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FOREWORD

Continuing along the guidelines set forth in *“Integration & Trade: a New Chapter”*, this time we decided to address the topic of climate change, and more specifically, its links with economic development and international trade. This decision was based not only on the extraordinary importance attached to international negotiations in the 2009-2010 biennium to define a new post-Kyoto global scenario but also on the current greater awareness of Latin American and Caribbean (LAC) countries on these issues. This is manifested both in the appreciation of the diversity of this phenomenon as well as in the urgency to undertake national actions and reach agreement at the regional and global levels that will facilitate mitigation to climate change and adaptation to its consequences.

Acknowledging these events, the Inter-American Development Bank (IDB) decided to support the countries of the region and therefore, launched in 2007, the Sustainable Energy and Climate Change Initiative (SECCI). Through this Initiative the Bank has sought to articulate climate change with its operations in different relevant fields. Thanks to two special financial funds that were set up, such coordination has increased in number and intensity, particularly since 2009. The Initiative's activities are structured around three areas: knowledge generation, institutional strengthening and financial assistance. SECCI is currently operational in over 20 countries in the region following an incremental strategy that begins with low-cost operations with the purpose of exploring ways to achieve sustainable development mainstreaming climate change. These operations help to set the foundation for more elaborate programs and facilitate access to additional financial instruments. On the basis of the experience gained so far, the Bank is oriented to promote the articulation of financial instruments (from the public and private sectors) and of non financial tools to assist the countries in achieving enough preparedness at the institutional and technical levels and the financial capability to address climate change problems. The strategy will also be useful to guide and facilitate dialogue on these topics between the Bank, governments, civil society and the private sector.

Particularly with this purpose, the IDB, in partnership with Lord Nicholas Stern, had hosted the Conference *“Development in a more hostile climate”* in Washington, at the beginning of 2009. The Conference convened a group of renowned world experts from private and public sectors, civil society and international organizations to analyze three topics: first of all, the impact of the financial and economic crisis triggered in 2008 on the efforts to undertake mitigation and adaptation actions and the threats of the crisis for country development; secondly, the role of alliances between governments, the private sector and regional and international financial institutions to structure responses to specific investment challenges that developing countries face as a result of climate change; and thirdly, to give an overview and discuss the conclusions of the case studies carried out in Brazil, Mexico and Southeast Asia, following the guidelines set forth in the so-called Stern Report. The analytical value of the presentations and the interest of the information provided at the conference led us to present a brief summary of deliberations in the first section of this Journal, together with brief video clips of the main comments made at the Conference.

In the second section we have asked renowned experts to prepare four essays on the consequences of climate change, from different but supplementary viewpoints. *Ricardo Meléndez-Ortiz, Trineesh Biswas and Ingrid Jegou* examine the links between international trade, climate change and sustainable development. After a brief historical review, they state that these links have acquired considerable importance in the current world. To illustrate this argument, they analyze the development of global institutionality in trade, *vis à vis* climate change, pointing out mutual interrelationships. The article concludes that present difficulties to reach a global agreement to reduce emission of greenhouse gases (GHGs), create the conditions for the adoption of unilateral policies by developed countries (DDCs), under diverse taxing modalities and subsidies that would negatively affect developing countries (DGCs) in several sectors of its exports to the developed world.

Next, *Grant Aldonas* analyzes the consequences of climate change within the current context of global production based on an intricate network of global value chains, managed by big transnational firms. The author holds that, within this framework, decisions adopted by oversight bodies in developed countries on the standards of distribution of the carbon footprint along the value chain, will have a greater impact on costs and market access for primary producers in developing countries than trade negotiations themselves. In this sense, he points that the delay in reaching a global agreement on emissions control could be used as an opportunity to analyze the impact that mitigation measures under consideration would have on developing countries.

The essay by *Gary Clyde Hufbauer and Jisun Kim* highlights that, although Latin America and the Caribbean holds a small share in the generation of greenhouse gases worldwide, it is one of the most vulnerable regions to the different consequences of climate change. Nonetheless, they state that the region's countries have comparative advantages for adopting low-carbon economic growth patterns to favour an abundance of natural resources. On the other hand, they anticipate that the current international negotiations allow reading between lines that mitigation efforts to be undertaken by the region can attract international financial resources and new technologies that are essential for their development.

Finally, the article by *Sandra Polónia Rios and Pedro da Motta Veiga* focuses on Latin American and the Caribbean. The authors point out that country heterogeneity in the region makes vulnerability to climate change and the distribution of its impacts vary from country to country and, therefore, national agendas acknowledge different levels of urgency and balance between mitigation and adaptation actions. The authors propose the adoption of national policies that favor low-carbon production and consumption models. They also suggest that regional cooperation should be structured around thematic pillars and geographic regions sharing common issues so as to promote a greater convergence of positions to defend regional interests in global negotiations.

To illustrate the many perceptions and positions on the issue of climate change in Latin America and the Caribbean, the third section includes the opinions of a distinguished group of experts representing different regional realities. Panel members had to answer five questions: firstly, on the visible impacts of climate change and the prospects for forthcoming decades; secondly, on how national players perceive climate agenda negotiations; a third question on the evaluation and the outcomes of the Copenhagen Conference; another on the potential impact of these outcomes on the national strategy which may have to be reviewed and the possibilities to articulate regional strategies;

and a fifth question on the most promissory areas for regional cooperation in future mitigation and adaptation efforts.

Participating experts were: *Carolina Burle Schmidt Dubeaux* (Brazil), *Alieto Aldo Guadagni* (Argentina), *Carlos Fuller and Kenrick Leslie* (Belize and the Caribbean Community, respectively), *Mario Molina* (Mexico) and *Jorge Rodríguez Quirós* (Costa Rica). In our opinion, the experts have reflected in their replies not only their academic training and knowledge but also their professional and political experience. We believe that the variety of answers will help to understand the current terms of the debate among the different geographical areas of our region.

Lastly, a section on Statistics provides the usual highlights on integration and trade figures and also several graphs and a glossary with relevant information and terms on climate change, being the selected topic for the 30th issue of *Integration & Trade*. ♦

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Integration & Trade Journal



CLIMATE CHANGE IN LATIN AMERICA AND THE CARIBBEAN: A Priority Task for IDB Action*

The purpose of this institutional article is to provide information about the actions and approach that the Inter-American Development Bank (IDB) has adopted to support Latin American & Caribbean (LAC) countries to face the challenges posed by climate change. The main effects of this phenomenon on the region's countries are described. The last section discusses the expectations raised by the 16th Conference of the Parties (COP 16) toward a global climate change agreement, which is to be held in Cancun, Mexico, next November.

GLOBAL CLIMATE CHANGE AND ITS EFFECTS ON LAC

The Fourth Assessment Report by the United Nations' Intergovernmental Panel on Climate Change (IPCC) concluded that global warming of the climate system is unequivocal. As evidence of this, it stressed climbing average world air and sea temperatures, widespread thawing of snowfields and glaciers, and rising average of world sea levels. Numerous detailed observations around the planet -continental and oceanic- show ecosystems being deeply affected by various kinds of climate disturbances, especially rising temperatures.¹

Developing countries (DGCs) are experiencing the worst conditions when it comes to dealing with climatic variations. They and their communities are in a vulnerable state, which time and inaction tend to exacerbate. The outlook for LAC countries, in particular,

is bleak, as they will have to confront increasingly severe consequences in various areas in the absence of global, regional, and national actions to tackle climate change. Such consequences include:

- A significant reduction of agricultural productivity in the most vulnerable areas, with extremely negative effects on food security.
- Changes in the quality, quantity, and availability of water for human, animal, and agricultural consumption, and electricity generation. As an indicator, it is estimated that 77 million people will face water shortages by 2020 as a result of the disappearance of the tropical Andean glaciers. This also entails adverse changes in the electricity sector, as it will force the use of dirty energy sources (coal and oil) instead of the hydroelectric sources that have so far dominated in several countries in the region (over 50% of Ecuador's energy supply, over 70% in Bolivia, and 68% in Peru).²

¹ IPCC. *Climate Change 2007. Fourth Assessment Report*. 4 vols. Geneva: IPCC, 2007.

² WORLD BANK. *World Development Report 2010: Development and Climate Change*. Washington, D.C. 2009.

* The Sustainable Energy and Climate Change Unit of the Inter-American Development Bank (IDB), managed by Juan Pablo Bonilla, provided the material for this note.

IDB SUPPORT FOR LATIN AMERICA & CARIBBEAN COUNTRIES

- Damage in coastal areas caused by an estimated 1-5 meter rise in sea levels, leading to an economic crash between 0.4% and 1.0% of the region's Gross Domestic Product (GDP).
- Permanent negative effects on marine fauna, including corals that will seriously affect production and tourism. It is estimated that, by 2053, climate change will cumulatively have cost the Caribbean subregion between US\$0.4 and US\$2 billion. In the same subregion, the annual income from fishing may be affected by as much as US\$140 million from 2015.
- Significant losses of biodiversity with disastrous effects on the region's countries in various economic sectors, especially, tourism.
- It is estimated that the increase in the frequency and intensity of natural disasters will involve a 0.6% reduction in *per capita* GDP in the countries affected.
- Some studies suggest that a 2°C-3°C rise in the planet's average temperature will lead to a loss between 20% and 80% of the Amazon rainforest, thus accentuating the problems of desertification in the region.³
- In 1970-2008, disasters caused by climate change (storms, floods, droughts, forest fires, extreme temperatures, and health) cost LAC countries US\$81.4 billion a year.⁴

Although LAC countries' contribution to the concentration of greenhouse gases (GHGs) is less than 12% of the world total, there is no doubt they are experiencing more negative effects, such as those detailed above, a list that is by no means exhaustive. What is more, in the absence of global, regional, and national actions to climate change, the damage will be worse in the region's countries and the negative effects in economic terms will be even more acute.

