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Marine fisheries and CITES:

Breaking the cycle of overexploitation

By Leslie Delagran and Eric Bilsky

Overview

International trade can drive unsustainable fishing, particularly for high demand or high priced species that are not well managed. For example, bluefin tuna, sharks and corals are being overfished to the point of endangerment to meet demand for sushi, shark fin soup, and jewellery. Many fish species are widely traded, providing markets for developed and developing country fisheries. This trade often makes an important contribution to income, health, and employment, but there are significant environmental and economic downsides. Global fishery management is largely inadequate to ensure the sustainability of marine stocks, with overexploitation threatening the livelihoods of millions of people and coastal economies around the world.

Efforts have been made to use market measures to break this cycle through consumer education, trade sanctions against illegal fishing vessels and countries, and limitations on subsidies that drive overfishing. The most powerful market intervention for species threatened with extinction is a ban on trade under Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). For species that could support trade at sustainable levels, but would be at risk of extinction if trade were not controlled, CITES listing under Appendix II requires exporting countries to certify that their trade in the species is "not detrimental" to the species survival.¹ Current proposals to list Atlantic bluefin tuna

on Appendix I, and eight shark species and 31 species of pink and red corals on Appendix II, are an acknowledgement of the complete failure of national and international fisheries management to prevent the overexploitation of these resources. Many fisheries stocks around the world are depleted and many more are not monitored. This suggests that if fisheries management continues to be absent or weak, additional marine species will surely be candidates for CITES listing.

The link between trade and overfishing

Bluefin tuna is prized for sushi and can fetch astoundingly high prices -- at Japan's first auction of 2010, a single 233 kg. bluefin tuna sold for US\$177,000.² Shark fins are the key ingredient in shark fin soup, a famous dish that can sell for between US\$13 and US\$60 a bowl in restaurants in China, US\$100 a bowl in restaurants in Singapore and Malaysia and US\$400 in the most expensive restaurants in the United States.³ While shark fins historically were only consumed by the wealthy on special occasions, rising affluence in China and other Asian countries has led to soaring demand for fins. Shark fins are one of the most valuable seafood products -- those from oceanic whitetip sharks sell for US\$45 to US\$85 per kg.⁴ and the



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¹ CITES, How CITES Works. (February 19, 2010).

² Yuasa, S., Associated Press, Tuna weighing 513 pounds fetches \$177,000 in auction at world's largest fish market in Japan. (January 5, 2010).

³ FAO. Shark Trade. A Presentation, by Helga Josupeit. (February 2008).

⁴ CITES. (2010). Consideration of Proposals for Amendment of Appendices I and II. Doha, 13-15 March 2010. CoP XV Proposal 16. p. 6.

average wholesale price for dried scalloped hammerhead shark fins is US\$135 per kg.¹ Demand for the fins alone, and the relatively low value of the meat, makes many shark species subject to the removal of their fins and subsequent discard of the remaining carcass at sea, a practice known as 'finning'.

Fish and fishery products in general are widely traded, with more than 37 percent of total production entering international commerce as various food and feed products. Seafood is the most traded food commodity internationally and fish and shellfish exports from developing countries exceed the value of coffee, rubber, cocoa, tea, tobacco, meat and rice combined.² Developing countries benefit from this trade by exporting high-value seafood to developed countries, importing low-value seafood and using the surplus to purchase other goods and services. But according to the World Bank, the benefits from the globalisation of fish trade have been reduced by overexploitation, as ineffective governance of fisheries has allowed the depletion of fish stocks and with it the natural capital of many countries. The World Bank estimates that US\$50 billion is lost globally - equivalent to more than half the potential value of the global catch - because of poor fisheries management and resulting overexploitation.³

Fundamental incentives that arise from the common pool aspect of fishery resources motivate fishermen to target stocks even when they are declining. Most fisheries management systems around the world are unable to effectively limit this 'race for the last fish'. For bluefin tuna, efforts to sustainably manage the level of catch have failed miserably in the face of overcapacity, high demand, and high prices. For years, fishing nations have been unable to follow scientific advice in setting quotas under the International Commission for the Conservation of Atlantic Tunas (ICCAT), and further unable to enforce the quotas that were authorised. For sharks, the story is different. Despite efforts by some countries, shark catches remain largely unmanaged by governments and by regional fisheries management organisations. As a result, catches, discards, and waste have risen with the increasing demand for shark fin soup, and the reported data have failed to tell the full story. Only the clear decreases in population size indicate the implications of this failure. Likewise, the corals, sponges and other non-target species are usually neglected in management plans.

Fishing has traditionally provided essential local food, livelihoods and export earnings for developed and developing countries alike. But artisanal uses as well as domestic and export incomes from marine capture fisheries are left unprotected by fisheries management systems unable to contain pressures for overfishing. A recent study in the academic journal *Science* found that seafood's contribution as a global source of protein and livelihood is precarious, largely because many exporting developing countries lack the institutions necessary to prevent the deleterious ecosystem impacts of seafood production in the face of increasing pressures from international trade.⁴ But the failure to control overfishing is by no means confined to developing countries, as evidenced

by the number of overexploited stocks directly managed by developed countries. The now-classic example is the Atlantic cod fishery of the Grand Banks, once an economic mainstay of eastern Canada. Its collapse in the early 1990s occurred under the active management of Canadian fisheries officials. In turn, the near-extinction of the Atlantic bluefin tuna speaks to the short-sighted pursuit of fishing sector profits over sustainability and the collective failure of major tuna fishing nations, led by European Union countries and Japan, to effectively limit catches. Indeed, the inclusion in CITES of any commercial fish species was opposed for many years by a blocking minority of countries including Japan, Iceland, and Norway, who argued that CITES should not have a role in fisheries management.

Fishing activities globally are so heavily supported by subsidies that the global marine catch sector would otherwise operate at a loss.⁵ Subsidies for fishing, such as those for vessel construction and operation, create perverse incentives for continued fishing in the face of declining catches.⁶ The result is not only overfishing but the creation and support of fleet overcapacity that drives further overfishing. In turn, efforts to control catches are often undermined by vested interests in surplus capacity.

Overcapacity, high demand, and high prices are key factors in generating illegal fishing activity (illegal fishing, along with unreported and unregulated fishing, is commonly referred to as 'IUU fishing'). Globally, the illegal catch of fish is estimated to be between 11 and 26 million tonnes, worth US\$10 billion to US\$23.5 billion annually, or potentially a quarter of the value of all legally reported fish catch.⁷ The high price commanded by bluefin tuna has led to illegal fishing activities, including illegal spotting planes, pirate fishing, underreporting of catch and fishing during the closed season, in pursuit of the increasingly rare fish. The rapid rise in the ranching of bluefin tuna in the Mediterranean has also fuelled overfishing as bluefin juveniles, often smaller than the legal catch size, are caught for fattening in net cages.

The impact of trade on CITES proposed species *Atlantic bluefin tuna*

Atlantic bluefin tuna is an emblematic species that has been driven toward extinction by high demand in Asia. In the last few years, nearly all of the declared Mediterranean bluefin fishery production has been exported, primarily to Japan. In fact, Japan's total imports of 32,356 tonnes of bluefin tuna from the east Atlantic stock reported to ICCAT in 2007 exceeded the total allowable catch for that year of 29,500 tonnes.⁸ Scientists from ICCAT have concluded that eastern Atlantic bluefin tuna face an unprecedented decline, with spawning stock less than 15 percent of baseline levels.⁹

Atlantic bluefin tuna have suffered major depletion since the 1960s. The large population off the coast of Brazil was extirpated after six years of longline fishing in the 1960s. The sig-

¹ IUCN and TRAFFIC. (2010). IUCN/TRAFFIC Analyses of the Proposals to Amend the CITES Appendices at the 15th Meeting of the Conference of the Parties. Doha, 13-25 March 2010. p. 94.

² Loftas, T., et al. Dimensions of need - An atlas of food and agriculture. (1995). FAO

³ World Bank. (2009). The Sunken Billions: The Economic Justification for Fisheries Reform.. p. 53.

⁴ Smith, M.D., et al, Sustainability and Global Seafood. (February 12, 2010). Science Vol. 327: 784-785.

⁵ World Bank. (2009). The Sunken Billions: The Economic Justification for Fisheries Reform. p. ix.

⁶ Ibid. p. 18.

⁷ Agnew, D.J., et al. (2009) Estimating the Worldwide Extent of Illegal Fishing. PLoS ONE 4(2): e4570. doi:10.1371/journal.pone.0004570.

⁸ CITES. (2010). Consideration of Proposals for Amendment of Appendices I and II. Doha, 13-15 March 2010. CoP XV Proposal 19. p. 2.

