansion of agricultural production as an energy source has broad and complex implications. Biofuels have raised hopes for reducing greenhouse gas emissions, mitigating climate change on a global or regional scale, and reducing the environmental risks to food security. Yet, biofuel expansion can also add to the greenhouse gas emissions problem through the conversion of forests and grassland to energy crop production. With land-use change, increased world corn-based ethanol production is estimated to increase greenhouse gas emissions and for palm oil-based biodiesel produced even more so.

On the positive side, biofuels could benefit the poor through raising agricultural incomes, creating additional rural jobs in crop harvesting and processing, and utilising marginal lands and crop residues. The extent to which these potentials are realised depends on the farmers' ability to access information and markets, produce at competitive prices and at sufficient economies of scale, and afford new biofuel sources. However, economies of scale in ethanol production—at least to date—favour large scale farms, while the existing subsidy regimes and import restrictions undermine the comparative advantage of developing countries. New technology such as that associated with sweet sorghum may change this pattern, however.

In terms of food availability, biofuels could unduly divert land and water resources, capital and political attention away from the production of food. Rising demand for biofuel feedstocks also puts strong upward pressure on agricultural commodity prices and thus on access to food. Further, the stability of food supplies is put at risk as volatile energy prices translate into larger food-price fluctuations, to which poor people have

little capacity to adjust. These increases in crop prices are also accompanied by a net decrease in calorie consumption in all regions. The largest decrease is in Sub-Saharan Africa, where calorie availability is projected to fall by more than eight percent if biofuels expand as drastically as planned. In addition, the pressure biofuels put on water for household use could pose health risks and undermine food utilisation. At the same time, however, local biofuel production could provide cleaner and cheaper cooking and heating fuel alternatives and have positive health consequences for the poor.

A rapid, coordinated, and multidisciplinary response is needed to respond to climate change and related emerging risks. Building on the fundamentals of good development policy is essential but not enough to ensure food security under new climate change challenges and threats. Effective adaptation and mitigation strategies must be proactive and explicitly target the impacts of climate change and energy (biomass) developments on the poor. The needed response involves a combination of science, institutional, and policy innovations, which should be taken into account in global, regional, and national strategies, and should comprise three main elements:

### *1. A science and technology strategy*

For climate change mitigation, the technological innovations needed include early warning systems for droughts, floods, and other natural disasters, better soil and water management, and seed varieties more resistant to adverse climatic conditions. For adaptation and long-term productivity, biodiversity should also be maintained and enhanced, for example through gene banks. Carbon sequestration, a process that removes carbon dioxide from the atmosphere, should be encouraged to mitigate the increase of carbon concentration. Also, more support should be given to developing clean bioenergy technologies that do not compete with food production.

To achieve long-term agricultural growth and build a more resilient food system that can meet ongoing and future challenges, developing country governments should also increase their medium- and long-term investments in agricultural research and connect to international science and knowledge-sharing systems. In addition, new approaches to scientific partnerships should be developed and expanded. Co-funding and cooperation among public institutions, foundations, and private enterprises should play an important role in building and advancing the scientific base.

### *2. Markets and trade policy strategies that call for global institutional arrangements of carbon and biofuels trading*

Developed countries should eliminate domestic biofuel subsidies and open their markets to biofuel exporters for biofuels from sustainable production. In view of high food prices, measures to make more agricultural products available for food and feed include freezing biofuel production based on grains and oilseeds. Transparent and equitable standards of carbon and biofuels trading are needed, including sustainability and performance-based standards rather than technology-based standards that will quickly become outdated.

On the policy side, post-Kyoto Protocol rules of access must change to include activities important for developing

*"...biofuels could unduly divert land and water resources, capital and political attention away from the production of food."*

countries such as avoiding deforestation, soil carbon sequestration, and mitigating methane and nitrous oxide. The Clean Development Mechanism rules should be refined to encourage small farmer participation and to change existing regulations that impose high costs on developing carbon markets in poor countries. Ongoing climate change negotiations under the Bali Action Plan should lead to a new binding international climate change agreement with appropriate carbon-trading and carbon-offset policies (e.g. cap-and-trade and carbon-tax instruments) that include economic incentives for engaging small farmers in developing countries. Farmers' organisations should cooperate at the national and international level to link small farmers to global carbon markets. Ensured by efficient contracts, the private sector and small farmers can engage in mutually-beneficial projects in carbon sequestration and decentralised bio-energy crop production.

### *3. An insurance and social protection strategy for the food insecure poor to respond to the growing complexities of food system changes*

To reduce the vulnerability of poor households to adverse climate and energy price shocks and to prevent new households from falling into poverty, there is an increased need to strengthen public and market-based social protection mechanisms. Examples of social protection policies include social safety nets (such as conditional or unconditional cash transfers, public works and school feeding programs, subsidies on items consumed by the poor, microcredit, and crop insurance), health insurance, and social security. In addition, the triggers of emergency agencies to respond to crises should be improved. New and innovative insurance mechanisms and private-public partnerships should also be introduced at a larger scale to expand coverage among the poor. Insurance and social protection must be adjusted to the individual circumstances of each country and should be supported by investment in rural infrastructure and services, and good governance.

### *The way forward*

It is clear that action is needed to address the acute and long-term impacts of climate change, particularly in the developing world. Each country should develop and implement a viable national action plan, which takes into account future development paths, expected climate change impacts, and adaptation and mitigation costs. Appropriate prioritisation, sequencing, and institutionalisation of mechanisms are essential. Proposed solution for the short-term should also not undermine long-term climate mitigation options. Global actors should coordinate their transfer of resources, knowledge, and technology, and build a global response to address climate change risks, beyond a single post-Kyoto agreement.