³ AVISSAR R. & D. WERTH. "How many Realizations are Needed to Detect a Significant Change in Simulations of the Global Climate?", cited in De la Torre, Fajnzylber, & Nash. *Low Carbon, High Growth*. 2005.

⁴ COMISIÓN ECONÓMICA PARA AMÉRICA LATINA Y EL CARIBE - CEPAL. *Cambio climático y desarrollo en América Latina y el Caribe: una reseña*. Santiago de Chile. 2009.

Based on over half a century of experience supporting the region's development, IDB provides services and funding to help LAC countries design and implement policies to mitigate and adapt to the consequences of climate change. As a result, the Sustainable Energy and Climate Change Initiative (SECCI) was launched in 2007. The Bank sought through this initiative to coordinate climate change with operations across the board in several relevant areas (energy, water, the environment, and institutions). Thanks to the formation of two funds (the multidonor fund, to which IDB member countries contribute, and SECCI's ordinary capital fund, financed out of the Bank's own budget) such coordination has been increasing in scope and intensity.

The activities are structured in three areas: knowledge generation, institutional strengthening via training and technical cooperation, and financial assistance. In the area of knowledge generation, IDB, *in tandem* with Economic Commission for Latin America and the Caribbean (ECLAC), is preparing studies on the economics of climate change in LAC in order to identify and evaluate its economic implications, and the potential costs and benefits of mitigation and adaptation actions in specific sectors. Chile, Mexico, and some other countries in the region have already taken this path, incorporating cost estimates under different climate scenarios at various economic (sectoral and global) and geographic (national and subregional) levels. These studies conclusively show that the cost of mitigation and adaptation actions is considerably lower than the costs that would be incurred by a lack of action to tackle climate change.

The relative newness of the climate change issue and the scant training at world level to address its consequences has led IDB to set up various institutional strengthening programs for LAC countries, grouped in a second area of action. SECCI has progressively become a platform for dialogue with national and local governments, contributing to the programming of a wide range of activities in the areas of climate change mitigation and adaptation, and to the implementation of profound political reforms aimed at disseminating good practices and institutional strengthening. In 2009, the Initiative's fund was recapitalized, thereby doubling the financial resources for its operations. Thus, in the

last year support for the institutional strengthening of the countries has increased considerably.

The third area of action is the development and strengthening of regulatory and institutional frameworks to support investments and facilitate countries' access to regional and international financial resources (see *Box*). SECCI is currently operating in over 20 countries in the region under the following operational strategy:

- The first step addresses relatively small cost operations, whose purpose, exactly as happens with technical cooperation, is to explore avenues of sustainable development that incorporate climate change.
- The operations lay the foundations for more elaborate programs and facilitate access to rather more sophisticated instruments, like the Conditional Credit Line for Investment Projects (CCLIP) on the one hand, and Policy-Based Loans (PBL) on the other.
- These instruments are essential to enable countries to catalyze the funds and optimize the green multiplier with international financing operations.

Mexico is the pioneer of this strategy. SECCI initially allocated US\$4 million to cooperate with the government in moving forward in the climate change agenda. This cooperation laid the groundwork for a subsequent US\$600 million, PBL-financed program. The coordination of these IDB technical cooperation and financing instruments has been instrumental in developing sustainable transport and renewable energy programs. These programs, in turn, enabled access to the new Climate Investment Funds (CIF) for US\$500 million and succeeded overall in mobilizing resources from IDB, the International Bank for Reconstruction and Development (IBRD), public and private entities, and shared financing (Credit Reconstruction Institute) for over US\$2 billion.

Colombia is another good example. In this case, a US\$5 million SECCI technical cooperation operation promoted a US\$250 million PBL loan, ultimately mobilizing international financial resources of nearly US\$3 billion for energy efficiency and sustainable transport programs. It is also worth noting that, thanks to technical cooperations financed by SECCI, Bolivia, Jamaica, and other Caribbean countries are launching

climate change adaptation programs, with financing from various international sources.

Some Available International Funds

- Funds from the United Nations Framework Convention on Climate Change (UNFCCC), including the Global Environmental Facility (GEF), the Least Developed Countries Fund (LDCF) and the Special Fund for Climate Change (SFCC).
- The Clean Development Mechanism (CDM), which provides financial assistance for mitigation projects.
- Other global funds such as the Climate Investment Fund (CIF), the Clean Technology Fund (CTF) and the Strategic Fund for Climate (SFC).

On the basis of the experience accumulated, SECCI has prepared a strategy to tackle climate change that will be evaluated for implementation in the course of 2010. Its essential aim is to effectively catalyze adaptation and mitigation support programs in LAC. The strategy is to promote the development and use of a specific group of instruments, both financial (public and private sector) and non-financial. These instruments are aimed at helping nations make adequate preparations at the institutional, technical, and financial capacity levels to deal with the problems arising from climate change. The strategy will also serve to guide and facilitate climate-change policy dialogue between IDB, governments, civil society, and the private sector.

COP 16 AND THE FUTURE OF THE REGION

Last, it is worth mentioning the rising expectations for the 16th Conference of the Parties (COP 16) of the United Nations Framework Convention on Climate Change (UNFCCC), to be held later this year in Mexico.

As is common knowledge, COP 15 was held in Copenhagen in 2009 capturing unprecedented world attention. 119 Heads of State and Government also participated and over 40,000 people, including government officials, international and non-governmental organizations, and private sector

representatives. The basic objective was to reach a comprehensive agreement on GHG emissions reduction targets in a five-year period starting in 2012, thus extending and expanding the agreements reached in the Kyoto Protocol. The negotiation process which had begun two years earlier to strengthen international cooperation over climate change after the Bali Road Map (COP 13, December 2007) was thus expected to reach a conclusion. Agreement was also expected to be reached over the implementation of measures toward mitigation, adaptation, financing, technology transfer, and the reduction of emissions due to deforestation and forest degradation in DGCs. It was also aimed at facilitating capacity-building actions and meeting the ambitious commitments in the developing countries with an initial financing of around US\$10 billion per year.

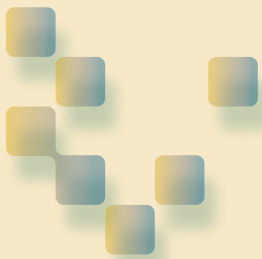
In spite of such expectations, in the months leading up to the meeting, the feeling that the Copenhagen Conference would fail to clinch a binding treaty spread. Nevertheless, it was hoped the Conference would prove crucial in setting out the key elements of a new framework agreement. The details toward a binding agreement could be negotiated later, in 2010, at COP 16. Also, to avoid, halt, or delay in the implementation of measures planned or under way in many developing countries, there was a growing recognition of the need to agree on the provision of additional further financing once the new agreement should be reached in Copenhagen.

However, major divisions over certain important issues persisted, particularly at the collective level of emissions reductions by developed countries (DDCs). The IPCC recommendation is for this target to be relocated between 25% and 40% until 2020 so that the increase in the planet's average temperature should not exceed

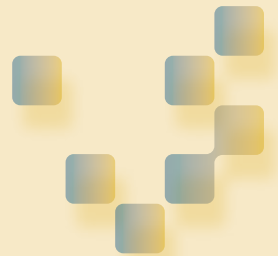
2°C. The level of international public financing needed to help DGCs implement mitigation and adaptation actions also created tensions, as -to a lesser extent- did the architecture for the disbursements of such financing. Another disagreement arose as to whether China and other emerging medium-sized economies ought to have treatment similar to the DDCs in measurement, reporting, and verification of their mitigation commitments. The negotiations were overloaded with discussions about procedure and the leaking of several negotiating texts without the necessary balance or consensus led to increasing difficulties for the talks. As valuable time was lost in the first two weeks, the COP 15 Presidency had no text to submit for consideration by the Heads of State and Government.

In contrast, COP 16 is an opportunity to get back on track. Beyond the global negotiations' potential for success, the Conference presents great challenges for LAC. On the one hand, it provides an opportunity for the region to combine criteria and, through its diversity, to promote solutions to fight climate change while reaping regional and global benefits. On the other hand, the road to COP 16 should also be used to include the private sector and civil society in the process, creating greater confidence and channeling their contributions toward such solutions.

As President Moreno put it in El Salvador, last March 5, *"there is no room for doubt over the logic of integration in the field of climate change. A path of joint action begins with an assessment of the economic costs of climate change in the region, for which a variety of funds has been made available. IDB's role here is clear: to help countries meet conditions of access to these funds and provide all subsequent support for their better application"*. ♦



Reviews



CONFERENCE: “DEVELOPMENT IN A MORE HOSTILE CLIMATE” (IDB, MARCH 5TH, 2009)

On March 5th, 2009 Lord Nicholas Stern and the Inter-American Development Bank (IDB) hosted the Conference: “Development in a more Hostile Climate”. The conference convened world-renowned speakers that analyzed the impacts of the financial crisis on the efforts for climate change mitigation and adaptation, its threats to development and the role of partnerships and multilateral institutions in responding to the climate investment challenges faced by developing countries (DGCs). Building on the path-breaking work of the Stern report on today's global economic impacts, the conference took a granular approach by looking at the national and regional studies of the economic impact of climate change in Mexico, Brazil and Southeast Asia. In addition, it also explored options to integrate climate change financing in the development process.

The Conference was organized around three blocks. The Opening Panel (World Economy and Climate Change) addressed the effects of the financial crisis on the Climate Change agenda and the costs entailed in pursuing it. The second block centered on national (Brazil and Mexico) and regional (South East Asia) case studies on the economic impact of climate change. The Closing Panel focused on the possibilities of accelerating and spelling out international finance and investment for climate change.