⁹ Baseline levels are the biomass of the virgin or 'unfished' stock. Anon (2009). Extension of the 2009 SCRS Meeting to consider status of Atlantic bluefin tuna populations with respect to CITES biological criteria. 21-23 October, Madrid (Spain). International Commission for the Conservation of Atlantic Tunas.

nificant declines in the remaining West Atlantic stock occurred during the 1970-1985 period. Most of the decline in the East Atlantic and Mediterranean stock has occurred over the past 10 years, and continued fishing at current rates is likely to drive the spawning stocks down to 6 percent of baseline levels.¹

ICCAT has a history of ignoring scientific advice in setting quotas. From 2007 through 2009, scientists recommended a catch of 15,000 tonnes for eastern Atlantic and Mediterranean bluefin stocks, but this was over-ruled in favour of quotas of 29,500 tonnes in 2007, 28,000 tonnes in 2008 and 22,000 tonnes in 2009.² Even the higher authorised quotas are exceeded. In 2007, according to ICCAT statistics, the total Mediterranean catch was 61,000 tonnes, more than twice the authorised limit.³ ICCAT estimates that illegal fishing may add another 30 percent onto the official catch figures.⁴ Even worse, the western Atlantic bluefin population is so devastated that the main fishing countries (Canada, Japan and the USA) have been unable to catch their combined quotas since 2003.⁵

Sharks

While Atlantic bluefin catch is managed under the auspices of ICCAT, international and national management of most shark species is extremely poor or non-existent. As a result, catch data worldwide are notoriously unreliable and much of the catch, bycatch and discards go unreported. While the reported landings of sharks have increased somewhat in recent years, estimated global landings of the larger shark species targeted for their fins have almost doubled from 67,000 tonnes in 1990 to 130,000 tonnes in 2007.⁶ Because of the practice of finning and the non-reporting of bycatch, total catch, as opposed to landings, is likely to be considerably higher. To produce the shark fins that are sold each year, it has been estimated that almost 1.7 million tonnes of sharks would have to be caught.⁷ Key shark-exporting countries are Taiwan, Spain, Panama, Costa Rica, Japan and Canada.⁸ Spain is the largest exporter of frozen shark fins to the Hong Kong market, the single biggest shark fin market in the world.

Eight shark species have been proposed for listing under CITES Appendix II, including porbeagle, spiny dogfish, oceanic whitetip and scalloped hammerhead, along with four species of sharks that are proposed for listing due to their similarity in appearance to the scalloped hammerhead. The life history characteristics of sharks, such as a slow growth rate and low reproductive potential, make them vulnerable to overfishing and slow to recover once populations have been depleted. The demand for shark fins, meat, liver

oil and other products, and the resulting fishing pressure, has driven numerous shark populations to the brink of extinction. Sharks now represent the greatest percentage of threatened marine species on the International Union for Conservation of Nature (IUCN) red list of threatened species.⁹ Due to their position at the top of the food chain, sharks help regulate ocean ecosystems, and their loss can cause drastic and irreversible changes to the marine environment and the economy on which it depends.¹⁰

Oceanic whitetip sharks are one of the more common tropical pelagic species taken as bycatch in tuna and swordfish fisheries. Given the high value of their fins in relation to the value of the meat, they tend to be subject to finning, and their fins are one of the most common products in the Asian shark fin trade. Oceanic whitetip shark populations have declined 60-70 percent in the northwest and central Atlantic Ocean and have suffered up to a 10-fold decline from baseline in the central Pacific Ocean.¹¹ The scalloped hammerhead shark is largely exploited for its fins and has seen declines of 50-90 percent in abundance in recent decades in many areas of its range, including South Africa, the northwest and western central Atlantic, Brazil, Ecuador, and Columbia. It has also been subject to extensive fishing by longline vessels operating illegally in coastal waters of the western Indian Ocean. The porbeagle shark is one of the relatively few shark species exploited not only for its fins, but also for its meat, which is similar to swordfish. Porbeagle populations have declined to less than 30 percent of baseline levels, with the rates of decline increasing in recent years.¹²

European demand for spiny dogfish meat is the key driver of fisheries directed primarily at mature females. As a result the species has been severely depleted around the world. Fish and chip shops in the United Kingdom have historically used cod, haddock, plaice, or hake but as stocks of those species declined, some shop owners turned to lower-priced dogfish to meet demand.¹³ However, import prices for spiny dogfish have also begun to rise in Europe as spiny dogfish numbers decline. It remains to be seen what species will be targeted next in the ongoing serial depletion of global fish stocks.

Corals

Corals play a key role as the foundation of seafloor ecosystems and as a home to millions of marine species.¹⁴ Corals tend to have long life spans and low reproduction rates, making regrowth difficult and slow. Unregulated exploitation of precious corals around the world has led to local declines of the most heavily targeted species and has altered the marine communities that depend on them. The thirty-one species of the family Corallidae are intensively exploited to supply international demand for jewellery and other products. As one example, overexploitation of *Corallium rubrum* in the Mediterranean Sea has caused a nearly 70 percent decline in

¹ CITES. (2010). Consideration of Proposals for Amendment of Appendices I and II. Doha, 13-15 March 2010. CoP XV Proposal 19. p. 5.

² 2007 data: Clover, C. US calls for total ban on bluefin tuna fishing. (November 8, 2007). Telegraph EC. Commission closes EU bluefin tuna fishery for 2007. (September 19, 2007). Press Corner. 2008 data: IUCN. (2008). Action for recovery of the East Atlantic and Mediterranean population of Atlantic Bluefin Tuna *Thunnus thynnus*. p.1. 2009 data: Jowit, J. Higher quotas will push Atlantic tuna closer to collapse, campaigners warn. (November 25, 2008). Guardian.

³ ICCAT. (2009). Report of the standing committee on research and statistics (SCRS). Madrid, 5-9 October 2009.

⁴ Bluefin Tuna an Endangered Species, Bridges Trade *BioRes*. Vol. 9. Number 15. (September 4, 2009).

⁵ Restrepo, V. (2009). On the possible current status of the western Atlantic bluefin tuna stock, had the main fisheries caught their 2003- 2007 quota. Collect. Vol. Sci. Pap. ICCAT. 64(2): 657-661

⁶ FAO FIGIS database.

⁷ FAO. Shark Trade. A Presentation, by Helga Josupeit. February 2008.

⁸ Ibid.

⁹ Speech by Dr. Harlan Cohen, member of the IUCN delegation to the UN General Assembly (December 18, 2007).

¹⁰ Griffin, E. et al. Predators as Prey: Why Healthy Oceans Need Sharks. *Oceana*. (July 2008).

¹¹ CITES. (2010). Consideration of Proposals for Amendment of Appendices I and II. Doha, 13-15 March 2010. CoP XV Proposal 16. p. 2.

¹² CITES. (2010). Consideration of Proposals for Amendment of Appendices I and II. Doha, 13-15 March 2010. CoP XV Proposal 17. p. 2.

¹³ Kurlansky, M. (1997). *Cod: a biography of the fish that changed the world*. New York: Penguin Books. 208 p.

¹⁴ Knowlton, N. (2008). Coral reefs. *Current Biology*. Vol. 18: 18-21.

the past few decades.¹ This decline has increased pressure on the remaining population and on Pacific precious corals. Removal of pink and red corals deprives other marine species of food and shelter, changing the seascape at a time when it is already under attack from climate change and overfishing.

Breaking the cycle of overexploitation

The powerful economic incentives that drive overfishing - poorly managed fisheries, high global demand and subsidised production - typically overwhelm efforts to conserve fisheries through conventional fisheries command-and-control management. As a statement from the governments of Australia, New Zealand, and the United States put it:

While management is a necessary element for sustainability, the record is painfully clear: even sophisticated management systems in developed countries have failed in many cases to preserve stock sustainability, and management does not address the market- and trade- distorting effects of subsidies.²

It naturally follows that to break the cycle of overexploitation of marine species, we should address the harmful economic incentives directly, by reducing demand for unsustainably fished species and eliminating subsidies that reduce the cost of fishing. At the same time, tough regulations against illegal fishing are necessary to limit the significant financial benefits accruing to those engaged in these activities. Where high global demand and weak management have conspired to drive down populations to fractions of their former abundance, restrictions on international trade are necessary in an attempt to preserve and rebuild populations.

To reduce demand for overexploited species, environmental non-governmental organisations have launched several campaigns over the years. For example, in Asia, WildAid is sponsoring an advertising campaign with the basketball star Yao Ming declaring that he will not eat shark fin soup. The campaign has recruited numerous well-known entertainers, athletes, and business people to take the pledge. In the United States, SeaWeb campaigns for consumers to sign a "Too Precious to Wear" pledge to refuse to purchase products made of real coral and to support protection for red and pink coral under CITES. The campaign has enlisted the support of major retailers, including Tiffany & Co. Some organisations are attempting to more broadly redirect demand from unsustainable to sustainable fisheries. For example, some seafood pocket cards inform consumers about sustainable seafood choices, such as troll or pole caught skipjack tuna instead of bluefin.