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# Negotiations on disclosure of origin requirement under scrutiny

By Fleur Claessens

Over the past decade, the misappropriation of genetic resources and traditional knowledge has emerged as an issue of global concern. Yet gaining international recognition for the need to effectively address such misappropriation and adequately protect traditional knowledge remains a major challenge for developing countries, which hold the majority of the world's genetic resources and traditional knowledge.

The WTO Doha Ministerial Declaration (2001) requested the Trade Related Aspects of Intellectual Property Rights (TRIPS) Council to address the relationship between the Convention on Biological Diversity (CBD) and the WTO TRIPS Agreement. Since then, a debate has ensued over whether the TRIPS Agreement conflicts with the CBD, and whether a disclosure of origin requirement should be introduced into the former. Many developing countries, including Brazil, Pakistan, Thailand, Peru, India, the African Group and the group of least-developed countries (LDCs) have proposed amending the TRIPS Agreement to require patent applications to disclose the origin of genetic resources and associated traditional knowledge in inventions, as well as to provide evidence of prior informed consent and benefit sharing with communities with a view to combating biopiracy. Biopiracy refers to the misappropriation—generally by means of patents—of genetic resources and associated traditional knowledge. Their proposed amendment recognises the sovereign rights of states over their natural resources, and includes forfeiture of patent rights as a penalty for noncompliance.

*"An international system of protection would give the legal possibility of asserting rights outside the domestic territory and would also ensure the recognition of TK within the international community."*

However, many industrialised countries question the need for such amendment. Some consider the World Intellectual Property Organisation (WIPO) the appropriate forum to deal with these issues, particularly the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC) established in 2001. Japan and the US - which is not a party to the CBD - do not regard the CBD and the TRIPS Agreement to be in conflict with each other, but understand both Agreements to deal with separate issues. In contrast, the EU, Norway and Switzerland are supportive of establishing disclosure of origin requirements at the international level, but not necessarily in the framework of the WTO. Norway was the first developed nation to favour the incorporation of a disclosure requirement in the TRIPS

Agreement, yet it differs from developing countries on the legal consequences of the lack of disclosure, considering that non-compliance should not lead to the revocation of the patent.

Having ongoing parallel discussions on the protection of traditional knowledge within the WTO TRIPS Council, the WIPO IGC, the Food and Agriculture (FAO) International Treaty on Plant Genetic Resources for Food and Agriculture, and the CBD raises further questions of coherence between deliberations in these different fora and adds to the complexity of this technical debate. The discussions also reflect the highly political nature of the issue.

Countries generally agree that the misappropriation of genetic material can have severe consequences for indigenous people in terms of economic losses and access restrictions, which could stifle the preservation of culture and biodiversity. An international system of protection would give the legal possibility of asserting rights outside the domestic territory and would also ensure the recognition of TK within the international community.

## The disclosure of origin and the certificate of origin

In order to combat the misappropriation of their resources and to minimise the granting of erroneous patents, several countries and regions apply disclosure of origin measures for patent applications for inventions derived from genetic resources at the national level. Here, there are two separate but related issues: the disclosure of origin certificate, and the disclosure requirement. A certificate of origin would serve as a type of passport or permit that would accompany the genetic resource along the whole chain of the access and benefit sharing (ABS) process. It could be verified at various points, particularly once the said resource left the provider country, ensuring the traceability of the genetic resources. A certificate of origin would be a practical way to implement the disclosure of origin requirement, but it would not have the same legal consequences as an official amendment to the TRIPS Agreement, making it a much looser and less effective measure.

In contrast, an amendment incorporating a disclosure of origin requirement would strengthen implementation and enforcement significantly as it would be linked to the WTO dispute settlement system. It would strengthen the process of verifying whether genetic resources were collected in accordance with national rules requiring consent, and whether



the conditions for such consent were met. A disclosure of origin requirement has the potential to function as a bridge between national and international legislation as well as between the providers and users of resources to monitor trade and movement of resources in endeavours to protect and promote TK.

Discussions under the CBD have led to a process for adopting a certificate of origin system that would make the disclosure requirement operate effectively.

A disclosure of origin requirement is part of a broader system of measures to safeguard and protect TK, of which access and benefit sharing (ABS) embodies an important component. The concept of ABS was further crystallised by the CBD. It addresses the range of benefits that result from the commercialisation of genetic resources at different stages. These benefits can take various forms including: 1) financial compensation through royalties or fees; 2) stakes in equity or profit sharing; 3) commercial partnerships such as joint ventures; 4) scientific, social and/or environmental benefits; and/or 5) non-monetary benefits such as the sharing of research results or technology transfer. All these different modes of benefits are intrinsically linked.

Although the CBD advocates the preservation of TK by using mechanisms such as ABS, prior informed consent and disclosure of origin, some shortcomings remain. Since the convention only has an impact on genetic resources obtained after its adoption in 1992, the CBD's effectiveness is significantly reduced. In particular, botanical gardens and seed banks have gathered up to one third of the world's plant species, but remarkably the CBD does not demand that these banks adopt policies of prior obtained approval from the country of origin. As a result, these genetic resources can be subjected to further use and subsequent commercialisation without the requirement to share benefits with the source country.

### Disclosure of origin requirement: where, what and how

To date, there is no agreement as to the form of an ideal disclosure of origin requirement, the necessity of such a regime, its form, objectives, and whether it should be adopted within the framework of WTO, CBD or WIPO.