OPENING PANEL: WORLD ECONOMY AND CLIMATE CHANGE

Nicholas Stern, director of the Stern Report commissioned by the United Kingdom government and a professor at the London School of Economics observed that the world is currently facing two crises: a financial crisis and a climate change crisis, and that it is urgent to tackle both at the same time. According to him, nowadays there are enormous technological opportunities to lay the foundations for low-carbon growth. In this respect, *Luiz Figueiredo Machado*, Brazil's top Climate Change negotiator, argued that the financial crisis has given countries a huge opportunity to build a cleaner future and highlighted the importance of acting without delay to tackle the climate change crisis. However, *Alicia Bárcena*, Economic Commission for Latin America and the Caribbean (ECLAC) Executive Secretary, disagreed with Stern and Figueiredo Machado arguing that at least in Latin America the countries were not ready to include green policies into their fiscal stimulus packages. She drew attention to a paper, prepared by ECLAC, showing that most of the Latin American governments responses to the financial and economic global crisis were focused on the monetary and fiscal sides, rather than on a structural change oriented towards a greener economy, basically due to the lack of sound green investment projects in their countries.

Videos



Nicholas Stern. Presentation on the financial crisis. (Excerpt)



Luiz Figueiredo Machado. Presentation on energy efficiency and deforestation. (Excerpt)



Alicia Bárcena. Presentation on the financial crisis. (Excerpt)

On the US economic stimulus package and its relationship with climate change, *William Pizer*, Deputy Assistant Secretary for the Environment and Energy at the US Department of the Treasury, stated the Obama administration intention to put a strong accent on climate change. However, he mentioned that it is necessary to harmonize the environmental agenda together with the economic and financial so that they all reflect the same priorities. He remarked the importance that Finance Ministries and Treasuries get more involved in environmental issues and climate change. The panelists also discussed issues about energy efficiency, deforestation and the possibilities of achieving an agreement at the United Nations Climate Change Conference to be held in Copenhagen. *Nicholas Stern* suggested the need of linking climate change mitigation, and deforestation in particular, to development and expressed the importance of acting collectively. US Senator *Timothy Wirth* expressed that besides the incremental policy negotiation related to the Kyoto Protocol; there is a need to negotiate a second track composed of several stimulus building blocks (energy efficiency, deforestation, biofuels, and the Clean Development Mechanism - CDM among others). Finally, *Luiz Figueiredo Machado* presented his perspective about Copenhagen, the different parties involved and the outcomes that should be expected.

Videos



William Pizer. Presentation on energy efficiency and deforestation. (Excerpt)



Nicholas Stern. Presentation on energy efficiency and deforestation. (Excerpt)



Timothy Wirth. Presentation on Copenhagen. (Excerpt)



Luiz Figueiredo Machado. Presentation on Copenhagen. (Excerpt)

CASE STUDIES: SOUTHEAST ASIA, MEXICO AND BRAZIL

The second block focused on national and regional case studies on the economic impact of climate change in Southeast Asia, Mexico and Brazil. *Zamzamin Ampatuan*, Undersecretary of the Department of Energy in the Philippines, presented the main findings of a study of the Asian Development Bank (ADB) in Southeast Asia. He emphasized seven points as key messages of the report on climate change: (i) the archipelagic part of Asia, Philippines and Indonesia are extremely vulnerable, in terms of sea rise level, to climate change; (ii) there have been several attempts undertaken on adaptation during the last years by the countries in the region; one example is Indonesia's effort for replanting and protecting mangroves; (iii) the region is offering many cost-effective opportunities for mitigation and adaptation; (iv) regional cooperation is essential to address climate change cost-effectiveness; (v) there is an urgent need for a rapid deployment of appropriate technologies and mobilization of adequate finances; (vi) it is necessary to create public awareness about the climate change problem and to strengthen institutional and human capacities to deal with it; (vii) building a low-carbon and climate resistant, climate-resilient society in the region is both crucial and affordable. Regarding policy implications he called for the need to identify win-win options and emphasized that both adaptation and mitigation are essential. Secondly, he said it is crucial to enhance adaptive capacity and to cooperate on research and development, technology and infrastructure. In this sense, he suggested that the policy agenda on climate change should be oriented to: (i) create incentives for private investment in the form of venture capital and mutual funds focusing on low-carbon and energy-efficient technologies; (ii) increase the regional presence in the global carbon market to reduce the bias towards industrial countries in terms of decision-making; and (iii) provide support on technical cooperation and information-sharing among countries that have similar characteristics. Finally, he stressed that uncertainty about how climate change works implies uncertainty about the extent of future damage, which for Southeast Asia will be greater than the global average. Catastrophic risk will become more evident only in the long run and therefore adaptation today is likely to payoff in the future.

Videos



Zamzamin Ampatuan. Presentation on Southeast Asia. (Excerpt)

Videos

Mario Molina, Nobel Prize winner for his pioneer study of the ozone layer, presented the case of Mexico. He underscored his agreements and disagreements with the Opening Panel. On the agreement side, he said that the cost of taking the necessary measures to deal with climate change is relatively small (1% of global gross domestic product - GDP), and it is certainly much smaller than the cost of the damage. But a remaining question is how to share this cost between developed and developing countries. Although for equity reasons there has to be a transfer of funds from the former to the last, both groups of countries must approach the problem in a collaborative way. The main disagreement, he said, is that Latin America is not really doing much in this respect. Mexico, for example, is showing strong leadership to tackle the climate change issue through its action plan which aims to reduce emissions by 50% in 2050. This would go along with the European commitments 2030, 30% and 2050, 50% (as compared with 1990 levels). Regarding specific measures he emphasized that there are a number of actions that can be implemented immediately with a rather small financial support like fuel efficiency standards in the transportation sector and the building industry. He concluded that the study shows that it would be possible for Mexico to grow while maintaining a low carbon economic growth path. Lastly, Molina called attention on new scientific evidence measuring long lasting effects of CO₂ in the atmosphere, and also on the damaging combined effect of methane, black carbon and other gases controlled by the Montreal Protocol.



Mario Molina. Presentation on Mexico. (Excerpt)

Videos

Sergio Margulis, a Brazilian lead economist of the World Bank's Environment Department, presented the findings of a recent study on the economics of adaptation in Brazil.* The objectives of this study are to contribute to the debate, develop economic analysis, inform public policy, and especially organize institutions. He emphasized the importance of the last one by saying that linking multidisciplinary institutions is very important in the Brazilian exercise and it should be so for all the partner countries. Methodologically, the study is seeking to answer some provoking questions. How does climate change affect specific sectors, regions and ecosystems? What are the overall costs imposed on the economy? Which are the social and distributive impacts? How could adaptation strategies be identified and their costs measured? Another crucial issue would be whether to act now or wait? Good and cost-effective mitigation opportunities exist, he continued, but there are significant trade-offs among global, national and local costs and benefits. He disagrees with the recurrent statement that curbing deforestation is a win-win measure because normally it would imply very large costs (i.e. Brazilians are not deforesting the Amazon just to destroy it). Consequently the differences among local, national and global interests should be recognized in order to explore feasible trade-offs. Next, he said that the general structure of the study is composed of two blocks. One, the mitigation measures, which were basically biofuels (particularly alcohol), deforestation (mainly the Amazon basin) and energy efficiency. The second block includes all the sector impacts especially water supply for all uses, effects on agriculture and main crops, sea level rise, biodiversity, health and migration among other dimensions. The components of both blocks would be linked into a computable general equilibrium model in order to analyze overall impacts, costs and distributive issues. Of course, he added, there are relevant intermediate interactions like energy, agriculture and forests competing for land (food, biofuels and conservation). Instead of looking for win-win measures, the study emphasizes the analysis of trade-offs.

* ECONOMIA DO CLIMA. *Economia da mudança do clima do Brasil: custos e oportunidades*. Resumo Executivo. http://www.economiadoclima.org.br/files/biblioteca/RESUMO_FINAL.pdf.



Sergio Margulis. Presentation on Brazil. (Excerpt)

INTERNATIONAL FINANCE AND INVESTMENT FOR CLIMATE CHANGE

The Closing Panel focused on the possibilities of accelerating and spelling out international finance and investment for climate change. The panelists addressed the scale and nature of the challenge for adaptation and mitigation and discussed the question of how to promote, encourage, and foster the kind of investments necessary for this. *Warren Evans*, from the World Bank, argued that the international community has more knowledge on mitigation than on adaptation since there is much more accumulated experience on the former and it is much more difficult to estimate the costs associated to the latter. On this regard, *Juan Pablo Bonilla*, from the IDB, suggested that a key question is how to implement both adaptation and mitigation projects on a bigger scale. In addition, *Nick Robbins*, Head of HSBC Climate Change Centre for Excellence, argued that probably most of the money for this kind of projects should be provided by the private sector. Finally, regarding concrete examples of mitigation, Bonilla mentioned several examples in Latin America like the mass transportation system in Bogota, the “TransMilenio”, and the energy efficiency program in Mexico. On adaptation, he mentioned the huge project undertaken by the Ministry of the Environment and the National Institute of Health in Colombia to prevent diseases like malaria and dengue and the wastewater management program in the Caribbean, intended as an integral approach to protect the coral reefs and at the same time apply good practices of wastewater through renewable energy.