The member nations of the World Trade Organization (WTO) are formally committed as part of the Doha Round of negotiations to reducing the billions of dollars of government subsidies that contribute to overfishing. The WTO 2005 Hong Kong Declaration strongly reaffirmed the need to "strengthen disciplines on subsidies in the fisheries sector, including through the prohibition of certain forms of fisheries subsidies that

contribute to overcapacity and overfishing."³ Achievement of this objective as part of the Doha Round would remove a substantial economic incentive that harms the marine environment. However, given the uncertainty surrounding WTO negotiations, it is far from clear when a deal will be clinched.

Some efforts to combat IUU fishing focus on limiting trade in IUU products. The Food and Agriculture Organization recently adopted an agreement on port state measures to address IUU fishing. The agreement establishes procedures for port states to obtain information from vessels requesting entry so as to determine whether the vessels are involved in IUU fishing, and if so, to deny such vessels entry. Regional fisheries management organisations have also adopted measures that include the closure of ports or markets to vessels that have been identified as having engaged in IUU fishing activities.⁴ Both the European Union and the United States have enacted domestic measures to prohibit trade in IUU fish, including provisions to prohibit imports from vessels engaged in IUU fishing and from countries that fail to implement regulations to deter and eliminate IUU fishing.

CITES provides for the strongest intervention in markets to protect species threatened with extinction. While CITES is clearly not effective if commercial and political pressures prevent a species from being listed, a CITES trade prohibition can have a beneficial effect for listed species. For example, the hawksbill sea turtle was in danger of extinction due to the excessive demand for tortoise shell products after large scale exploitation and trade began in the 1950s. The hawksbill was listed in Appendix I in the 1970s, but it was not until 1994 that Japan, a major importer, accepted the listing and ceased its trade in hawksbill shells. While the hawksbill continues to be critically endangered, recent increases in Caribbean nesting populations are encouraging.

To certify that their trade in the species is not detrimental to the species survival, an Appendix II listing requires exporting countries to document that they are sustainably managing their exploitation of a species and prohibiting trade with countries that cannot document sustainable management. The implementation of a comprehensive fisheries management program alone would be a tremendous advance for the largely unregulated sharks and corals proposed for listing.

Conclusions

In sum, the record of many species subject to conventional fishery management is that they are unable to withstand the economic and political pressures that come from high demand. By limiting the harmful impact of such demand, export prohibitions may turn out to be one of the most effective approaches to conserve highly sought after seafood such as bluefin tuna. For other species in demand, such as sharks and corals, the fact that we are discussing the regulation of trade in an attempt to reduce the risk of extinction demonstrates just how far many governments and international bodies are willing to allow species to be depleted before efforts are made to manage stocks.

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¹ Bramanti L., et al. (2006). Population dynamics and global change-induced mortality in the precious red coral *Corallium rubrum* (L.1758). 7th International Temperate Reef Symposium (ITRS), June 26-July 1, 2006. Santa Barbara, CA.

² Communication from Australia, New Zealand, and the United States, Fisheries Subsidies, TN/RL/W/235 11 (July 18, 2008).

³ World Trade Organization, Ministerial Declaration of 18 December 2005, WT/MIN(05)/DEC Annex D ¶19 (December 22, 2005).

⁴ CCAMLR, Illegal, Unregulated and Unreported Fishing, <http://www.ccamlr.org/pu/E/sc/fish-monit/iuu-intro.htm> (December 12, 2007); WCPFC, Vessels, <http://www.wcpfc.int/vessels> (February 19, 2010); IATTC, Vessel Database, <http://www.iattc.org/VesselListsENG.htm> (February 1, 2010).

Fostering the development and diffusion of technologies for climate change:

Lessons from the CGIAR model

By Carlos M. Correa

To address the consequences of climate change, the international community must launch a major global effort of interdisciplinary research in various fields, ranging from fuel-efficient technologies to cut carbon dioxide emissions, to seeds adapted to new climatic conditions. In view of the urgency of the technological demands generated by climate change, the commitment of governments and donors to ensure access to needed technologies by developing countries is indispensable. If climate change is to be addressed effectively, decisive action by the international community to make mitigation and adaptation technologies globally available is necessary. In this context, there might be useful lessons to learn from existing international partnerships in other public policy areas where technology research and collaboration play an important role, such as the Consultative Group on International Agricultural Research (CGIAR).

Enhanced action on technology development and transfer is a key topic in the UN Framework Convention on Climate Change (UNFCCC) negotiations. The Copenhagen Accord of December 2009 calls for the creation of a Technology Mechanism towards this end. As negotiations pick up again, more clarity will be needed on what such a mechanism entails. Technology transfer and diffusion have been discussed in the context of the Ad Hoc Working Group on Long-term Cooperative Action (AWG-LCA) - the main negotiating body on future action under the UNFCCC, which will continue to meet. In this context, negotiators are likely to flesh out the Technology Mechanism in more detail. Other important elements of possible future agreement in the AWG-LCA text include the establishment of global and national technology objectives and action plans, the establishment of a network of regional technology and innovation centres, and strengthening national innovation systems in connection with climate-friendly technologies.

For these elements, too, many aspects need to be sorted out. In this context, there are valuable lessons to be learned from the experience of existing international partnerships in other public policy areas where technology research and collaboration play an important role.

Against this background, the Consultative Group on International Agricultural Research (CGIAR) is becoming the subject of increased interest on the part of stakeholders actively involved in climate change talks. The CGIAR is a strategic partnership of international agricultural centres that mobilizes scientific research to achieve sustainable food security and reduce poverty in developing countries. It is still little known outside expert circles.

Climate change R&D and Intellectual Property Rights: Trends and challenges

Currently, a significant portion of R&D relevant to climate change is made by private companies, and the outcomes of this R&D are subject to intellectual property rights (IPRs). Moreover, the appropriation through patents of R&D results is not the rule in the private sector only. Increasingly, public research institutions, including universities, file for patents for their research results. Indeed, recent years have wit-

nessed a growing trend toward the appropriation of climate change technologies by IPRs.

If this trend is to continue, IPRs are likely to play a key role in determining access to these technologies. If highly priced, access to protected technologies may be unaffordable to many developing countries.

Technology diffusion creates major benefits: the more a technology is used, the greater the likelihood of further improvement; the wide diffusion of a technology allows the development of economies of scale and reduction in costs; and access to technologies by all countries, including the poor, is essential to face the global challenges posed by climate change.

Adaptation and mitigation to climate change hence, require not only a massive effort to develop suitable technologies but mechanisms to make them readily available on an affordable basis through technology transfer and extensive international cooperation. Innovation is not enough.

In view of the dimension and urgency of the technological demands generated by climate change, the commitment of governments and donors to ensure access to needed technologies by developing countries is indispensable. In the absence of such action, this essentially global problem will not find a global solution, but will be left in the hands of those that possess the capital and technical capabilities to produce new clean technologies.

The CGIAR: A network for oriented research

A variety of proposals have been made to foster climate change related R&D and ensure broad access to its results. These proposals, made in the context of the AWG-LCA, include the establishment of specialized international funds, such as a 'multilateral technology fund' (now addressed in the form a Technology Fund under the Copenhagen Accord), and the setting up of "regional R&D networks of existing indigenous research institutions in developing countries for climate change technology development and commercialization that permit sharing of resources and cost for innovation infrastructure and expensive equipment."

In the context of international partnerships in the area of joint R&D collaboration, the Consultative Group on Inter-

national Agricultural Research (CGIAR) offers an interesting model, and lessons regarding its evolution over time.

The CGIAR was born in 1971 as a result of the joint initiative of a number of international and bilateral agencies, supported by the Ford and Rockefeller Foundations. The CGIAR emerged as a network of international agricultural research centres working together to create and disseminate improved plant varieties with the goal of alleviating hunger and poverty.

As a strategic partnership with 64 Members that include 21 developing and 26 developed countries, four co-sponsors, as well as 13 other international organizations, the CGIAR operates a centre-driven coalition of 15 research centres. It was conceived as a loose federation of independent centres and not as an organization at all, but an arrangement for consultation. Each Centre is managed by its own board, has an independent budget, and can seek funding for its own activities.

The existence of the CGIAR has permitted the Centres to share resources and coordinate policies at the system level, and thereby generate economies of scale and of scope that enhance the Centres' capacity to perform their missions. The Centres rely on more than 8000 scientists and staff, with activities in over 100 countries. Although at its inception the CGIAR research focused on the diffusion of the 'Green Revolution' (essentially through increases in the productivity of foodgrains), as economic and social changes took place in developing countries, its work expanded into areas of natural resources management, problems of the poor (including enhancing the micronutrient content of food staples), and analysis of policy and institutional issues. Currently, the CGIAR mission is:

"to achieve sustainable food security and reduce poverty in developing countries through scientific research and research-related activities in the fields of agriculture, forestry, fisheries, policy, and environment".