Views vary as to the legal effect and practical consequences, whether disclosure should be mandatory or voluntary; and whether its materialisation could lead to an additional requirement to patentability, or if the requirement could be inserted as part of the grant/administrative procedure. Proposals have also included various options as to the consequences of non-compliance from revocation of the patent to sanctions outside the patent system.

Further, practical problems may arise in the implementation of a disclosure of origin requirement. How will national regimes be brought into compliance on prior informed consent and ABS on mutually agreed terms? How can patent officers be trained to deal with patentability issues in this area? Is it feasible to ask that all sources of knowledge and material be remunerated, no matter how minor and peripheral to the invention?

This brings with it the additional difficulty of tracing all countries of origin. Indeed, how would one deal with several nations that could all legitimately claim to be countries of origin of the same resource?

*"discussions would prove more fruitful if countries searching for solutions to protect traditional knowledge reach consensus on their objectives and goals: a long-term vision is a must."*

In addition, a disclosure requirement will not change the fact that so many resources and TK relevant to a patented invention can be acquired or learned without visiting any of the countries of origin or source. It follows that the measure will only be applicable to a small number of inventions. Although the pharmaceutical and agricultural seed industries have depended heavily on biogenetic resources and TK in the past, this does not mean that they will equally rely on such resources and knowledge in the future. Arguably, molecular biology and genetic engineering technologies will overtake natural products in drug, discovery, design, and development activities. At the same, TK is widely used, especially in the botanical medicine industry, as the basis for determining safety and efficacy, to develop agronomic practices for the cultivation of materials, and to guide the development of new products.

### Final remarks

It is important that countries that have not done so already—in particular developing countries—set in motion the process of creating ABS rules, including prior informed consent and a disclosure of origin requirement in their domestic legislation. This will strengthen claims and proposals for a disclosure of origin requirement at the international level. In addition, the impact of special patent disclosure requirements, already introduced in national laws on the use of bio-prospecting and ABS, should be fully studied, as is the extent to which patent applicants already provide sources of information in their applications when materially relevant.

Furthermore, discussions would prove more fruitful if countries searching for solutions to protect traditional knowledge reach consensus on their objectives and goals: a long-term vision is a must. This equally applies to national regimes of protection. Without clear long term objectives, laws, sui generis systems, or policies are unlikely to be effective. The participation of indigenous peoples in identifying these objectives and solutions is of importance.

In the meantime, developing countries should also explore options, such as local collaborative projects, to promote collection and use of genetic resources with traditional uses. The T'ikapapa potato project in Peru, which brings together different sectors of society to promote the commercialisation of native potatoes, can serve as a good example.

A disclosure requirement, in the end, is only part of the solution to ensure that patents are granted in such a way that the invention furthers key objectives for the conservation of biological diversity, sustainable use of its components, and the achievement of social equity.

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# The unspeakable economics of ABS

By Joseph Henry Vogel

Economics is abstract but not unfathomable. The truth of that statement can be seen in the attempt to elaborate a multilateral regime for 'access and benefit sharing' - ABS for short - at the ninth conference of the parties to the Convention on Biological Diversity held in May.

'Access' refers to a piece of the action in biotechnology for the country of origin. The requirement of ABS is both fair and pragmatic. For example, some 78 percent of anti-cancer drugs derive from genetic resources that are often found in threatened habitats. Benefit-sharing could promote their conservation.

Because ABS is an economic issue, one would think that the multilateral regime would be guided by economic theory. But such is not the case. Most of the delegates to the conferences of the parties (COPs) are lawyers or diplomats who have long since forgotten whatever introductory economics they once studied. Nevertheless, it is not too late to inject some economic thinking into ABS. The next COP will convene in 2010 in Nagoya, Japan and vote on whatever multilateral regime emerges over the next two years of negotiations.

Where to begin? Harvard naturalist E.O. Wilson loves to cite the Chinese wisdom of getting things by their right name. The wisdom can also apply to economic classification. Are genetic resources tangible or intangible goods? Correct classification is of paramount importance. The classification 'tangible' militates against any monopoly right while 'intangible' can justify it! Because the delegates of COP IX were negotiating as if genetic resources were a tangible, they embarked on the wrong road toward a multilateral regime.

A simple analogy can make the economics fathomable. Consider a blank CD. It is a tangible and sells for about 30 cents. One can easily imagine the same CD selling for \$5.00 if the government were to grant a monopoly over its manufacture. Such a monopoly would exclude many consumers and inhibit efficiency as the manufacturer grows comfortable with a profit margin of \$4.70. Monopolies over tangibles are both inequitable and inefficient. Let's now look at that same CD but burnt with information, an intangible. In a competitive market, the price would be 30 cents plus the costs of recording, marketing and a normal return on investment. Judging from the black market in recorded CDs, that price would be about \$1.00. Note well that the cost of creating the information recorded is never recouped in the \$1.00 price tag. Therein lies the economic justification for copyrights over books, music and software.

The difference between the price of a copyrighted recorded CD and its black market equivalent is what economists call 'rent'. For digitised books, the rent is typically \$10, for music, \$14, and for software, hundreds of dollars. Without the possibility of capturing rents through a monopoly intellectual property right, much innovation is not financially viable.

Now consider genetic resources. The cost of accessing natural information is extremely low while the opportunity cost of

protecting habitats is extremely high. For as little as \$50, one can collect enough dry leaves for research and development even though the habitat may cost millions of dollars to conserve.