Videos



Warren Evans. Presentation on finance and investment for climate change. (Excerpt)



Juan Pablo Bonilla. Presentation on Latin American projects for climate change mitigation. (Excerpt)



Nick Robbins. Presentation on finance and investment for climate change. (Excerpt)

The Conference made it possible a fruitful exchange of concepts, ideas and experiences almost one year before the Copenhagen Summit. It also exposed the analytical underpinnings of the complex negotiating scheme that would jeopardize meaningful consensus on most matters leading to setting up Country Commitments at that meeting. ♦*

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Articles

ANTICIPATING PRESSING ISSUES IN INTEGRATION: THE TRADE, CLIMATE AND SUSTAINABLE DEVELOPMENT NEXUS

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No environmental issue has ever had more implications for trade than climate change. Altered weather patterns will reshape important sectors of economic activity such as agriculture, fisheries, and tourism. And policy responses to climate change -moves to mitigate emissions and promote adaptation- will directly affect the way we produce and consume. They will affect not just what we trade, but how we trade it; international transport costs are sure to be influenced. Trade-related activity can in turn affect climate and help or exacerbate its unnatural change. Trade-led growth can increase consumption and add to emissions. But freer trade can also lead to more efficient resource use, thus reducing production-related emissions, for instance. Despite the obvious links, the relationship between trade governance and efforts to address climate through the crafting of international rules and policy frameworks, has been characterized by avoidance rather than collaboration over the past 20 years. This is no longer the case. With the negotiations for international cooperative approaches to climate change yielding little of concrete value, some individual countries have gone ahead with domestic policies to reduce emissions. These moves, however, have been accompanied by ensuing concerns about competitiveness: would domestic producers be able to compete with foreign growers or manufacturers that face lesser carbon constraints? Would production simply move abroad to less demanding jurisdictions? One option to address competitiveness concerns that seems likely to figure in US legislation, but has also received much attention in the European Union (EU) and other in the Organization for Economic Co-operation and Development (OECD) and emerging economies, is "border carbon adjustments" (BCAs), i.e., tariffs on goods from unconstrained economies. While not without a certain economic rationale, BCAs would be controversial. Target countries would see them as a threat to export-led growth, and, in the case of developing countries (DGCs), as punishment for a problem they may not have created. And a World Trade Organization (WTO) dispute ruling on BCAs would likely infuriate either environmentalists or DGCs, and possibly both. And the ultimate question begs to be asked, what impacts would BCAs actually have on emissions?

In the run-up to the Copenhagen Conference, most developing nations pushed strongly for a blanket prohibition for developed countries (DDCs) to using "any form of unilateral measures, including countervailing border measures, against goods and services imported from DGCs". However, there is a separate issue that may merit even greater attention from a trade perspective, particularly sensitive for DGCs: free emission allowances in the context of national cap-and-trade systems. Such instruments are almost certain to be part of climate policy in most OECD countries, with considerable potential ramifications for competitiveness in the future. Moreover, if applied in the agricultural sector, they may dramatically reverse years of reform efforts aimed at levelling the playing field on trade-distorting support. Both, BCAs and allowances, are seen by many analysts as the type of policy tools that, once created, would rapidly generate entitlements, vested interests and, if left undisciplined, turn into a hellmouth, the way antidumping has.

INTRODUCTION

Though true, it has become trite to say that climate change is one of the biggest challenges facing humanity, threatening to radically alter the lives of billions in the decades to come. So we shall focus our attention on this: no environmental issue has ever had more implications for trade.

The environment is the context for all economic activity, trade included. It has long been clear that trade can have implications for the environment. In the 19th century, for example, the phylloxera aphid crossed the Atlantic with some imported vines to devastate the European wine industry.

Even links between trade policy and environmental damage are nothing new: a bilateral spat over cross-border pollution from a smelter affected talks on reciprocal tariff reductions between Canada and United States (US) in the 1930s.

As global rules for regulating trade and then for the environment started to take shape in the second half of the 20th century, the links between the two slowly began to receive formal recognition.

The 1947 General Agreement on Tariffs and Trade (GATT) allowed countries to deviate from normal obligations to protect human, animal, and plant health or to conserve exhaustible natural resources (a GATT group on environmental measures and trade was created in 1971, but did not meet for 20 years). Two of the first multilateral environmental accords regulated trade in endangered species and ozone-depleting substances.

As the scope of trade rules reached beyond tariffs to "behind the border" policies, environmentalists grew concerned about the prospect of limits being placed on national governments' ability to introduce environmental and health-related regulations. There were also fears of a "race to the bottom", in which production would move to jurisdictions with weak environmental and labour protections, causing governments anxious about staying competitive to ratchet standards down rather than up.

A few prominent cases seemed to lend credence to these concerns. A series of GATT rulings against an import ban that US imposed on Mexican tuna imports in the name of protecting dolphins infuriated environmentalists. Foreign investors successfully used protections in bilateral investment treaties and free trade agreements (FTA) to argue that some health and safety regulations were tantamount to expropriation.

With the advent of the WTO in 1995, things appeared to change, at least at the multilateral level. In a landmark ruling, the Appellate Body said that a unilateral US import ban on shrimp caught by methods that harmed endangered sea turtles was in fact justifiable -except for the fact that it had been applied in a discriminatory manner. A series of subsequent rulings established the legitimacy and legality of *appropriately designed and fairly applied* environment-related trade measures in the eyes of the global trade body. However, the balance struck in these rulings often remained contentious.

Climate change involves virtually all of the same issues, but on steroids.

Seriously curbing carbon emissions would involve a significant rise in the price of fossil fuel-based energy,

in turn raising production costs. Just how much these costs would rise is the subject of heated debate (and increasing analysis), but many governments worry that it could significantly damage the international competitiveness of domestic producers.

While concerns about a race to the bottom have proved largely overblown for many kinds of pollution, many fear that for greenhouse gas (GHG) emissions, there is a serious chance of “carbon leakage”: a shift in global market share or relocation of investment from carbon-constrained economies to those facing fewer or no curbs on emissions, with no net gains (or even net losses) for the atmosphere.

Carbon leakage fears would have been put to rest with a comprehensive global accord on curbing GHG emissions last December in Copenhagen. A treaty would have established countries’ fair share of a worldwide mitigation effort, eliminating disagreement over “carbon pollution havens”. Instead, some countries are continuing to consider the unilateral imposition of climate-related tariffs, often called “border tax adjustments” (BTAs) or “border carbon adjustments” (BCAs). In theory, these adjustments -either a tariff on imports or a rebate for exports- would offset any competitive advantage other countries would gain through the absence of carbon constraints.

If turtle-related trade measures were controversial, climate-related ones would be explosive. While they could in principle be WTO-consistent if carefully designed and implemented -indeed, the WTO already has rules for “adjusting” other taxes, such as consumption or value-added taxes-¹ there would be many potential pitfalls. First, from a practical standpoint, product-specific emissions are hard to assess, and, under cap-and-trade schemes, carbon prices fluctuate, and “comparable action” to curb emissions is hard to determine.

From a political standpoint, the calculus is even more complicated.

A WTO dispute launched against a border carbon adjustment scheme would instantly become the most controversial and most heavily watched case ever put

to the global trade body. It would likely take years to adjudicate, with no certainty that any outcome would be very conducive to the cooperative governance of international trade. It may place extraordinary stress on the WTO system.

If a WTO dispute panel found a BCA WTO-inconsistent, incensed environmental groups would argue that the WTO stood in the way of effective action on climate change. If a BCA were deemed to be in line with WTO law, the DGCs that would be its likely targets would almost certainly see a plot to deny them market access paid dearly for in past trade negotiations. Many emerging economies see BCAs as a tool to make them foot the bill for mitigating climate change even though they bear little responsibility for existing levels of GHG emissions in the atmosphere. An argument which they see hard-wired as a fundamental principle in climate negotiations through the concept of “shared but differentiated responsibility”.

Nevertheless, the fact of the matter is that carbon-related trade provisions -whether ultimately applied or not- are likely to figure in any politically saleable climate legislation in US; some in Canada had hinted that their government will immediately follow the US approach, and possibly in Europe as well. Some other OECD as well as some non-OECD countries are actively looking at options to respond with equivalent measures or retaliatory action. Before delving into the likely ramifications of this, particularly for countries in Latin America, it is necessary to look at the existing international rules pertaining to climate change.

THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

The United Nations Framework Convention on Climate Change (UNFCCC), which entered into force in 1994, is the foundational international treaty on climate change. Its primary objective is to stabilize atmospheric concentrations of GHGs in order to avoid “dangerous anthropogenic interference” with the climate system. This objective has three guiding conditions:

- It should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change;

¹ GATT Article III - See also in particular World Trade Organization (WTO) and United Nations Environment Programme (UNEP). *Trade and Climate Change*. Geneva. 2009.

- It should ensure that food production is not threatened; and,
- It should enable development to proceed in a sustainable manner.

The convention stressed that actions taken to address climate change should respect all parties' efforts to achieve sustainable development. It established important principles:

- Equity;
- "Common but differentiated responsibilities and respective capabilities";
- The full consideration of specific needs and special circumstances of DGC parties, especially the most vulnerable;
- Acceptance that lack of full scientific certainty is not a basis to postpone action (precautionary approach);
- The importance of cost-effectiveness of policies and measures;
- The right of parties to pursue their sustainable development; and,
- The importance of avoiding unjustifiable discrimination or disguised restrictions on trade.

In sum, the UNFCCC asserted that all countries should contribute to addressing climate change, and that DDCs should take the lead and provide finance and technology to assist others in their efforts to mitigate and adapt to climate change.

Within three years of the convention's entry into force, nations adopted the Kyoto Protocol.² Under this, industrialized nations (so-called Annex I Parties; the group also included post-Soviet transition economies),

² The Protocol was initially adopted on December, 1997 in Kyoto, Japan and entered into force, with Russia's ratification on February, 2005. To enter into force, Kyoto required at least 55 parties to ratify the agreement and for the total of those parties emissions to be at least 55% of global production of GHGs. Up to 2010, 189 countries and one regional economic integration organization have ratified the agreement. Of the signatories, only US refused to ratify the Protocol.

agreed to an average of 5.2% overall reduction of GHGs from 1990 levels, within the first commitment period (2008-2012). Non-Annex I countries, including all DGCs, faced no similar target under the Kyoto Protocol.