Evolution of the CGIAR

Over the course of its forty year history, the CGIAR has evolved in response to developments in its realm of operation. While the system has proven to be a successful international partnership producing a number of global public goods such as the maintenance of the world largest collection of germplasm of various crops, changing circumstances - the reduction in unrestricted funding, and the growing role of the private sector in agricultural research - have, among other factors, required significant adjustments in the policies and organisation of the CGIAR. In particular, the expansion of IPRs in different areas of biodiversity and agriculture has raised many challenges. In accordance with the Science Council, "the Centres have found, increasingly and particularly in the molecular biology area, that they need to be able to use proprietary technologies; the need for and the implementation of humanitarian licences have become much debated; biotech crops, with varying levels of statutory protection but still under the control of an increasingly consolidated international plant breeding industry, are now being grown widely in a number of developing countries; and, the System has had its first experiences of third party IP in its own biotech crops".

Defining a common approach to IPRs by the CGIAR Centres has proven a complex task. According to the most recent proposal in this area, the Centres might only exceptionally seek or assert IPRs, such as when it is indispensable to ensure further development of a research result, or to get ac-

cess to technologies under the control of private companies that are needed to fulfill the CGIAR mission.

Can the CGIAR model be applied in the area of climate change?

While the CGIAR's experience may provide useful lessons, the possibility of establishing a similar network of institutions for the coordinated development and broad diffusion, as public goods, of climate change adaptation and mitigation technologies, poses a large number of political, strategic, and managerial challenges. Science is normally more amenable to cooperative work and dissemination as a public good than is technology, which generally requires adaptation to particular needs and circumstances.

Based on the CGIAR experience, efforts to design a possible international network of research institutions to work on climate change mitigation and adaptation technologies should consider the following issues:

- selection of participating institutions or establishment of new ones;
- funding mechanism and plans;
- governance of collaborating institutions and capacity to engage in joint research;
- mechanisms to determine research priorities, distribute tasks, monitor progress, and evaluate the achievement of the defined objectives;
- conditions for cooperation with and use of technologies held by the private sector;
- establishment of common policies on diffusion of research outputs and use of the IPRs system; and
- participation of developing countries' institutions in research and means for facilitating access by developing countries to all relevant research results.

Conclusion

The dimension of the challenges generated by climate change seems to justify the efforts required to put into place an international system of applied research that produces global public goods. The CGIAR may serve as a model for that purpose, but the history, area of work, focus, and organisation of the system suggest that replicating it in other areas may not be an easy task, given, in particular, the current trend towards the appropriation of research results under IPRs in the various industries that may generate adaptation and mitigation technologies. A significant degree of organisational capacity, funding, and political support will be necessary to ensure that an initiative of that type can materialise in a way that effectively responds to those challenges. Building it will also require dealing with the boundaries between knowledge and action in ways that enhance the impact of the scientific and technological results that are produced.

To access the full Policy Brief that this article is based on, visit <http://ictsd.org/i/publications/66697/>

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Moving past Copenhagen:

Next steps for agriculture

By Marie Chamay

While many other issues have proved contentious in the efforts to reach a new global climate deal over the past couple years of negotiation under the UN Framework Convention on Climate Change (UNFCCC), agriculture has been able to unite interests across many lines.

In particular, numerous parties have promoted and successfully advanced specific language on agriculture in the negotiations of the *Ad Hoc* Working Group on Long Term Cooperation Action (AWG-LCA), under the topic of sectoral approaches to mitigation. The current version of the text, which is included in a “non paper” that will continue to be negotiated in 2010, recognises the importance of food security to address climate change challenges, as well as the relationship between agriculture and food security and the clear link between adaptation and mitigation in the context of agriculture. It also includes a request for the Subsidiary Body for Scientific and Technological Advice (SBSTA) to establish a programme of work on agriculture. While Copenhagen did not succeed in finalising the negotiations of the AWG-LCA, countries decided to carry negotiations forward towards an eventual agreement in Mexico.

Agriculture and land use change

While agriculture is not specifically referenced in the Kyoto Protocol, it is indirectly addressed in the negotiations on land use, land use change and forestry (LULUCF) of the *Ad Hoc* Working Group on the Kyoto Protocol (AWG KP). Under the Kyoto Protocol, Annex I countries must report and quantify emissions and removals by sinks in the LULUCF sector in order to achieve their targets. Possible LULUCF activities discussed included voluntary action to curb greenhouse gas (GHG) emissions from agricultural soils.

In Copenhagen, discussions did not progress on including agricultural activities beyond cropland management and grazing land management. In addition, countries did not decide on whether to take voluntary or mandatory approaches to land-based emission reductions. However, a programme of work looking at more comprehensive accounting - including land-based accounting - might be put in place in the future. Finally, discussions on the scope of the Clean Development Mechanism (CDM) did not make progress, and the CDM will remain limited to afforestation and reforestation activities.

Agricultural mitigation action under the Copenhagen Accord

The Copenhagen Accord, supported by most but not all member countries, did not mention the agriculture sector or food security. It requested developed countries to submit mitigation targets and developing countries to submit actions as well as details on how they would reach their goals. Among countries that responded, twelve submissions from developing countries (out of thirty-two) specifically mentioned the agricultural sector among their mitigation actions.

The developing country mitigation actions submitted to the UNFCCC Secretariat reflect different national capacities,

conditions and perspectives. They include some of the key mitigation technologies and practices currently commercially available in the agricultural sector. These technologies and practices consist of: 1) improved crop and grazing land management to increase soil carbon storage; 2) restoration of cultivated peaty soils and degraded lands; 2) improved rice cultivation techniques and livestock and manure management to reduce methane emissions; 3) improved nitrogen fertilizer application techniques to reduce nitrous oxide emissions; 4) dedicated energy crops to replace fossil fuel use; and 5) improved energy efficiency.

Examples of country commitments

Brazil, Republic of Congo, Cote d'Ivoire, Ethiopia, Indonesia, Jordan, Madagascar, Mongolia, Morocco, Papua New Guinea, Sierra Leone, and Republic of Macedonia made submissions within the agricultural sector.

Brazil provides estimated quantitative, voluntary emission reduction targets. This country proposes actions related to pastoral and crop land management, as well as livestock management. More specifically, it will seek to restore grazing land, integrate crop-livestock systems and use no-till farming techniques and biological nitrogen-fixing species. Brazil will also increase its use of biofuels.

Indonesia is finalising a National Action Plan to materialise 26 to 41 percent CO₂ equivalent emission reduction in the country. To achieve this 2020 emission reduction cut, the country proposes actions in different sectors, including agriculture. Among other activities, they will implement sustainable peat land management activities and develop carbon sequestration projects. They also consider the development of alternative and renewable energy sources.

Ethiopia submitted voluntary Nationally Appropriate Mitigation Actions (NAMAs) hoping these actions will be supported financially and technologically as promised in the Copenhagen Accord. With regards to the agricultural sector, this country proposes to increase carbon soil sequestration by developing compost in rural local communities' agricultural land and implementing agro-forestry practices and systems. In addition the country will seek to produce ethanol and biodiesel for road transport and household use.

Jordan proposes to grow perennial forages in the Badia Region, use best management practices in irrigated farming fertilisation applications and use methane emitted from livestock and chicken farming production and slaughter houses.

More than 80 percent of the GDP of Mongolia's agriculture sector is derived from the livestock sub-sector. As a NAMA, the country proposes to limit the increase of the total

number of livestock by increasing the productivity of each type of animal, especially cattle.

Morocco suggested improving the productivity of its agricultural land.

Papua New Guinea expressed its willingness to decrease GHG emissions at least 50 percent before 2030 while becoming carbon neutral before 2050. It proposes to decrease agricultural GHG emissions by 15-27 MtCO₂/year but does not specify activities.

Sierra Leone proposes to introduce conservation farming and to promote the use of other sustainable agricultural practices such as agro-forestry.

The Republic of Macedonia will enable favourable pre-conditions for GHG emission reduction through several policy actions including the implementation of the EU CAP legislation, the completion of institutional and legal reforms in irrigation sector, the development of a system for application of Good Agricultural Practices and enabling financial support for motivating the farmers to use mitigation technologies. The GHG mitigation technologies to be developed in the agricultural sector include better crop residues and animal waste management.

According to the FAO, the proportion of the submissions from the Non-Annex I Parties in response to the Copenhagen Accord that include agriculture may be an indicator that

agriculture is likely to become an important component of the NAMAs in developing countries.

Next steps for agriculture

Notably, outside the UNFCCC process, twenty-one countries recently signed a ministerial declaration creating the Global Research Alliance on Agricultural Greenhouse Gases. Participants of this alliance will share their knowledge and research efforts; identify gaps in the whole portfolio of research; and leverage new resources for collaborative projects. This group will first gather on 9-10 April in New Zealand to discuss governance issues and research focus. This research alliance should facilitate a common understanding on challenges related to agriculture mitigation.