Can the Convention on Biological Diversity (CBD) enable a country of origin to capture an economic 'rent' and make conservation viable? The answer is a resounding 'no.' Whereas intellectual property law grants a monopoly over the intangible, the CBD extends sovereignty to many countries over the same genetic resource. Each has a strong incentive to undercut its neighbour and conclude a 'material transfer agreement' with industry. This is what ECON 101 predicts and indeed what we have seen over 15 years of bilateral negotiations on ABS. Royalties are typically one percent or less.

In light of the fathomable economics of ABS, COP IX was rife with ironies. Industry maintains that the price of its products owes to the extraordinarily high costs of R&D and the long haul to bring an invention to market. Karl Marx would be proud. The Marxist labour theory of value denies worth to natural resources. To quell protests over the laughably low royalties remitted to the countries of origin, industry also insists on the secrecy of the transfer agreements. Joseph Stalin would be no less proud.

Make no mistake. Providing countries are not the hapless victims of rapacious transnationals. Old fashioned pride has deluded many delegates into believing that their country can 'negotiate' a better monetary benefit than that which others have 'negotiated' in the past. Again, they should dust off their ECON 101 textbooks. Providing countries are price-takers and negotiate very little or nothing at all. The royalty rate reflects the competitive process of the market. Only if the megadiverse countries act as a cartel will they ever obtain anything above the market one percent.

Despite the uneconomic thinking of the Conferences of the Parties so far, the economics of ABS may no longer be unspeakable. At COP IX, the Informal Consultative Group recommended study of three vital questions: should economic rents be charged for genetic resources; what is the justification for or against such a rent; and what should be the basis of valuation? Immediately following the plenary, Jeffrey Sachs, arguably the world's leading development economist, gave a riveting (and *pro bono*) address. The audience was rapt.

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# Tit for tat: Agbiotech intellectual property and corporate social responsibility

By Martin A. Lema and Vanesa Lowenstein

Intellectual property rules were originally established to balance private and public interest with regard to inventions. When it comes to the area of agbiotech, this balance can be influenced by certain regulatory or biological processes. While firms appeal for new approaches to extend/restore their rights, they would also do well in taking measures aimed at extending/restoring public benefits.

At the outset of civilization, inventions could be freely reproduced by anyone; secrecy was the inventor's only form of protection. Eventually, however, the lack of compensation for the innovator, coupled with a lack of public access and subsequent innovation delayed technological development and curtailed societal benefits. As a result, a social contract was established: inventors would disclose the invention allowing future reproduction, and society would grant them a monopolist/market exclusivity position for a certain period of time (currently harmonised at 20 years) in order to benefit from the commercial exploitation of the invention.

More recently, health and safety regulations have introduced time-consuming assessment processes prior to the release of some products, including in the biotech sector. As a consequence, critics claimed that the effective patent period had been reduced, and that therefore, the "contract" was no longer being honoured - to the detriment of the patent holders. In addition, some "regulated" innovations cannot be patented according to the usual criteria, although they involve ingenious activities, major investment, and provide solutions for public health or productive activities.

So far, at least two general approaches for compensation in such situations have been developed: patent term restoration and test data exclusivity. Under patent term restoration, first introduced in US law, a novel product can receive a patent extension of up to half of the "regulatory delay." Test data exclusivity - adopted in the US, EU and China, among other countries, and included in several Free Trade Agreement negotiations - implies that data submitted by a first product applicant cannot be used for similar products presented by other applicants, within a defined protection period, without the permission of the right holder.

These measures were introduced to compensate patent holders for alleged deviations from the original "contract". However, an inversed situation now seems to emerge for some biotechnology inventions. Genetically modified (GM) crops, in particular, may become a "perishable technology" due to certain sanitary regulations and/or natural processes. As detailed below, this jeopardises the half of the contract in which society should benefit, since no one profits from the invention after patents have expired.

## Regulatory constraints

Currently, it takes roughly a decade to develop a GM crop and obtain its approval in multiple countries for "worldwide" trade

clearance. Under the present system, a European Community authorisation, for example, is granted for a period of ten years. As a consequence, by the time the first authorisation period is over, patents on the product have expired or are about to expire. This would be the right moment for breeders and small seed companies to perform incremental innovations by incorporating the transgenic event in local varieties, given that it is entering the public domain. Moreover, local companies already commercialising the event under a licence would have legitimate interests in keeping their business running when no patent royalty is due.

This way, the final incorporation of transgenic events in the public domain could partly offset the alleged "imbalance" between patent protection of biotech inventions and the *sui generis* protection of germplasm and breeders' work - an issue that has been repeatedly raised in the FAO Commission on Genetic Resources for Food and Agriculture, among other fora - since, in the end, the events would switch from "proprietary inventions" to "ordinary genetic resources".

In turn, this would also lower the price of seeds containing older, yet useful technologies for farmers with limited resources, while more competitive farmers would still adopt the newest events. A seed price reduction in exporting countries would further benefit importing countries by lowering the cost of food, biofuels, and other agro-commodities.

Yet another lively debate focuses on farmers' right to save seeds from their harvest to reseed the next year, particularly in cases where the seed carries a transgenic event. Although countries hold diverse positions on the topic, the issue would become irrelevant after the patent expires. Therefore, biotechnology in the public domain would also lower the production costs of agro-commodities in more restrictive countries.

Unfortunately, all these potential benefits to global society are lost if the original developer does not apply for an authorisation renewal (currently, when the first authorisation period expires only the original applicant is able to request an extension). This pattern might continue if the original developer launches a similar but new GM crop with enhanced characteristics - and covered by new patents.