The Kyoto Protocol, which entered into force in 2005, introduced three market-based "flexibility mechanisms", which gave shape to the current multi-billion dollar carbon market. Although countries with commitments under the protocol must meet their targets primarily through national measures, these three mechanisms -the Clean Development Mechanism (CDM), Joint Implementation (JI), and Emissions Trading Schemes (ETS)- allow rich countries to purchase reductions in DGCs and countries in transitions, or to establish carbon-trading schemes.³

It must be noted that current scientific calculations indicate that the Kyoto Protocol targets are far below what is necessary to stabilize the climate system. And many governments have fallen well short of their Kyoto targets.

Also in 2005, participating governments initiated two sets of discussions to address future approaches to climate change. An *Ad Hoc* Working Group on Further Commitments for Annex I Parties to the Kyoto Protocol (AWG-KP) was mandated to consider future commitments for Annex I Parties following the close of the first commitment period in 2012. It was to address mitigation potential and ranges, and means to achieve mitigation objectives. The second process was the Convention Dialogue, which was to address long-term global cooperation on climate change. This was succeeded by the *Ad Hoc* Working Group on Long-term Cooperative Action (AWG-LCA) following the Bali Climate Conference in December 2007. At that conference, parties adopted the Bali Action Plan, which called for:

³ The Kyoto Protocol introduced three market-based mechanisms, thereby creating what is now known as the "carbon market". The **CDM** allows a country with an emission-reduction commitment under the Kyoto Protocol to implement emission-reduction projects in DGCs. **JI** allows a country with an emission reduction or limitation commitment under the Kyoto Protocol to earn Emission Reduction Units (ERUs) from an emission-reduction or emission removal project in another Annex B Party. **ETS** allows countries that have emission units to spare (emissions permitted them but not "used") to sell this excess capacity to countries that are over their targets.

- A shared vision for long-term cooperative action;
- Enhanced national and international action on mitigation;
- Enhanced action on adaptation;
- Enhanced action on technology development and transfer to support action on mitigation and adaptation; and,
- Enhanced action on the provision of financial resources and investment to support action on mitigation and adaptation and technology cooperation.

The Copenhagen Climate Conference did not succeed at putting in place the operational mechanisms -on finance, on technology, on adaptation, and so forth- necessary to implement obligations that have gone largely unfulfilled over the past 15 years.

DOES THE TRADE REGIME ADDRESS CLIMATE CHANGE?

The rules-based international trading system, consisting of the multilateral WTO and a large number of bilateral and regional trade agreements of varying scope and geographical coverage, establishes rules for commercial exchange (and, in many cases, for trade-related inside-the-border policies, as noted above). These regulations can by definition either constrain or enable the global transition to a low-carbon economy.

Climate change presents several challenges that are directly relevant to trade policy and regulatory systems:

- The biophysical impacts of climate change will directly impact sourcing, land use, and production and trade flows, and most likely, terms of trade and competitiveness. We are now quite certain that agriculture will be altered by changed weather patterns, shifts of crops and herds, and changed methods of production. This will have considerable implications for trade flows;
- The means used to transport goods locally and internationally would be affected by the necessary rise in the cost of carbon-based fuels;

- Moves to promote mitigation and adaptation, including national and sub-national policy strategies, will imply major transformations to consumption and production patterns, and consequently for trade.

The challenge for climate and trade policy is to steer a transition of this magnitude without compromising development and growth prospects. Cooperative international action, such as through the UNFCCC, is crucial to managing the impacts on competitiveness in an equitable manner.

Over the past 20 years, the relationship between multilateral policy-making on climate and trade has been characterized by avoidance rather than collaboration.

The climate regime, unlike some other environmental agreements, has avoided the use of trade measures to implement its objectives. But the obvious links, coupled with the politics of climate discussions, seem to be pushing for convergence, particularly given the simultaneous struggles of both the WTO and the UNFCCC.

The most concrete opportunity for advancing both agendas at once is presented by the WTO's Doha Round negotiations on the liberalization of trade in Environmental Goods and Services (EGS). Yet, due mostly to a stalemate in the trade talks, little movement has been made on that front. Interestingly, though, the very lack of synchronicity between the climate and trade processes might push major players such as the OECD countries and China to pursue a stand-alone initiative to liberalize trade in certain environmental goods.

More generally, there is great potential for the trade regime to support climate mitigation and resiliency, although experts note that areas of potential collaboration need to be carefully defined.

Given the importance of the rapid diffusion and development of low-carbon technologies, trade experts have been evaluating the possibility and actual consequences of facilitating the use of flexibilities under the Agreement on Trade-Related Aspects of Intellectual Property Rights, in a manner comparable to what has been done for public health. For the moment, evidence-based analysis in this area demonstrates a very significant difference in technology and innovation in medicines compared to climate-related technologies. In the climate negotiations most DDCs have resisted

any perceived loosening of intellectual property protections, both for mercantilist reasons and given the uncertain wisdom of such an approach.

There are several other areas where trade rules may be relevant to measures aimed at mitigating climate change. These include the WTO's general prohibition against use of quantitative restrictions at the border and the general non-discrimination principle, as articulated in trade law through the most-favoured-nation and national treatment principles. A review of existing disciplines on subsidies for both agricultural and industrial goods, could be helpful to establish how climate-friendly practices could be supported (or at least not hampered). Rules on technical regulations and standards, including on sanitary and phytosanitary measures, could also have implications for trade in climate-friendly products.

The WTO's existing, "regular" (i.e., non-negotiating) committees on Technical Barriers to Trade and on Trade and Environment are two "Doha-neutral" WTO fora in which countries could, in theory, explore areas of mutual benefit through the trade and climate regimes -if they are willing to do so.

Some work has been done to explore ways to leverage financing and investment for climate change mitigation and adaptation activities through the trade regime.

Of course, the use of trade measures in the context of domestic climate change regimes, such as border carbon adjustments or trade-distorting emission allowances and rebates, is another topic of clear interrelatedness between the trade regime and climate change policy. US' draft national climate legislation, which includes provisions for BCAs and emission allowances, will be explored below.

HOW DO THE CLIMATE RULES AND NEGOTIATIONS ADDRESS TRADE?

As mentioned above, the climate regime has generally avoided interaction with the issue of trade, except for a few precise areas.

Article 3.5 of the UNFCCC and Article 2.3 of the Kyoto Protocol provide that measures taken to combat climate change should not constitute a means of

arbitrary or unjustifiable discrimination or a disguised restriction on international trade. The articles also stipulate that such measures should be implemented so as to minimize adverse effects on international trade, as well as the social, environmental and economic impacts on other parties.

Article 3.5 of the Convention further emphasizes the importance of cooperation to promote a supportive and open international economic system that would lead to sustainable economic growth and development for all.

Article 3.14 of the Kyoto Protocol asks parties to implement their commitments in a way that minimizes the adverse social, environmental and economic impacts on DGCs. An implementing decision for this article (Decision 31/CMP1) sets out a work plan to address the removal of subsidies and trade barriers in this regard. Talks in the AWG-KP last year explored the benefits and potential adverse effects of various kinds of policies for technological change; switching from international to local sourcing; the adoption of standards; and tariffs, taxes and subsidies.

In the run-up to the Copenhagen Conference, trade surfaced in discussions, primarily in response to the potential border tax measures being floated by some DDCs. Citing Article 3 of the UNFCCC, developing nations pushed for language in a prospective accord prohibiting DDCs from using "any form of unilateral measures including countervailing border measures, against goods and services imported from DGCs on grounds of protection and stabilization of the climate".

BCAs IN COPENHAGEN

During the December negotiations in Copenhagen, language was considered for three alternative options, which currently remain valid for negotiation as they appear in the latest draft, dated December 18th as text from the ACW-LCA, Annex VII, "Economic and social consequences of response measures":

Alternative 1:

Agrees that DDC Parties shall not resort to any form of unilateral measures, including fiscal and non-fiscal border trade measures against goods and services from DGC Parties on any grounds related to climate change, including protection and stabilization of climate, emissions leakage and/or cost of environment compliance, recalling the principles and provisions of

the Convention, in particular Article 3, paragraphs 1, 4 and 5, Article 4, paragraphs 3 and 7. By referencing those specific articles of the Convention, this language is intended to rule out any possible use of such measures.

Alternative 2:

Urges Parties to take into account the principles of the Convention including its Article 3, paragraph 5, in relation to the economic and social consequences of response measures. This formulation uses language from GATT Article XX. Indeed, the Convention's Article 3.5 states that "Means taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade (...)".

Alternative 3, appearing as a middle ground option:

Agrees that Parties, in the pursuit of the objective and implementation of the Convention, shall not resort to any measures, in particular unilateral fiscal or non-fiscal measures applied at the border against goods and services imported from Parties, that constitute a means of arbitrary or unjustified discrimination or a disguised restriction on international trade, taking into account the relevant provisions of the Convention and further recognizing the principle enshrined in Article 3, paragraph 5.

As mentioned above, the talks in Copenhagen failed to resolve these differences. The three-page political agreement reached there, dubbed the Copenhagen Accord, did not even mention the two most contentious trade-related issues at stake here, i.e., these border carbon adjustments or the role of intellectual property rights in limiting access to climate-friendly technologies.

ON THE SUBJECT OF BORDER CARBON ADJUSTMENTS

It seems inevitable that varying levels of commitments to reduce GHG emissions will influence competition. Industries facing higher production costs than their competitors in other countries are likely to see their profit margins reduced; they may even risk losing shares both at home and in export markets. There is also a risk of carbon leakage.

The wisest solution to political tensions arising from competitiveness concerns would be a deal on emission

reduction that covers all major economies. This would reduce, though not necessarily eliminate, problems of leakage. It would also be the most efficient solution to combating climate change.

However, until there is a detailed international agreement that addresses the links between competitiveness and climate policy to the satisfaction of all major economies, the door will remain open to unilateral action linked to national efforts on climate change.