What is likely to be the next step for agriculture in the climate negotiations? The negotiations on the AWG LCA and AWG KP will resume as mandated by the Parties in Copenhagen and decisions on the scope and content of a SBSTA work programme on agriculture are still to be taken at the next UNFCCC meetings. This work programme could facilitate and inform a future climate agreement on scientific and technological methodologies for agricultural mitigation.

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Geographical Indications and the protection of biodiversity in Andean countries

By Carlos Pomareda and Julio Paz¹

In their effort to guarantee that the benefits of marketable products created from biodiversity in Andean countries² are developed responsibly and stay within control of their owners, governments could make use of various protective instruments, including Geographical Indications (GIs).

There is a growing interest in creating added value in rural areas of Andean countries. Such added value can be obtained through the direct use of the primary products of biodiversity; their use as inputs for products which require processing (e.g., foods and drinks, cosmetics, and pharmaceutical products); the extraction of genes through biotechnology; or their utilisation *in situ* through ecotourism. In all such cases the products could be accompanied by traditional knowledge, which increases their value.

Creating value in rural areas

Poverty in rural areas in Andean countries is rapidly expanding and traditional agriculture, in the way it is currently

practiced, is not generating adequate employment and income to reverse this trend. If this expansion is allowed to continue, it is more likely to aggravate the problem of poverty in the future, than help to solve it.

Andean countries have a dual-agricultural sector: commercial and peasant agriculture. Commercial agriculture depends heavily on renewed genetic material, including hybrid seeds, high levels of agrochemical inputs, and mechanisation. For some crops, relatively large farms are dominant. In peasant agriculture, there is a heavy dependence on local seeds derived from the domestication of biodiversity and traditional cultural practices. However, while nutritional value is high, quality can be sub-optimal and market linkages are not well developed. Adding value and better marketing practices in this sector would be a significant contribution.

Rural areas in the region are rich in non-domesticated biodiversity which are often exploited on a small-scale by native

¹ This article is an abstract of a research paper presented at the seminar "Diálogo Andino sobre Medidas Relacionadas con la Biodiversidad el Sistema de Propiedad Intelectual" organised by ICTSD, GTZ, Comunidad Andina and Ministerio del Ambiente del Perú. Lima, 10 to 12 March 2010.

² Andean countries consist of Bolivia, Colombia, Ecuador, and Peru.

communities for their food and medicinal needs. However, the extraction of these same resources by those interested in patenting such properties without proper recognition of communal rights has motivated political decisions geared towards the protection of biodiversity in *extremis*.

Justifying distinctive signs

The need for competitive participation in markets has pushed firms and countries to differentiate their products in the marketplace, from the most general to the very specific distinctive means. Thus, we find country marks as general as “Made in Germany,” and also we find brands created by companies of different sizes from transnational corporations (e.g., Coca Cola, Nestle), to midsize and small national companies. In a similar way, GIs have emerged as a way of differentiating products from specific regions.

The main arguments for using distinctive signs are grounded in three rationales. The first is to protect the value and identification of local differentiated products; the second is to encourage alliances among producers and processors to standardise their production and processing practices; and third to facilitate access to markets where consumers have shown a preference for such distinct products.

Identity options

The most common options for successfully creating an identity for products and territories include geographic indications, denomination of origin (DO), and collective brands. GIs, in a general sense, are a sign placed on products that have a clearly established origin and poses qualities and reputation derived from its place of origin. GIs are not limited to agricultural products as they could cover handicrafts and other products.

GIs have been developed for primary and processed products of biodiversity. The weight of traditional knowledge in GIs is more significant in processed products and it is usually associated with ancestral traditions. In most cases there is a link between the singularity of a given product and biodiversity. However, the ultimate weight of biodiversity varies depending on the relative importance of processing - traditional or modern technologies - and local knowledge.

DOs are a special type of GI for products that own a specific quality derived in a unique way from its genetic characteristics, the ecology of the site, or through industrial processing. For example, while a GI may refer to *Café de Colombia*, a DO may refer to coffee from a particular region of Colombia. Europeans are the most active users of DOs and they tend to be extremely precise when specifying products and locations. In fact, in Spain alone, 574 DOs were registered between 2001 and 2005.

Brands or marks also help to differentiate products as they provide the holder with exclusive rights for its use. In the case of ‘collective brands’, the holder is an association that groups private firms or individual producers authorised to use the brand. In several cases, a local brand by itself is identified with a local territory as it is, for example, in the

case of *Pisco Biondi* from the small valley of Moquegua, Peru. In other cases, the mark allows the differentiation of specific origins. For example, this is the case with *Café Britt* in Costa Rica, which in its label recognises various origins, including *Tarrazú*, *Tres Rios*, and *Los Santos*.

Certifications, such as *Fair Trade* and *ISO*, are also ways to differentiate products. In such cases, there is a recognition of quality, commitment with the environment, and recognition of specific groups in local societies (women or small producers). However, certifications are not instruments for protection against violation of GIs or intellectual property rights (IPRs).

Making the most of GIs

In order to benefit from GIs and DOs, consumers must first recognise the special characteristics of a given product. Without this, effectively positioning the product on the market can be difficult.

Applicants are required to follow the rules and regulations to obtain the certification and to commit to applying those criteria for the life of the project. In order to obtain a GI and a DO an applicant must first undertake a study of the qualifying conditions and market prospects, present a registration requirement, and then fulfil all the required steps until the right to use the instrument is obtained. If a group of producers and processors are united in an alliance, they must be accredited and commit themselves to implementing an investment program, employing a management strategy that guarantees product quality under defined standards, and achieving market access.

It must be remembered that once a GI or DO is established, all members of credited organisations must strictly follow the defined rules of the national legislation, as well as their specific norms.

The Andean experience in GIs and DOs

The GI and DO potential for Andean countries - from the dry lands of the Pacific coast to the highlands and the Amazonian jungle - is substantial. Hundreds of products - in both domesticated and natural environments - have been noted as possible candidates for these instruments. However, in the case of Peru, of this long list some 23 products have been recognised and only six have been registered; four others are currently in the process of being registered.

Institutional capacity to deal with the opportunities for GIs and DOs in Andean countries is limited and there is a lack of a strategy at the country level to promote and support the achievement of GIs. Within the institutes responsible for IPRs and related matters in Andean countries, the offices responsible for GIs are minimal and in the agricultural ministries there is a complete absence of such units. At the local level, in the territories with potential and among producers of specific products, the capacity is in most cases non-existent.

The European experience shows that compliance with the legislation and the capacity of local organisations regarding

GIs is essential if it is to be an effective means of protection against imitation and fraud. Recognition of these matters at the WTO continues to be an issue of debate.

The Andean experience: lessons learned

The following lessons have been observed from the analysis of the four products looked at in the study. In some products, such as *Café de Colombia*, production takes place in a broad geographical area, while in others, such as *Maiz Blanco del Cuzco*, production can be far more localised. Also, defining the origin of a given product may be complicated in some cases when goods are produced in more than one country, as in the case of *quinoa*, which is produced in Peru and Bolivia - and even in the US. Thus, efforts must be made to ensure DOs are designed as specifically as possible regarding territories.

However, when looking at genetic factors for the same examples, it becomes clear that cases can be different. For example, *Maiz Blanco del Cuzco* is very specific, but *quinoa* has several varieties. Genetic characteristics must be given a high recognition as an element for DOs.

Processing is perhaps the most important element of establishing a DO, particularly when it has been derived from ancestral traditions; this is however not always the case for DOs in the Andean countries. *Café de Colombia*, for example, is processed under industrial rules to assure quality, *Cacao Arriba from Ecuador* and *quinoa* from Peru and Bolivia are processed under traditional methods, but *Maiz Blanco del Cuzco* is not processed at all. One would expect that DOs that include transformation processes incorporate traditional cultures.

GIs and biodiversity

Biodiversity as such, particularly *in situ*, must be protected by governments and society to ensure the preservation of the ecosystem; to facilitate living conditions of native populations while they learn to use biodiversity to generate market products; and to allow scientific work that leads towards future products of industry and biotechnology. Means for protection of biodiversity *in situ* include declaration and surveillance of natural reserves, supporting bio prospective research, and empowerment of local populations.

Regarding the protection of biodiversity products in specific territories, IPRs and GIs have a limited scope. In the first case, such protection is given through patents. However, while patents should be shared with local communities to make them effective in the protection of specific products of biodiversity, it is well known that this is not occurring.

However the protective capacity of GIs does not go beyond safeguarding the geographical origin and the qualities attached to it. This instrument has very limited use in protecting the traditional knowledge that frequently is associated with the products of biodiversity.

Trademarks identified with territorial and product specific qualities could be an option to provide some protection. They also have the advantage of being more achievable than GIs. However, at least in the case of Peru, the 23 products identified

with potential to gain GIs, are currently being used by 43 companies to produce several hundred products. Some of the original products are being used by as many as 13 companies without any non-financial recognition to local producers. Changing this reality would undoubtedly be a major undertaking.