In addition, due to mergers and acquisitions, the commercial development of biotech crops is mostly concentrated in a small number of companies based in a few developed countries. Therefore, patent expiration is an important asset

to counter this concentration and the “genetic divide” it leads to. Nevertheless, under the scenario depicted above, the market will continue to be concentrated regardless of patent expiration. This, in turn, will keep seed and food prices artificially high and lower crop biodiversity, with the associated risks to food safety.

## Biological constraints

In addition to the situation described above, some GM crop technologies may expire due to biological evolution. Herbicide resistant crops, for instance, are useful as long as weeds do not evolve to also resist the herbicide; and insects can eventually evolve to resist the insect-control substances produced by some GM crops. Past experience with conventional and biotech crops suggests that the timescale for the spontaneous development of resistance to pesticides is around a decade. As in the previous case, by the time an open market - and its implied benefits for global society - is at hand, the opportunity may be gone.

However, insect refugees, herbicide alternation/combination and other field management strategies have been developed to delay the emergence of resistant insects or weeds. Appropriately and continuously applied, such strategies can extend the lifespan of the relevant technologies for many decades.

## A Role for Corporate Social Responsibility

Most of the revenues for society from the patent system are based on the disclosure of the invention and the subsequent possibility for anyone to exploit it. However, the disclosure of the invention - so far considered the only requisite to this end - is just not sufficient to fulfil the second half of the agreement (i.e. the later free commercial use of the invention) in the situations described above. Therefore, in order to balance their demands for test data protection and IP enforcement measures,<sup>1</sup> companies should do their part to honour the “social agreement.” In particular, “corporate social responsibility” efforts could translate into actions to assure that the technology would really be available to the public after the exclusivity/monopolist period is over.<sup>2</sup>

One line of action would be for the company to continue asking for renewals in “time limited” marketing approval systems, so the products could be marketed indefinitely by others with an interest in it (as long as the product was actually being marketed by others after the first renewal). This would not represent a huge expense since the new information requested is simple to produce; besides, due to its nature, this information is far easier to gather for the original developer than for other interested parties. Such a move need not preclude governments from reviewing their policies and allowing any interested party to apply for renewal, or to automatically grant a renewal following a decade free of incidents.

Another line of action for companies could be to encourage and support farmers in adopting strategies that delay the emergence of resistant weeds or insects, or any other avoidable threat to the lifetime of these technologies. Companies should effectively help combat the rise of adapted

pests once they emerge in the field, even after they have lost commercial interest in the GM crops, herbicides, or insecticides involved.

An additional positive corporate policy might involve contributions to biotech “open source” initiatives, through providing genetic materials that have fallen in the public domain, test data, and information on expired patents. Since there is no unique International Patent Classification (IPC) code for identifying biotech products (a problem that is currently under study by the OECD), the identification of biotech patents is not straightforward. Of all the areas of biological innovation, agriculture is probably the most cross-sectorial field, as it affects food supply, the environment, health, energy, raw materials, and the general economy of most countries. Technologies applied to agriculture are also highly interdependent. Therefore, extraordinary efficacy would be expected when innovative tools are applied, and contributing to a “Biotech bazaar”<sup>3</sup> would be another commendable endeavour for biotech companies.

Tools currently available to help keep a balance in the patent contract are applicable mostly during the patent extension period, and are not satisfactory to deal with the scenarios described. In contrast, corporate social responsibility policies like those proposed in this article would allow technologies to be more effectively incorporated into the public domain after patent expiration. In this way, the spirit of the original patent agreement would be fulfilled, which would be fair and beneficial for society worldwide.

Developing countries, which rely more on cheap technologies in the public domain, would derive most benefit from such corporate policies. In many cases, developing countries have adequately enforced international intellectual property agreements and they are sometimes under bilateral requests to incorporate additional enforcement measures. So far, however, they have received little reciprocity regarding technology transfer and genetic resources.

In addition, companies supporting the effective entry of agbiotech products into the public domain after patent expiration would also contribute to those developed countries that depend on developing countries for their food security, or those that seek to establish fair and healthy internal agricultural markets.

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<sup>1</sup> Biotech patent holders may also acknowledge another sign of good will from society: in the beginning, biotech patents were resisted by some legal experts and social sectors, due to conceptual doubts regarding if such creations were actually valid patent objects, or due to alleged ethical concerns. Nevertheless, finally they have been accepted in most countries, and even specific regulations were developed to allow dealing with “live matter” patents.

<sup>2</sup> This might also be positive to deter allegations of anti-competitive conduct.

<sup>3</sup> See *Science as Social Enterprise: The CAMBIA BiOS Initiative*, by Richard Jefferson (*Innovations*, Vol. 1, No. 4, Pages 13-44, fall 2006).



# Seals of approval: Eco-labelling and sustainable fisheries

By Caitlin Zaino

Global fish stocks are in distress: one-quarter of the world's stocks are overexploited, depleted, or recovering from depletion, one-half are fully exploited and at or close to their sustainable limits, and 69 percent of the world's major fish species are in decline. If fisheries continue on this trend of poor management, global fish stocks risk being depleted beyond repair within the next forty years. There is thus clearly a need for a solution that maintains productivity while improving fisheries management and the conservation of marine biodiversity.

One such solution that is being offered is eco-labelling of fish. Much like labelling of other food and consumer products, a fishery product bearing an eco-label logo signals that the product has been produced in accordance with certain environmental standards. Eco-labelling of fisheries products is generally calculated on the basis of criteria that assess, principally, the level of stock of the particular species, the environmental impact of the product on the marine environment, and how stocks are managed to respond to changing fisheries populations.