The extent to which the competitive playing field would be tilted by a country's carbon constraints is hard to estimate. We don't yet know how much different countries intend to reduce emissions. The more countries that contribute, the smaller the leakage risk. The bigger a given country's reduction effort relative to others, the higher the risk for leakage.

In response to these concerns, the possibility of using climate change-related tariffs or equivalent measures (under various names) has increasing features in climate policy discussions in US and some European countries.

Apart from the discussions about whether such taxes are legal or feasible, a few important questions need to be asked. *One*, would BCAs contribute to protecting the environment? *Two*, would they help the economy of the country imposing them? And *three*, what would they do to the world economy?

We must also recognize from the outset that there are two distinct sets of considerations at play here: economic rationale, and the demands of political economy.

There is a certain economic rationale for placing tariffs on exports from countries that do not place constraints on the price of carbon. Tariffs are a cost borne by domestic consumers, however much of the mercantilist lens through which we tend to view trade relations makes us see them strictly as a penalty on would-be exporters. A border tax adjustment could, as Paul Krugman has pointed out, make a consumer pay for the carbon embodied in an imported product just as he would already be paying for the carbon embodied in a domestically-made alternative.⁴

⁴ <http://krugman.blogs.nytimes.com/2009/06/29/climate-trade-obama/>

On the other hand, there is some evidence that the feared competitiveness effects of carbon-reduction policies are overblown. There does not seem to be a strong case supporting BCAs, except perhaps for a handful of energy-intensive goods. Energy expenditures generally account for a small share of final goods prices, and the practical costs of imposing BCAs would be considerable.

The political discussion is more muddled -and, in terms of the ultimate shape of national policies, it is the domestic political debate that is likely to count. Fears of leakage, founded or not, are impeding concrete action on the environmental front in some countries, especially US. Some argue that BCAs might be one way to get around that.

Washington analysts following the trade and climate debate have suggested that any US legislation to cap carbon emissions will necessarily include border provisions for imports if it is to win support in Congress. Similar developments are starting to be seen in the EU as industries affected by the European Emissions Trading System (ETS), such as the cement and minerals sectors, show real evidence of competitiveness-driven leakage.

However, the realities of policy-making being what they are, a government's attempts to design a unilateral carbon tariff measures would be besieged by a wide range of different interest groups. Instead of the perfect offset imagined by Krugman, a country could well end up with a policy peppered with exceptions, de facto subsidies in the shape of free offsets, and other sweeteners for influential sections of domestic industry.

In addition, we cannot focus exclusively on domestic politics in US and the EU. For countries not responsible for historic emissions, the threat of BCAs adds insult to already-real injury. The poorest DGCs are already footing the bill for adaptation to a problem they did nothing to create. Will somewhat better off economies now be forced to forfeit potential growth just so rich countries can get their act together on mitigation? How would border tax adjustments for carbon be consistent with the principle of "common but differentiated responsibilities" already enshrined in the United Nations Framework Convention on Climate Change (UNFCCC)? Unilateral BCAs would affect their engagement at the multilateral level, and not help cooperative governance on either climate change or trade.

US CLIMATE LEGISLATION: WHAT MIGHT BCAs, ALLOWANCES AND REBATES LOOK LIKE?

What might BCAs actually look like in practice? The only fleshed out example comes from the so-called Waxman-Markey bill passed by the US House of Representatives in June 2009. It is far from clear that the bill, named for its sponsors, will become law. The Senate still needs to ratify it or pass similar legislation and reconcile the two versions, and there are signs in Congress of considerable disenchantment with the bill's "cap-and-trade" approach.

Nevertheless, the Waxman-Markey bill sets out clear rules for BCAs, illustrating for other countries and foreign industry how they might one day operate. It would eventually require importers of heavily-traded energy-intensive products to purchase emissions allowances, a measure that is tantamount to a tariff. Sectors likely to be affected include chemicals, iron and steel, cement, glass, lime, some pulp and paper products, and non-ferrous metals such as aluminium and copper.

Last-minute provisions added to the bill reduced the president's discretion to prevent the trade measures from kicking in; in the form in which it was passed, Congress would have to formally approve a presidential declaration that border measures are not in the "national economic interest".

Under the bill, countries are potential targets for border tax adjustments if they:

- i. Are deemed *not* to have emissions reduction targets "as stringent" as the US, whether as part of a global climate deal or a sectoral initiative.
- ii. Account for at least 0.5% of global emissions OR more than 5% of US imports in an industrial sector.
- iii. Have GHG intensity higher than that in the US, in the sector in question.

The policy specifically aims at large DGC emitters like China, Brazil, and India. Virtually all DDCs will have some sort of binding emissions reduction commitment. Also excluded from the extra charges are exports from the least-DDCs. Imports would be free from the emissions allowance purchase requirements if 85% of US imports of the product come from countries with binding emissions reduction targets (or lower energy intensity).

A separate provision in the Waxman-Markey bill presents a different potential trade irritant: it provides for domestic trade-exposed energy-intensive industries to receive rebates for the costs of complying with the climate change legislation. These rebates, could under certain circumstances over-compensate carbon-efficient plants, thus acting as a subsidy. In principle, the administrator of the BCA scheme is supposed to reduce, or even eliminate, extra charges on imports to offset subsidies received by competing domestic industry.

One Senate climate bill, named for sponsors John Kerry (Democrat-Massachusetts) and Barbara Boxer (D-California) also includes a cap-and-trade scheme (although it doesn't call it one). The bill suggests emissions cuts of 20% from 2005 levels by 2020, against 17% in the House bill. Unlike the House legislation, the Boxer-Kerry bill declined to flesh out details for some controversial issues, leaving it to Senate committees to fill in gaps. For instance, it does not specify how emissions allowances would be distributed (for instance, would all of them be auctioned or would some, or all, of them be given away for free). It has no details for BCAs, stating only that *"it is the sense of the Senate that this Act will contain a trade title that will include a border measure that is consistent with our international obligations and designed to work in conjunction with provisions that allocate allowances to energy-intensive and trade-exposed industries"*. One notable provision would set a range within which carbon prices would be allowed to vary, which would help reduce uncertainties.

A different Senate bill, sponsored by Maria Cantwell (D-Washington) and Susan Collins (R-Maine) would create a "cap-and-dividend" system, under which instead of allowing major polluters to trade emissions permits, all allowances would be sold, and the bulk of proceeds returned to taxpayers. It provides for BCAs on carbon-intensive goods from countries without "comparable" emissions restraints along with "targeted relief funds" (i.e., rebates) to sections of domestic industry whose competitiveness in export markets is harmed by the absence of such restraints elsewhere. However, unlike Waxman-Markey, the bill does not include specific benchmarks for identifying trade-exposed energy-intensive sectors, kicking that back to various government departments following enactment. The bill does, it should be noted, stress the primacy of multilateral commitments, saying that import fees or subsidy funds must be *"compatible*

with the obligations of the US with respect to any applicable international trade agreement or treaty to which the US is a party".

At time of writing in spring 2010, the Congress had spent months preoccupied with healthcare before finally passing legislation on it in March. The fate of economy-wide cap-and-trade legislation in Congress remains uncertain. Influential senators have suggested that sector-specific approaches may be more feasible. A much-awaited bipartisan Senate bill developed by Lindsey Graham (R-South Carolina), John Kerry, and Joseph Lieberman (Independent-Connecticut) was thrown into limbo just before it was expected to be unveiled, when the Republican Graham withdrew support for the measure after a spat with the Democrats over immigration policy. That bill was expected to include some sort of border measures. Although Barack Obama was critical of the BCA provisions in the Waxman-Markey bill when it was passed last June, recent suggestions from senior members of his administration suggest the White House could accept trade measures in a Senate climate bill.

As for preliminary reactions from other countries to these potential moves towards BCAs, no Geneva-based trade diplomats we have spoken to have drawn an explicit link between the Waxman-Markey legislation and the Doha Round. However, emerging economies naturally are suspicious, since they know they are the target. One might wonder why China or India would want to make additional concessions to secure better access to the US market if Washington stood poised to nullify those gains with BCAs.

The EU has not reached a position on BCAs, though it has not ruled out the possibility of introducing them in the future. France strongly supports the idea, although the Commission thus far has been opposed.

HOW MIGHT LATIN AMERICAN AND CARIBBEAN COUNTRIES BE AFFECTED BY BCAs AND EMISSION ALLOWANCES?

The likelihood of any country, Latin American and Caribbean (LAC) nations included, being slapped with trade barriers depends on a great number of variables, above all what eventual climate laws in key trading partners look like.

In US, for example, much will depend on the extent to which federal agencies and the White House have discretion over when trade measures kick in (it is possible that trade measures will need to be *in* a climate bill to get it passed in Congress, but that the presidential administration will refrain from actually using them), and so forth.

Using the only set of specific parameters for border measures -those in the Waxman-Markey bill- we can start to estimate how countries in LAC might one day find their exports to some key markets affected by border measures.

Based on data for 2006 from the US Department of Energy, only five countries in the Western Hemisphere other than the US surpass the Waxman-Markey bill's threshold of 0.5% of global emissions: Argentina, Brazil, Canada, Mexico, and Venezuela.

As for the other key threshold, accounting for more than 5% of US imports in a covered sector, a preliminary look at US import data for several trade-exposed energy-intensive industrial sectors suggested that even some countries not traditionally thought of as major emitters might potentially be the target of BCAs (see [Table 1](#)).

In LAC, Chile and Peru account for more than 5% of US imports of copper and copper products. Trinidad and Tobago accounts for over a tenth of US imports under the HS system's chapter for inorganic chemicals, compounds of precious metals, and rare earths. Bolivia and Peru account for over 5% of US tin imports.