Main conclusions

The rural development of Andean countries can be improved through the creation of value added, and GIs are a possible means towards that end where products have particularities and a preferential position in markets. Distinctive signs are created for products that derive solely from biodiversity and also for products that gain value added through processing - particularly when that process is rooted in ancestral practices. These distinctive signs offer a possible means to protect unique products and territories from imitation and fraud with respect to their origin, but they provide little protection to traditional knowledge attached to the products.

The feasibility of establishing a GI, local trademarks, and other distinctive sign framework depends fundamentally on market preferences for the product, continuous commitment to quality, compliance with rules and regulations, and commitment from private investors to allow business growth and sustainability. The local capacity of producer organisations and municipal governments in the sites where GIs have potential is also a significant factor when looking at the feasibility of GI implementation.

Despite the proliferation of references to hundreds of products with the potential of acquiring GIs, the number of products with actual qualifications is smaller - and the number of products that have actually achieved GI status is extremely limited. And while there are expectations that IPRs and GIs will provide protection against copy, imitation, and fraud, their effectiveness is limited by the nature of the products and conditions in local territories and the weakness of regulations and institutional capacity for enforcement. Thus, there is a need for various instruments to protect local products of biodiversity - primary and processed - to allow the benefits to be retained by local communities and committed producers and processors.

Recommendations

Capacity within responsible national institutions must be improved to allow for effective enforcement of GI legislation and to promote their establishment in cases with proven potential. Access to information on the benefits, opportunities, necessary commitments, and investment and managerial needs for GIs to lead into successful business must be improved to ensure interested members of society can effectively engage in the process. Technical assistance to local producer organisations with potential to achieve GIs for local primary or processed products must also be improved when compelling opportunities have been identified.

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The Lacey Act: Timber trade enforcement gets some teeth

In May 2008, the United States became the first country in the world to place an outright, criminally enforceable ban on the import of illegally harvested timber. Codified in Section 8204 of the US Farm Bill, the new provisions amended the Lacey Act - a century-old law that serves as Washington's primary tool in the fight against illegal wildlife trade - to include imports of plant and wood products. The move by the world's biggest importer and consumer of wood products has provided a powerful incentive for the private sector to pay closer attention to how and where it sources its timber. The industry has started to react - and other countries are taking notice.

The US Department of Justice (DOJ) held off on enforcing the amendments until the spring of 2009, but promised that soon after it would prosecute some high-profile cases to make its point. True to its word, the DOJ followed through in November 2009 with a raid on Nashville-based Gibson Guitars, the world-renowned manufacturers of an array of stringed instruments. No arrests were made, but federal agents from the US Fish and Wildlife Service seized boxes full of documents, wood, guitars, and computer files from Gibson's corporate headquarters as well as from a nearby factory. Madagascan rosewood, the wood targeted in the investigation, is very popular in guitar manufacturing; it is also very expensive, usually selling for US\$5,000 per cubic metre, twice the price of mahogany.

At time of writing, the Gibson investigation was the DOJ's only high-profile enforcement case under the expanded Lacey Act, but observers say that similar raids are sure to follow.

The new amendments to the Lacey Act define 'illegal timber' as wood that has been harvested or transported in violation of a law or regulation of the country in which it was sourced. This includes violations of explicit timber-protection laws - illegally harvesting wood in a national park, for example - but it could also include breaches of administrative regulations, such as violating a curfew designed to combat illegal harvesting to transport timber at night.

Penalties for infringing the new Lacey amendments can be severe: individuals found guilty of importing, exporting, selling or trading illegal timber can face up to five years in prison or a US\$250,000 fine - for each separate violation. The responsibilities placed on importers are significant: US-based buyers of foreign wood can be prosecuted even if they had no knowledge that the wood they imported was illegally sourced. The government only has to prove that -- "in the exercise of due care" -- the importer *should have known* about violations in the harvesting of the timber. Of course the more an importer did know about the violations, the greater the potential penalties they could face.

To guarantee full protection, companies will have to be very thorough in vetting their imports. Before its headquarters were raided, Gibson Guitars appeared to have solid green credentials: its CEO, Henry Juskiewicz, sat on the board of the Rainforest Alliance - a strong advocate for the new Lacey amendments (Juskiewicz has since taken a leave of absence from the board) - and most of the wood in its instruments was harvested 'sustainably'. Most, that is, but not all.

Studies estimate that up to 10 percent of all wood that enters the United States has been harvested illegally. Imports of

wood products from places like Russia and Madagascar and are widely considered to be especially high risk. Some observers predict that once the government's enforcement efforts are in full swing, countries whose wood is likely to be tainted could be effectively blacklisted by US importers.

The 'Forest Annex': An alternate approach

The amending of the Lacey Act may be the most dramatic step that the US government has taken to combat illegal logging, but it certainly is not the first. The so-called 'Forest Annex' that was written into the free trade agreement (FTA) between the US and Peru has similar aims but takes a very different approach.

Instead of placing the burden on US timber importers, the Forest Annex requires the Peruvian government to enact a number of specific provisions to combat illegal logging. Under one of the mandatory measures, Peru must track the harvesting, transport, processing, and export of tree species that are protected under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Moreover, the Andean country - the world's biggest exporter of mahogany - is obliged to fully investigate violations of the agreement's law and regulations.

Some critics have said that because the Forest Annex approach ignores the question of 'transshipment' - routing timber through a third country to circumvent the system - it is fundamentally flawed. "Without a broader commitment to excluding illegal timber from all its trading partners, the US runs the risk that illegal Peruvian mahogany will be sent to Mexico or China to become our doors and furniture just the same," Alexander von Bismarck, Executive Director of the Environmental Investigation Agency, explained in testimony to legislators in October 2007.

The Forest Annex came about as a result of a political deal that was struck between lawmakers and the administration of President George W. Bush in May 2007. Many predicted that the revised Peru deal would become a model for future US trade agreements; so far, though, no new pacts have been negotiated.

Already a positive impact?

But while the Forest Annex demands reforms on the part of the producer country, the amended Lacey Act targets US-based importers, forcing them to take full responsibility for how their timber is handled all the way through to the end of the supply chain. For that reason, the new measures could be a boon to a critical actor in the forestry sector: third-party forest certification bodies.

The Forest Stewardship Council (FSC), a non-governmental organisation founded in 1993, and the Sustainable Forestry Initiative (SFI), run by the American Forest & Paper Association, an industry group, are two of the biggest such independent certifiers. Both schemes, and several others like them, 'certify' forest management practices according to a set standards of environmental and social sustainability. All of those certification schemes require the wood to have been harvested legally. The FSC alone has certified about

117 million hectares of forest - an area roughly the size of Colombia - in 82 countries around the world.

While certification has become significantly more popular over the past 15 years, the vast majority of wood traded in the international market has not been vetted by an independent third-party certifier. (The FSC's 117 million hectares represent only 5 percent of all forests in production around the world.) And there are several reasons for this: The certification process, which is purely voluntary, can be time-consuming and costly, especially for producers in developing countries. Moreover, there is little evidence that consumers are willing to pay a price premium for wood products bearing a 'certified' label.

But the revised Lacey Act may be starting to change that. Immediately after the amendments passed, certifiers began touting their services as the best way for companies to protect themselves from the prying eyes of DOJ lawyers. Now, nearly two years later, some certifiers are reporting an increase in demand for the services they provide.

Smartwood - a certification system run by the Rainforest Alliance, an environmental group - claims to have registered "a significant increase in interest in verification services since the Lacey Act was passed," including requests from Paraguay, Guyana, China and Russia - countries in which it had never worked in the past. WWF's Global Forest Trade Network has also reported a spike in interest in certification.

"From everybody that I talk to in the world of third party auditing - the folks who actually do the verification audits for certification - by all accounts, there is increased inter-

est" from companies, especially in the chain-of-custody certification, says Andrea Johnson of the Environmental Investigation Agency, a green group that fought hard for the amendments on Capitol Hill. "My sense is that they're starting to see an uptick...but it hasn't been a massive surge yet."