## So, how exactly does a seemingly simple label serve to halt irreversible damage to global fisheries?

Advocates of eco-labelling schemes argue that they create market-based incentives for environmentally friendly products, thereby achieving sustainable development objectives making use of market measures. By providing consumers and retailers with more information on their products, eco-labels raise environmental awareness. As more consumers call for products incorporating these standards, producers are motivated to meet these demands to gain a competitive advantage in the industry, add value to their product, and gain access to growing 'green markets'. In the end, eco-label advocates say, political support for more sustainable and responsible fisheries production and management is generated.

Eco-labelling is not as straightforward as it may seem, however. There are several different labelling schemes and ensuring that they all meet sustainable standards can be a challenge. In response, in 2005 the UN Food and Agriculture Organisation's (FAO) Committee on Fisheries (COFI) developed guidelines for eco-labelling fish products. "We have seen a proliferation of eco-labels on various products, some of which have little credibility, confused consumers, caused unfair competition in the market place, and did not promote sustainable practices," said Ichiro Nomura, the FAO Assistant Director General for fisheries. "These are the kinds of challenges that the guidelines on eco-labelling of marine-capture fish products recently adopted by COFI can help address."

The FAO eco-labelling guidelines outline general principles to govern such schemes, including the need for transparent, accurate, and independent auditing of standard-setting and accountability, and the need for standards to be based on reliable science. These principles provide guidance to

governments and organisations that maintain eco-labelling programmes—such as the Marine Stewardship Council (MSC)—and they outline minimum requirements and criteria for assessing whether a fishery should be certified and awarded an eco-label. Some examples of what is assessed includes the levels of fisheries stock for the targeted species, what impact the fisheries activities have on the marine environment, such as on the ocean floor, and how management systems that are in place will respond to changing fisheries populations. The entire process of certification takes, on average, 14 months and involves a wide range of stakeholders from the fisheries industry, environmental NGOs, marine scientists, and governments.

While schemes such as that promoted by the MSC and the FAO have met with success, there is concern over the challenges these programmes pose for poorer countries and small, artisanal fisheries, particularly in developing nations. Fisheries are a vital source of income in developing countries: net revenues from fish trade exports by developing nations is greater than that earned from their exports of tea, rice, cocoa, and coffee combined. The economic importance of fishery industries in these countries is further compounded by the reliance of communities and fishermen on fisheries for their livelihoods.

Signing up to eco-labelling schemes poses several challenges for developing countries and small and artisanal fisheries. With less access to financial resources and technical capacities, these vulnerable populations may lack the capacity to bring their fisheries production into line with eco-labelling criteria and standards. If global demand for fisheries products carrying the logo continues to grow, thereby decreasing the demand for non-eco-labelled goods, this could seriously threaten developing country producers and restrict market access. Here, the competitiveness of countries unable to meet or afford foreign labelling and certification standards risks erosion. In this case, the burden falls disproportionately on small and artisanal suppliers. Finally, from a trade perspective, there is concern that labelling schemes constitute a form of disguised protectionism.

While the concerns expounded here are similar to those often raised with regard to other eco-labelling schemes, the fisheries industry has made efforts to not repeat the same mistakes. The FAO guidelines acknowledge the hurdles that poorer countries face in responsibly managing their fisheries

because of a lack of financial and technical resources, as well as the particular challenges posed by the small-scale fisheries typical of many developing nations. The FAO guidelines, therefore, call for financial and technical support for poorer countries to help them implement and benefit from eco-labelling schemes. Likewise, the MSC recently initiated a pilot project to help bring in small scale developing country producers through the establishment of a methodology that will assess fisheries levels and other data that is necessary for certification on a smaller scale. Results for this pilot project are expected sometime in early 2009. It is hoped that through this project, developing country and small scale fisheries can overcome the current barriers to certification, such as limited data on stock levels.

Advocates for the schemes argue that eco-labelling holds potential for developing countries' fishery industries. Incorporating these standards presents opportunities for these producers to add value to their product, expand their market reach, and increase export revenues. They could also provide new opportunities for investment and joint ventures, something already witnessed in countries that have formed regional partnerships in order to bring industries into line with eco-labelling standards. At the moment, however, the proportion of certified fisheries producers based in developing countries remains low. Over the next several months, it is hoped that the efforts to further engage these producers will help yield significant results both financially, as well as environmentally.

Moreover, marine conservationists argue that if fisheries are more sustainably and responsibly managed as a result of eco-labels and seafood resources are protected, this is

*"International efforts and global guidelines, such as those led by the FAO, are vital for achieving these objectives."*

economically beneficial to developing countries that rely on fisheries for their livelihoods and food security in the long run. Fisheries management serves to protect the future of these fishing communities, say supporters.

The challenge for stakeholders—including governments, industry, and civil society—is thus to produce positive environmental outcomes in fisheries. They must promote sustainable fisheries, responsible management, and marine biodiversity conservation, while also protecting industries and communities, particularly in developing countries, from discrimination and economic disintegration. International efforts and global guidelines, such as those led by the FAO, are vital for achieving these objectives. However, global dialogue must continue; stakeholders from developed and developing nations need to engage with one another in future and current eco-labelling discussions and standards-setting to ensure that the needs of the most vulnerable societies are met and that support is provided for these communities to guarantee that sustainable and responsible fisheries management practices are implemented worldwide.