As per the terms of the Waxman-Markey bill, these countries, too, would potentially face BCAs unless their energy intensity is demonstrably lower than their US competition, or if the US sources the vast majority

Table 1

**DGCs ACCOUNTING FOR MORE THAN 5% OF US IMPORTS
IN TRADE-EXPOSED ENERGY-INTENSIVE SECTORS, 2008**

Aluminium and articles thereof	HS 76	China
Articles of stone, plaster, cement, asbestos, mica	HS 68	Brazil, China, India, Mexico, Turkey
Base metals	HS 81	China
Copper and articles thereof	HS 74	Chile, China, Mexico, Peru
Glass and glassware	HS 70	China
Inorganic chemicals; organic or inorganic compounds of precious metals, rare-earths	HS 28	China, Trinidad & Tobago
Iron and steel	HS 72	Brazil, China, Mexico
Iron and steel articles	HS 73	China, Korea, Mexico, Taiwan
Lead and articles thereof	HS 78	Mexico
Nickel and articles thereof	HS 75	
Ores, slag, and ash	HS 26	Brazil, Kazakhstan, Namibia, South Africa
Paper and paperboard	HS 48	China
Sulfur; earths and stone; plastering materials, lime and cement	HS 25	China, Mexico, Morocco
Tin and articles thereof	HS 80	Bolivia, China, Mexico, Peru
Zinc and articles thereof	HS 79	China, Mexico

Source: Data from the US Department of Commerce and the US International Trade Commission.

of the rest of its imports of those commodities from countries with binding emissions targets.

These calculations are based on a fairly crude aggregation of data -the HS 2-digit level- and a rough estimate of which sectors would surpass the Waxman-Markey thresholds for energy-intensity and trade exposure. An eventual US law would identify products at a much more detailed level.

More research is necessary to generate a better picture of which industrial sectors, countries and products stand to be affected, and to assess the risks and opportunities facing DGCs in the Western Hemisphere and elsewhere.

Another area where further examination is called for is the domestic industries of the vulnerable sectors of the countries in question. How does their GHG intensity comparable compare to their US competitors? It is possible that the right kinds of investments could help them reduce the chances of one day being slapped with BCAs -and reduce emissions in the bargain.

EMISSION ALLOWANCES AND REBATES: YET ANOTHER POTENTIAL TRADE DISTORTION

A separate issue may merit even greater attention from DGCs than BTAs: free allowances and rebates to energy-intensive sectors as part of DDC cap-and-trade programmes. While the spectre of BCAs has understandably preoccupied many DGCs in the trade and climate change debate, free allowances are almost certain to be part of climate policy in most DDCs, with considerable potential ramifications for competitiveness in the future.

The free allocation of emission allowances and rebates within a cap-and-trade scheme is a way of reducing the costs for the domestic industry for complying with emission reduction targets, while preserving a market price for carbon emissions and thus the incentives to reduce carbon emissions. The basic idea behind the concept is that a certain number of allowances are allocated free of charge. If a particular installation makes use of its allowances, it does not need to pay an extra cost for the carbon emitted during the production process. However, should the installation instead be able to reduce the

emissions related to the production process, it can sell the allowances on, thereby making a profit. In other words, for installations using the allowances, there is an opportunity cost associated with the emissions.

Now, why would there be any reason to be concerned about this? Well, as long as emissions are free in most countries, the free allocation of emission allowances in other countries may seem rather harmless. However, as emission allowances are being sold for profit, the free allocation could in principle be considered a subsidy, capable of distorting trade. Furthermore, if agriculture is included in a cap-and-trade system, allowances may exacerbate internal support levels and may be deemed in violation of the WTO subsidies agreement, or contradict new modalities for agricultural reform current under negotiation in the context of the Doha Round.

Contrary to the case of BCAs, free allowances are not simply a tool being discussed in relatively vague terms, but a real response measure already fully functioning and likely here to stay. The European Commission, for instance, has set out three criteria for identifying exposure to a "significant risk of carbon leakage" for the purposes of determining which industrial sectors merit free emissions allowances under the EU's domestic cap-and-trade scheme:

1. If the trade intensity of the sector (imports plus exports over total market size) is at least 10%, and complying with the emissions reduction commitments entails increases production costs by 5% or more; OR
2. If production costs rise by more than 30%; OR
3. If trade intensity is above 30%.⁵

The Commission has published in December 2009 a list of 258 potentially sensitive sectors and subsectors that may be covered in their allowances scheme. The list identifies dozens of sectors, from coal to the mining and production of ferrous and non-ferrous metals to several kinds of fibres, textiles, and machinery of

⁵ Commission Decision of 24 December 2009 determining, pursuant to Directive 2003/87/EC of the European Parliament and of the Council, a list of sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage [notified under document C(2009) 10251], <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:001:0010:01:EN:HTML>

varying degrees of sophistication, and even some food products. In addition to criteria above, determination of eligibility could well depend on whether the EU finds that other countries are making mitigation efforts comparable to those of the EU in specific sectors. The countries the Commission would be looking at would include its main trading partners as a general rule, but also emerging economies. If other countries are important competitors in a particular sector, they would also be included in the exercise. In EU debates on WTO compatibility, it has so far been assumed that these allowances would be non-actionable subsidies and thus defensible. Something debatable.

CONCLUSION

Climate change presents several challenges that are directly relevant to trade policy and regulatory systems. The biophysical impacts will directly impact the productive capacities worldwide, in particular in DGCs, and consequently trade flows. Moreover, the means used to transport goods will eventually be affected by policies aiming at increasing the cost of carbon-based fuels, and measures to promote mitigation and adaptation will imply major transformations for production and consumption patterns.

Inversely, trade is capable of influencing climate change. Trade in itself is an important factor for growth, creating opportunities for increased consumption and thereby

adding to emissions. At the same time, free trade can contribute to a better use of resources, and thus reduce the impact on climate change arising from production.

In spite of these synergetic dynamics, the relationship between multilateral policy-making on climate and trade over the past 20 years, has been characterized by avoidance rather than collaboration. In addition, the lack of real progress in the UNFCCC-negotiations in putting a global price on carbon emissions has now led to a situation where countries committed to combating climate change are putting in place domestic climate change policies, sometimes including plans of controversial trade measures such as border taxes and free allocation of emission allowances. Such measures would put both the trading system and the climate change negotiations under tremendous stress, at a time when the world needs more international co-operation rather than less.

The quest for a low-carbon future, the positive approach to addressing both climate change and energy shortfalls, is an opportunity to redesign policy frameworks and incentives. If Latin American countries jump on the wagon of better understanding their possibilities in this emerging world, the competitive edge of its production should be enhanced rather than compromised. Similarly critical should be evidence-based and strategic-grounded activism by Latin American negotiators and policy communities in the crafting and definition of the accompanying frameworks at multilateral and regional level on trade and climate. ♦

GLOBALIZATION, CLIMATE CHANGE AND LATIN AMERICA: IMPLICATIONS FOR DEVELOPMENT

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Delay in reaching agreement on climate change may prove helpful if used to think through the implications of the proposed regime from a development perspective. Analyzing proposed climate change mitigation measures from the perspective of Latin America and the Caribbean (LAC) producers is imperative in light of the globalization's impact on the organization of production. Commercial standards imposed by firms operating global supply chains pose a more significant hurdle for regional producers, particularly smaller firms than do conventional trade barriers. The cost of compliance with such standards will rise regardless of the form in which developed country (DDC) markets implement mitigation measures. To be effective, such measures will require enterprises to account for the carbon emissions throughout their entire production process. Carbon accounting standards flowing through global firms to their suppliers in LAC will, at a minimum, raise costs and potentially prevent smaller firms from qualifying as suppliers. Unless addressed as a part of a global climate change pact or trade capacity building programs, the resulting standards may drive smaller producers out of the global economy and into poverty, with significant implications for both development and the environment in the region.

INTRODUCTION

Progress toward a comprehensive agreement designed to replace the 1998 Kyoto accord has stalled. Negotiations in advance of the 15th Conference of Parties (COP 15) under the United Nations Framework Convention on Climate Change (UNFCCC) failed to produce credible offers of cuts in emissions from the two largest emitters of greenhouse gases (GHGs), the United States (US) and China.

Critics will argue that the failure of the Copenhagen process portends serious environmental and economic consequences. On the environmental front, the failure will reinforce concerns among environmentalists that world leaders are not serious about coming to grips

with the impending crisis that climate change will bring. The prevailing view of the UNFCCC experts is that delay will seriously impede mankind's ability to deter the onset of that crisis.

On the economic front, the failure of the Copenhagen process will likely reinforce pressure for the adoption of climate change mitigation measures that conflict with current trade rules. European Union (EU) member states that have already adopted climate change measures have come under considerable pressure to impose so-called "carbon tariffs" to offset the impact of such measures on their domestic industry's global competitiveness. Congressional leaders in the US have, for their part, indicated that no climate change legislation will succeed without including some form of carbon tariff.

Yet, a delay in reaching agreement on climate change may, in the end, prove helpful if it offers the opportunity to think through the implications of the proposed regime from a development perspective. To date, virtually all analysis of the development dimension of climate change has focused on the impact of global warming on the developing world (see, e.g., Stern [2007]; Nordhaus [2007]; Cline [2007]). Little serious analysis has been done on the impact of proposed mitigation measures.

One developed analysis has focused on the macroeconomic effects on developing countries (DGCs) of both climate change and prospective mitigation measures or their impact on particular sectors, such as manufacturing. That early analysis tells a foreboding story and offers an explanation why the two most populous developing nations -China and India- have shown little interest in undertaking cuts in emissions that would limit their economic development (see, e.g., Matoo, *et al.* [2009]).

Significantly, the macro-level analyses may well understate the actual impact of climate change mitigation measures on the economic prospects of many DGCs. Those studies do a credible job of examining the effects of such measures by analyzing them in terms of the “tax” they impose on certain carbon-intensive industries.