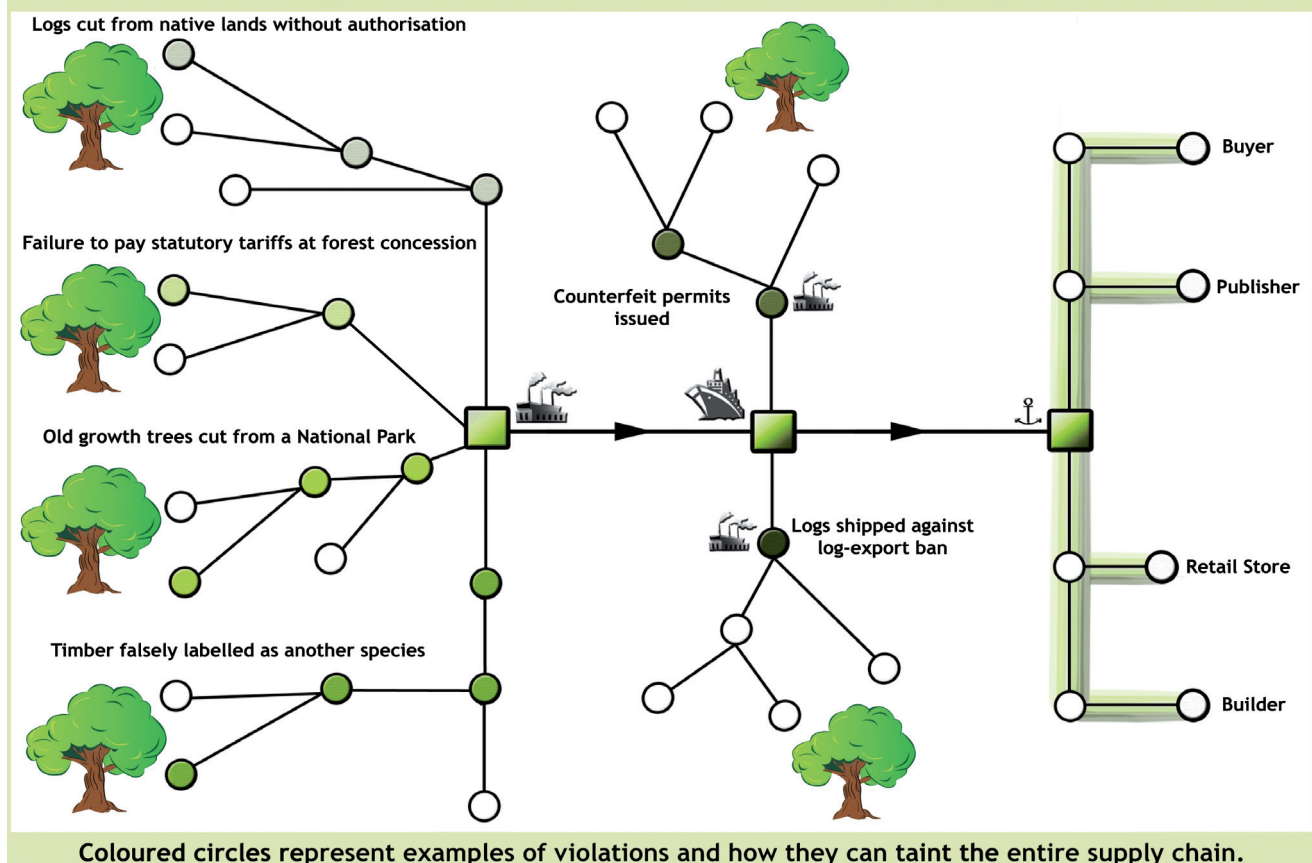
The demand for certification could become stronger, however, as the US government's enforcement efforts get more intense, Johnson said in an interview. "We talk pretty closely to folks in the [US government] who are implementing here, and the level of interest and investment in enforcement of Lacey is only getting stronger," Johnson says.

Other countries are taking notice. Australia is expected to announce similar legislation on illegal timber in the coming weeks, while the European Union is on track to pass a set of 'due diligence' laws governing the timber trade later this year. New Zealand and Japan have also signalled interest in pursuing similar strategies.

Taken together, a series of illegal timber bans in several major consumer markets could push the illegal timber trade past a "tipping point," Johnson says. "I have no doubt that this is going to lead to more certification on the ground, not just in the chain-of-custody end of things, but in forest management as well."

Paige McClanahan is Editor of Bridges Weekly Trade News Digest at the International Centre for Trade and Sustainable Development.

Tainting the Timber Supply Chain



Bioethanol production in rural Angola:

Benefits and risks associated with a Brazilian technology transfer project

By Rafael Vaisman

Thanks to the transfer of technology from Brazil, Angola is entering the biofuels sector with multiple aims. These include creating jobs in rural areas, diversifying the energy mix and boosting exports. While the production of biofuels can bring about many benefits, technology transfer in this area is not without risks and needs to be carefully crafted and executed, especially in order to include, rather than exclude, the rural poor.

The bioenergy sector has become one of the most dynamic in the economy. This has happened for three main reasons. Firstly, the dependence on oil from politically unstable regions and expected future fuel shortages have led to increased interest. Secondly, governments are seeking to limit their carbon dioxide emissions in order to tackle climate change, and biofuels could provide one part of the solution. Finally, the promise of rural employment as a driver for economic development is attractive to governments.

However, many countries do not themselves hold the technology needed. This challenge can be overcome through the transfer of technology. According to the OECD, technology transfer involves two separate processes: "The transfer of industrial production capacities, and the transfer of capabilities to master, adapt and further develop imported technology." This article focuses on one example of technology transfer, namely, between Brazil and Angola. These two countries are cooperating to diversify the energy sector and boost agricultural productivity in Angola.

Ethanol production in Angola

Angola, which is located in Sub-Saharan Africa, faces economic challenges because of its 27-year-long civil war, which ended only in 2002. Since then, the economy in Angola has been experiencing growth, and Angola is the second biggest oil exporter in Africa. State expenditure in Angola quadrupled over the years 2002 - 2004. According to the United Nations Development Program (UNDP), the gap between the rich and the poor in Angola has been widening during this same period, however. The production of bioethanol is conceived to help Angola diversify its economy and provide jobs in rural areas.

The technology transfer agreement between Angola and Brazil – which led to the creation of energy company BioCom (Companhia de Bioenergia de Angola, Lda) – focuses on the production of sugar and ethanol in the region of Cacuso in Angola. BioCom, which is a registered Angolan company, was created as a joint venture between Angola's state oil company

Sonangol (20%) Angolan firm Damer (40%), and Brazilian firm Odebrecht (40%) with a start-up budget of USD258 million. The project is set to be deployed on a total area of 30 thousand hectares in the municipality of Malange in Cacuso. It will be fully operational by 2012, generating an expected 30 million litres of ethanol, 250 tonnes of sugar, and 160 thousand megawatt-hours of electricity annually. In terms of initial financing, the Angolan National Agency for Private Investment (ANIP) helped to raise funds. Most of the initial funding came from the Angolan Foment Bank (BFA) and Bank Espírito Santo (BESA), with the participation of Brazil's State Development Bank (BNDES).

Transferring the technology

Brazilian expertise in the areas of agricultural practices, genetics and industrial equipment comprise the main elements of the technology transfer. This technology serves to ensure efficient, sustainable, state-of-the-art production. In terms of good practices, the project will focus, among other, on water and waste management (including recycling) and fertilizer use efficiency.

Most of the technology that is being transferred to BioCom is already of public domain, but some private domain technology is also being transferred. In December 2009, 62 BioCom employees underwent industrial and agricultural operator training at the agro-industrial unit Eldorado in Mato Grosso do Sul in Brazil.

The process of technological adaptation is slow. It might take three to five years, according to the experts involved. In the case of biological systems, such as agricultural production, their natural cycles must be respected. The cycle is one year for sugarcane, which means the results have to be evaluated and modified after three years of work.

Hopes, dreams and reality

The various partners to the technology transfer project, as well as the direct and the indirect beneficiaries, have expressed a number of objectives. These

include decreasing dependence on imports, as Angola now imports 100% of its sugar, and enhancing the possibilities of profitable exports of ethanol to European markets. Agnaldo Jaime, Co-ordinator of the Restructuring Commission of ANIP, stressed that, “We want private investment as sponsors of jobs, allowing the reduction of imports and hence the expansion of the Angolan trade abroad.”

The creation of rural industrial jobs, with the ancillary social and economic benefits that entails for rural areas, is indeed an important objective of the project. The project could even enhance rural electrification, as the industrial process - which is powered by bagasse (sugar cane residues) - is set to generate surplus electricity.

BioCom and its partners have identified additional potential environmental benefits, as the production of ethanol could allow Angola to start using ethanol fuel blends in the transport sector (building on the successful experiences with flex-fuel cars in Brazil). Not only would such a switch help reduce local air pollution, but would also bring down carbon dioxide emissions and as such might generate profits under the UN Framework Convention on Climate Change (UNFCCC) Clean Development Mechanism (CDM) in the future.

Technological development as a “poverty fix”?

The ambitious goals of the technology transfer project provoke a number of questions. Which actors will benefit? What opportunities and drawbacks is the population of Cacuso likely to face? Will the project help address poverty and inequality? What does it mean in terms of food security? As such, the project has its critics, especially as regards the actual benefits rural communities are likely to accrue.

In interviews conducted by the author, a number of socio-economic risks were raised. In terms of jobs, around 500 jobs will be created for both Angolans and Brazilians by the project. However, most of the local population of Cacuso lack the necessary skills, meaning they might not benefit at all. According to BioCom, 31 local people have been employed thus far. In the words of one interviewee, “Those people living in Cacuso- Malange are in need of food. The production of fuel and sugar are not able to help their daily requirements”.