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## Europe looking at major fishery policy shakeup

Blockades, strikes, demonstrations, and closed ports characterized much of the summer throughout Europe as fishermen across the continent protested the negative impacts that high diesel fuel prices have had on their already struggling industry.

Rising oil prices have pushed the cost of marine diesel up by 30 percent this year and 320 percent over the past five years. Without subsidies for fuel or a relaxation of fishing quotas that could help offset fuel-related costs, the fishermen argued, bankruptcy would be their only option. "This is the worst crisis in the industry in 100 years," said Javier Garat, the Secretary General of the Spanish Fisheries Confederation.

In mid-summer the European Commission's Fisheries Council took the bait, adopting an emergency package to tackle the fuel crisis that provided an extra €600 million in support of the European fishing industry. The objective of the proposal was to reduce overcapacity fishing while decreasing fuel costs through measures such as modernising vessels. Partial decommissioning of new vessels, was also included in the deal, which critics have accused of coming dangerously close to a reintroduction of subsidies for vessel construction—a measure that was phased out in the Common Fisheries Policy Reform in 2002.

The Fisheries Council decision was not a unanimous one. Countries like Sweden voted no to the measure, stating that it was merely a short-solution to a long-term crisis. Higher fuel prices, they argued, are only aggravating the industries' problems that are caused by too many fishing vessels and too few fish stocks. Marine advocates have echoed this sentiment, warning that the European's proposed measures may offset fuel costs, but they encourage overcapacity fishing.

Instead of subsidies, critics are calling for a long-term approach that helps the fishing industry adapt to rising fuel prices over time. Marine advocates argue that government must take responsible decisions to ensure that expenditures focus on reducing fleet capacity, supporting moves towards smaller, less environmentally damaging fishing fleets, finding techniques with low energy consumption, and adopting smarter fisheries management practices, globally. Many marine conservationists are also arguing for a reallocation of government funds away from subsidies and towards programmes that can help fishermen establish other long-term sources of incomes.

Throughout the past year there has been a major push in the WTO to prohibit fisheries subsidies in order to allow the replenishment of global fish stocks. But the recent failure of the WTO to reach an agreement on key issues during the Mini-Ministerial held in Geneva at the end of July, had repercussions for negotiations like those on fisheries, who fell victim to the collapse.

In late September, the European Commission launched a phase of analysis and consultation to further reform the Common Fisheries Policy of 2002. While the European Commission acknowledges that the 2002 policy yielded significant achievements, in light of the recent challenges the industry has faced, they heeded advice that more long-term decision making is needed to address the economic profitability and ecological balance of the fisheries sector. Talks began in late September, with plans to issue a full discussion document in early 2009.

# ICTSD update

## Fisheries in the ACP-EU EPA negotiations

Fisheries are an important source of employment, export revenue and food security in many African, Caribbean and Pacific (ACP) countries - and the EU is their main trading partner in this sector. Negotiations of Economic Partnership Agreements (EPAs), which will replace unilateral trade preferences currently offered by the EU with reciprocal preferences, are ongoing. The ACP countries are concerned, however, that the new EPAs might negatively affect their fisheries sectors, and are looking for solutions in this area.

A growing sector in international trade, fisheries are one of the few areas in which ACP countries' participation in world trade is increasing. The EU accounts for around 75 percent of ACP fishery exports, and they are concerned that the EPA negotiations could lead to a loss of preferences and decrease in fisheries revenues. Due to these worries, a number of ACP countries decided to initialise Interim Economic Partnership Agreements (IEPAs) or agreed on full EPAs with the EU at the end of 2007.

Apart from a loss of preferences, ACP concerns include tariff escalation and peaks, the reform of rules of origin, and new EU regulations on sanitary and phytosanitary (SPS) measures. The inclusion of investment in the EPA negotiations also adds a new dimension that warrants careful consideration. Overall, the negotiating process has been complex, challenging and divisive for the ACP groupings.

In order to facilitate a frank, open and solutions-focused discussion of these ACP issues, ICTSD and the Commonwealth Secretariat, in cooperation with GTZ and the Southern Africa Global Competitiveness Hub, organised a Regional Dialogue on Fisheries Aspects of ACP-EU EPA Negotiation at the end of August 2008 in Windhoek, Namibia.

At the dialogue, policy-makers, negotiators, representatives of the private sector and other stakeholders from ACP countries reviewed the substance of the fisheries provisions contained in IEPA/EPA agreements to assess their significance from a trade and sustainable development perspective and derive implications for the future course of negotiations toward full EPAs. Participants converged on the need to ensure outcomes that would effectively improve livelihood and food security, ensure meaningful market access, and achieve broad sustainable development objectives in the ACP countries.

Overall, participants noted an urgent need for regions with IEPAs to ensure satisfaction with fisheries provisions already negotiated, and for regions without interim EPAs to learn from other regions to better articulate their negotiating positions.

Concerns raised included EU preferential rules of origin (RoO) in EPAs, revolving around definitional issues for 'wholly obtained' and 'sufficiently worked or processed' products. While the new RoO will somewhat simplify conditions for qualification of 'wholly obtained', concerns remain with respect to demands that fish caught in a country's Exclusive Economic Zone automatically qualify as wholly originating.

On 'sufficiently worked or processed products' for fish, two issues remain: a possible extension of the new value tolerance (or de minimis) provision of 15 percent for non-originating inputs of fresh or frozen fish in fish products; and second, a possible extension of the global sourcing RoO currently offered by the EU to the Pacific to all other ACP regions. The global sourcing rule would allow for fish to be deemed originating from the ACP country regardless of where it was caught or the status of a vessel's flag, as long as it was transformed into a pre-cooked, packaged or canned product.

ACP countries continue to demand flexibility and support to comply with stringent EU SPS regulations. Key challenges discussed at the meeting included the costs of HACCP (Hazard Analysis Critical Control Points) systems both in terms of equipment and skilled human resources, inadequate laboratory facilities, and the lack of a business-friendly environment for the exploitation of inland fisheries. Participants noted that the increasing range and complexity of SPS requirements - which have to be administered by the public sector but implemented and paid for by the private sector - warrants a much closer relationship between the two in the form of public/private consultative partnerships.

Generally, participants felt that numerous challenges relating to non-tariff measures remain to be addressed to enable meaningful benefits. As several ACP regions enter the final stage in their EPA negotiations, rules and disciplines on trade in fish and fishery products are likely to remain under scrutiny given the critical importance of fisheries for employment, livelihood, export revenues and development in a large number of ACP countries.

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### UPCOMING EVENTS

#### OCTOBER

- 13-17 WIPO IGC-13. Geneva, Switzerland. [www.wipo.int/meetings/en](http://www.wipo.int/meetings/en)
- 14-17 FAO COMMITTEE ON WORLD FOOD SECURITY. Rome, Italy. [www.fao.org/UNFAO/Bodies/cfs/cfs34/index\\_en.htm](http://www.fao.org/UNFAO/Bodies/cfs/cfs34/index_en.htm)
- 22 2ND INTERNATIONAL WORKSHOP ON SECTORAL GHG EMISSION REDUCTION POTENTIAL. Paris, France. email: [hiroaki\\_teshima@env.go.jp](mailto:hiroaki_teshima@env.go.jp)
- 20-25 FOURTH MEETING OF THE CONFERENCE OF THE PARTIES TO THE ROTTERDAM CONVENTION (PIC COP-4). Rome, Italy. [www.pic.int](http://www.pic.int)
- 29-31 THIRD SESSION OF THE JOINT ILO/IMO/BASEL CONVENTION WORKING GROUP ON SHIP SCRAPPING. Geneva, Switzerland. [www.imo.org/Environment/mainframe.asp?topic\\_id=818](http://www.imo.org/Environment/mainframe.asp?topic_id=818)

#### NOVEMBER

- 3-8 FORTY-FOURTH SESSION OF THE INTERNATIONAL TROPICAL TIMBER COUNCIL AND ASSOCIATED SESSIONS OF THE COMMITTEES Yokohama, Japan. [www.itto.or.jp](http://www.itto.or.jp)
- 5-7 ECOTOURISM AND PROTECTED AREAS: CONTRIBUTING TO COMMUNITY DEVELOPMENT AND CONSERVATION. Maputo, Mozambique. [www.unwto.org/sdt/events/en/events.php](http://www.unwto.org/sdt/events/en/events.php)
- 16-21 10TH INTERNATIONAL SYMPOSIUM ON THE BIOSAFETY OF GMOS. Wellington, New Zealand. [www.isbgmo.info/](http://www.isbgmo.info/)
- 17-20 TROPICAL FORESTRY CHANGE IN A CHANGING WORLD. Bangkok, Thailand. [www.forest.ku.ac.th/fortrop2008/main/index.php](http://www.forest.ku.ac.th/fortrop2008/main/index.php)
- 16-20 TWENTIETH MEETING OF THE PARTIES TO THE MONTREAL PROTOCOL (MOP-20). Doha, Qatar. <http://ozone.unep.org/>
- 24-26 CONFRONTING THE GLOBAL FOOD CHALLENGE. Geneva, Switzerland. [www.tradeobservatory.org/library.cfm?RefID=103833](http://www.tradeobservatory.org/library.cfm?RefID=103833)
- 25-26 BIODIVERSITY AND ECOSYSTEM FINANCE. London, UK. [www.greenpowerconferences.com/carbonmarkets/biodiversity\\_lon08.html](http://www.greenpowerconferences.com/carbonmarkets/biodiversity_lon08.html)

#### DECEMBER

- 1-5 CGIAR ANNUAL GENERAL MEETING. Maputo, Mozambique. [www.cgiar.org/meetings/agm08/agm08\\_index.html](http://www.cgiar.org/meetings/agm08/agm08_index.html)
- 1-12 FOURTEENTH CONFERENCE OF THE PARTIES TO THE UNFCCC AND FOURTH MEETING OF THE PARTIES TO THE KYOTO PROTOCOL. Poznan, Poland. [http://unfccc.int/meetings/cop\\_14/items/4481.php](http://unfccc.int/meetings/cop_14/items/4481.php)
- 2-3 CONSERVING WATER ACROSS THE SUPPLY CHAIN. San Francisco, California, USA. [www.greenpowerconferences.com/corporateclimateresponse/corp\\_water.html](http://www.greenpowerconferences.com/corporateclimateresponse/corp_water.html)
- 2-5 CBD EXPERT GROUP ON ABS CONCEPTS, TERMS, WORKING DEFINITIONS AND SECTORAL APPROACHES. Windhoek, Namibia. [www.cbd.int/meetings/](http://www.cbd.int/meetings/)

### RESOURCES

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THE GLOBAL IP UPWARD RATCHET, ANTI-COUNTERFEITING AND PIRACY ENFORCEMENT EFFORTS: THE STATE OF PLAY. By Susan Sell, George Washington University, June 2008. [www.iqsensato.org/?p=69](http://www.iqsensato.org/?p=69)

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