In terms of land, some interviewees feared that the expansion of the large-scale monoculture of sugar cane would cause land pressures on the poor - although BioCom stressed that “water and land are not an issue there. The land was not appropriated by any community and sugar cane is not an irrigated plantation, consequently not jeopardizing any small farmer’s production.”

The Angolan non-governmental organisation ADRA (the Association for Rural and Environmental Development) calls for three issues in particular to be ad-

ressed. Firstly, the families in the region in which an industry is being developed should be involved in order to effectively evaluate the risks and benefits for the future. This would help mitigate problems and compensate those affected. Secondly, a plan should be carefully developed to maximise the use of local labour, also with a view to future opportunities. Thirdly, companies should focus on their Corporate Social Responsibility, investing in social development while taking environmental responsibility in the region.

Generally, concerns related to institutional and social weaknesses, including the social gap between the rich and the poor in the host country, were raised. Overall, Angola is still struggling with issues of political instability and governance issues. Public participation and debate in policy processes around projects such as the one described in this article are still at a low level, and did not take place in this particular case.

This situation is, however, slowly changing. A recent appeal from representatives of Angolan civil society to their government - entitled “Declaracao Benguela” - calls for the re-evaluation of current policy to ensure that big investments in the country do not lead to eviction of people from their lands. The letter does not oppose investments, but highlights potential problems if business-as-usual continues. The signatories want to avoid negative consequences, such as land pressure on the poor, and ensure that those most in need become party to the benefits, rather than being sidelined by the already rich and powerful. The issues raised in the appeal are worth considering in the bioethanol sector as well.

Concluding remarks

In conclusion, technology transfer has to be carefully designed and executed, especially in countries characterised by weak institutional governance. This should be done in order to ensure benefits to those most in need. Otherwise, the sustainability of the commodity to be produced - in this case ethanol - is in jeopardy. This would not be in the interest of any of the stakeholders involved, ranging from the government to the enterprises to the local communities. My study, currently underway, suggests that some specific arrangements between the companies and local communities should be considered in order to achieve sustainability for all parties involved. Overall, there is a need for a deeper understanding of the dynamics of technology transfer in relation to large scale agricultural projects. Such an understanding could help in the design of relevant policies to support rural activities and livelihoods, enhancing the Human Development Index of the country in question.

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ICTSD update

EGS work under ICTSD's Global Platform on Climate Change

The world left the Copenhagen conference on climate change in December 2009 in a quandary and questioning the path forward. Among other things, negotiators and advocates who sought to influence a climate agreement have had to face the fact that trade and competitiveness concerns now act as a major driver in determining the outcomes of a climate deal. Indeed, many of the dynamics—and specific issues—are those confronted in the context of negotiations at the WTO. Beyond this however, these actors face decisions that involve developmental, environmental, and economic aspects of climate change on trade and production patterns as well as the possible impact of climate-related measures on the livelihoods of those who are already marginalised.

While Copenhagen did not result in the expected outcomes, there are elements in the Copenhagen Accord that provide useful guidance for further work on trade in climate-friendly technologies. ICTSD's research findings on climate-friendly environmental goods, namely that additional market-creating and supportive measures for developing countries will enhance trade in these goods and meaningfully enhance the benefits from an environmental goods and services (EGS) trade-liberalisation process at the WTO, closely mesh with the Accord's recommendations. The Accord also has a strong significance for discussions on technology-transfer in climate-friendly goods including those that have been taking place in the context of the WTO EGS negotiations.

ICTSD's activities on EGS in 2009 focused on advancing the understanding of and negotiations on climate-friendly goods - both in the context of the WTO, UNFCCC, and regional trade (APEC) - and on strengthening the capacity of developing countries in the area of EGS and sustainability, specifically in terms of identifying and articulating their interests.

On the climate front, ICTSD's research on trade flows, barriers and market drivers for climate-friendly goods in the renewable energy supply and building sectors formed the core of the focus on 2009. A similar study on the transport sector is underway. These climate-technology mapping studies were part of a pioneering initiative undertaken under ICTSD's EGS project and also formed the basis of other initiatives undertaken by ICTSD's programme on intellectual property rights (IPRs) in collaboration with UNEP and the European Patents Office - notably the patent-landscaping exercise for climate-friendly technologies.

Outcomes were presented at informal dialogues in Geneva (in April and September of 2009), at regional and APEC dialogues (where they formed part of the wider trade and climate change agenda) and at a side event at the UNEP Governing Council on diffusion of climate-change friendly technology - "The potential of trade policies in the transition towards a green economy." They were also presented to stakeholders in conjunction with the Copenhagen Climate Conference in December 2009.

Thus far, ICTSD's emphasis has been on goods. Identifying the potential of trade in climate-friendly environmental services is imperative for effective and lasting solutions for climate change. ICTSD will now consult with relevant stakeholders to ascertain the most useful areas of research on climate-friendly environmental services. The issues and challenges involved in the design of sound climate policy to enable better diffusion of climate-friendly technologies and trade policy that can accelerate such diffusion requires more sophisticated ongoing research. It also involves reaching out to new stakeholders such as domestic and international regulatory agencies and private-sector stakeholders at various levels of the EGS value chain. Developments in regional negotiating and standard-setting bodies outside WTO and UNFCCC could also have implications for trade in climate-friendly EGS.

Related papers

ICTSD papers relevant to trade in climate-friendly goods and services can be accessed on ICTSD's web-portal- <http://ictsd.org/climate-change/accelerating-trade-and-diffusion-of-climate-friendly-goods-and-services/>

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EVENTS

ICTSD Events

30-31 March, New Delhi, India. TRADE AND CLIMATE CHANGE IN EMERGING ECONOMIES: THE COMPETITIVENESS, TECHNOLOGY, AND INTELLECTUAL PROPERTY RIGHTS DIMENSION. Organised by ICTSD and Research and Information Systems (RIS).

20-21 April, Kathmandu, Nepal. DIALOGUE ON TRADE, POVERTY AND CLIMATE CHANGE. Organised by ICTSD, the Indian Institute of Foreign Trade, and SAWTEE.

Other Events

22-26 March, London, UK. 60TH SESSION OF THE IMO'S MARINE ENVIRONMENT PROTECTION COMMITTEE.

23 March, Geneva, Switzerland. WORKSHOP ON EMERGING TRADE MEASURES IN TIMBER MARKETS. Co-organised with the Economic Research and Statistics Division of the WTO Secretariat.

23 March, New York, US. CSD-18 THEMATIC SEMINAR SERIES: SUSTAINABLE CONSUMPTION AND PRODUCTION. Organised by the CSD Secretariat.

24-25 March, Langat Basin, Malaysia. INTERNATIONAL SYMPOSIUM: HARMONISING ENVIRONMENTAL CONSIDERATIONS WITH SUSTAINABLE DEVELOPMENT POTENTIAL OF RIVER BASINS.

6-11 April, Geneva, Switzerland. 30TH ANNUAL MEETING OF THE INTERNATIONAL ASSOCIATION FOR IMPACT ASSESSMENT.

15-16 April, Paris, France. WORKSHOP ON ADVANCING THE AQUACULTURE AGENDA: POLICIES TO ENSURE A SUSTAINABLE AQUACULTURE SECTOR.

21-23 April, Seoul, Republic of Korea. BUSINESS FOR ENVIRONMENT GLOBAL SUMMIT (B4E).

3-14 May, New York, US. EIGHTEENTH SESSION OF THE COMMISSION ON SUSTAINABLE DEVELOPMENT (CSD-18).

24-28 May, Guatemala City, Guatemala. 26TH SESSION OF THE LATIN AMERICAN AND CARIBBEAN FORESTRY COMMISSION.

15-17 June, Belfast, UK. SUSTAINABLE OCEAN SUMMIT (SOS).

14-17 July, Quito, Ecuador. INTERNATIONAL CONFERENCE ON BIODIVERSITY CONSERVATION IN TRANSBOUNDARY TROPICAL FORESTS. Organised by the International Tropical Timber Organization (ITTO) and the Convention on Biological Diversity (CBD).

26 July - 6 August, The Hague, Netherlands. ICAP SUMMER SCHOOL ON EMISSIONS TRADING FOR EMERGING AND DEVELOPING COUNTRIES.

16-20 August, Fortaleza, Brazil. SECOND INTERNATIONAL CONFERENCE ON CLIMATE, SUSTAINABILITY, AND DEVELOPMENT IN SEMI-ARID REGIONS - ICID 2010.

22-25 August, Oldenburg and Bremen, Germany. 11TH BIENNIAL CONFERENCE OF THE INTERNATIONAL SOCIETY OF ECOLOGICAL ECONOMICS: ADVANCING SUSTAINABILITY IN A TIME OF CRISIS.

18-29 October, Nagoya, Japan. CONVENTION ON BIOLOGICAL DIVERSITY TENTH CONFERENCE OF THE PARTIES (CBD COP 10).

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