What those analyses overlook is another dimension to the problem that will affect all DGC producers -the microeconomic costs of complying with climate change mitigation measures that will flow down through the global supply chains that now dominate world trade to the producers in the lower tiers of production where most of Latin America’s producers connect to global markets. Regardless of the approach -whether carbon trading, carbon taxes or regulation of emissions- mitigation measures will oblige the affected enterprise to account for the energy usage and carbon emissions produced along its supply chain, as opposed to the enterprise alone.

Given that globalization has driven the increasing de-verticalization of enterprises and the organization of production of value chains that extend beyond national borders, any approach to climate change mitigation will have to look beyond the border as well. Carbon accounting standards will flow through an enterprise to its suppliers globally, requiring upstream producers to account for energy usage and emissions in order to qualify as suppliers.

The effect on producers in the hemisphere will undoubtedly be broader than the effect of border measures such as carbon tariffs, which have, thus far, gained all of the attention of policymakers in LAC. Carbon tariffs would affect only that portion of the suppliers’ production that is exported to the market imposing the border measure. Carbon accounting standards, on the other hand, are likely to affect the every supplier’s cost of production because a carbon accounting system capable of meeting the global buyer’s standard will be needed to qualify as a supplier in the first instance. What is more, the challenge this presents to suppliers in the developing world is likely to grow over time as global buyers are expected to reduce their carbon emissions further, which will require stricter accounting methods as time goes on.

The reasons for the lack of analysis of the impact of such measures to date are both technical and conceptual. At a technical level, microeconomic analyses of the sort needed are less susceptible to modeling than are the macroeconomic effects of a “tax” imposed on economic activity. That sort of estimation is well understood from previous work in public finance and trade theory where modeling the (static) effect of taxes and tariffs on Gross Domestic Product (GDP) growth and trade has been refined over many years. In addition, such analysis involves considerably less in the way of data gathering to gain a relatively accurate picture of what is likely to flow from the imposition of the tax. The numbers used for modeling the effects of a tax, in most instances, are directly from national income accounting -data that is widely available from governments and institutions like the International Monetary Fund (IMF).

By contrast, microeconomic analysis necessarily involves gathering data about specific enterprises in order to construct their cost curves and model their reaction to any regulatory change. Gathering data at the microeconomic level in DGCs has not progressed past the current efforts of the World Bank as part of its *Doing Business* series and the work of the *World Economic Forum* in preparing its Enabling Trade Reports. As important as those efforts have been in illustrating the benefits of liberalizing trade and removing regulations that hamper growth, they do not reach the firm-level data that would help policymakers understand the implications from an entrepreneur’s perspective. Analysis at that level is, as the recent work of Ricardo Hausmann and Dani Rodrik suggests, essential to any understanding of the development implications of the

policy choices nations confront, particularly in an arena as complex and multidimensional as climate change (Hausmann and Rodrik [2003]).

While the technical challenges are real, the conceptual problem is more serious. As the current political discourse in the US reflects, even those policymakers responsible for trade lack a firm understanding of how the global economy works and the extent to which globalization has redrawn economic geography. Discussions on trade in the US Congress reflect a perspective on the global economy and the US' role in trade that is roughly 40-50 years out of date.

Given that gap in understanding among trade policymakers, the lack of understanding of these dynamics among climate change negotiators is not surprising. To date, the negotiations in advance of Copenhagen have not seriously addressed even the bluntest threats of conflict between the nature of the environmental solution they are trying to create and the underlying global economy that provides much of the world's growth and the surest path to development for many countries.

There are efforts under way that do come closer to recognizing the complexity and interwoven nature of modern economic life. The World Resources Institute and the World Business Council, for example, have made significant progress toward developing a carbon accounting standard applicable not only to an enterprise, but to its supply chain as well. But, the exercise is limited to developing an accounting standard. It does not -at least yet- make any attempt to understand the implications for enterprises, much less the impact that such a standard would have on producers in the developing world.

As will be discussed in greater detail below, the failure to grasp the challenge that producers throughout LAC will face has profound consequences. Previous work done for the Inter-American Development Bank (IDB) on the dynamics of global supply chains and their importance to development has illustrated the extent to which global supply chains have become the new gateways to world markets (see, e.g., Aldonas and Trejos [2009]). Today, the commercial standards imposed by these new gatekeepers of global commerce are more likely to inhibit exports by producers in the region than conventional trade measures like tariffs and quotas.

What that means in terms of responding to climate change is important both economically and

environmentally. From an economic perspective, imposing new carbon accounting standards that flow down to regional producers that lack the resources to comply could interpose an outright barrier to their participation in global markets. That sharply diminishes their prospects for growth, with obvious implications for their ability to contribute to their country's development.

The environmental impact is equally serious. As much of the work of environmental economists illuminates, development is actually essential to environmental quality. A nation's environmental quality generally turns down at the earliest stages of development, but then rises along with rising *per capita* income. By the same token, growing poverty equates to poor environmental quality. Effectively barring producers in the region from participating in global markets will undeniably result in growing poverty and the poorer environmental quality that the research to date suggests would occur.

How that plays out in the case of climate change is easily illustrated. According to Conservation International, the best estimates of human contribution to climate change suggest that a significant share comes from deforestation. A significant share of that deforestation comes from clearing land for agriculture -often subsistence agriculture; another share flows from the use of the forests for fuel. One likely outcome of small producers falling out of global value chains as a result of climate change mitigation measures imposed by countries in the developed world would be a return to subsistence farming, with all that implies in terms of rising poverty and environmental impact.¹

¹ In the Amazon, deforestation is often criticized as the result of corporate farming, but it is just as often the result of fulfilling the basic human needs of the poor. The two phenomena are, in fact, related. See, e.g., Laurance; Albernaz; Fearnside; Vasconcelos, and Ferreira [2004] pp. 1109-1111. Land cleared for corporate soybean farming in Brazil does cause some deforestation directly, but the principal effect is indirect. Corporate farming operations tend to invest in previously cleared land, savanna, and transitional forests, rather than moving deeper into the rain forest. It is more often ranchers and subsistence farmers that are clearing new tracts of forest land. *Ibid.* That said, the movement of ranching and subsistence farming deeper into the forest does reflect the economic impact of expanding corporate farms. By outbidding ranchers and slash-and-burn farmers for easily accessible land, the expansion of corporate farms pushes ranchers and poorer farmers toward more marginal land along the forest frontier -land that has to be cleared in order to become productive. The growth of corporate farms also creates a demand for new highways and infrastructure projects, which then attract subsistence farmers who use the land along the newly created transport links for subsistence agriculture, accelerating the process of deforestation in the process.

The following discussion outlines the challenge that climate change mitigation presents from the perspective of entrepreneurs in the region looking to enter global markets as a way of expanding their own production and raising their competitiveness. In the process, it develops taxonomy of the sorts of costs that climate change mitigation measures may interpose unless constructed with the microeconomics of the region's producers in mind. It also suggests alternative approaches for mitigating the risks identified.

GLOBALIZATION'S IMPACT ON WORLD TRADE

As highlighted above, the impact of globalization on world trade is not well understood even by trade theorists and trade policymakers. The forces driving globalization are many and varied. The end of the Cold War erased political divisions that cut the world in half for the better part of the last century. The elimination of those political barriers created a broader plane across which the ongoing revolution in computing, communications and transportation has played out. That revolution has been abetted at every step by the globalization of private capital markets, helping to finance the expansion in world trade, international investment, and the technology transfer that accompanies both trade and investment flows. The liberalization of trade barriers (largely on industrial goods) contributed as well.

Perhaps the most significant event, however, is one that is most often overlooked. That involves the response of many DGCs to the unfolding political and economic dynamic unleashed by the factors mentioned above. A large share of the developing world opted to join the global economy, adding roughly 2 billion new workers and consumers to global markets. The result of that choice has been to redraw economic geography.

It is now possible to organize production on a global basis largely without reference to underlying resource endowments. The underlying changes in the global economy have fundamentally altered the basis of commercial competition -what was a largely mercantilist competition over access to national markets has become a global competition for capital, talent and ideas.

The effect has been to change the paths by which Latin American producers connect to global markets. Globalization has made it possible to operate a global

supply chain; which, in turn, has made the operation of a global supply chain a competitive necessity. Global trade is now organized by global firms that mobilize capital, talent and ideas on a global basis to produce for world markets, rather than national markets.

The "thickness" of interaction among participants in the global supply chains created by global firms is extraordinary. The flows among different participants are, in fact, no longer captured by the linear concept of a supply chain. They might better be described as evolving toward economic ecosystems that thrive on sharing information, technology and production processes.

These dynamics have already become visible in the trade statistics. Today, less and less of international trade involves an arm's length sale between independent buyer and seller in separate countries. Since 1960, intra-industry trade has doubled as a share of world trade, from 27% to 54% (World Bank [2009]). Roughly half of world trade now consists of intermediate goods (i.e., inputs or goods in the process of production).²

What that means in practical terms is that the majority of world trade now takes place within global firms or the broader reach of their global supply chains. For LAC producers, their access to global markets is increasingly defined by their ability to participate in the global supply chains that serve world markets. Indeed, the success of various trade arrangements -from the World Trade Organization (WTO) to the Southern Common Market (MERCOSUR) to the North American Free Trade Agreement (NAFTA) and the Dominican Republic-Central America Free Trade Agreement (DR-CAFTA)- in lowering conventional trade barriers means

² The most recent version of the WTO's *International Trade Statistics*, which takes a conservative approach to measuring such trade, suggests that trade in intermediate manufactured products represented roughly 40% of the non-fuel world trade total in 2008. (WTO [2009]). The WTO's figure reflects the fact that trade in intermediate goods has grown faster than trade in final products. (See, e.g., Hummels; Ishii, and Yi [2001] pp 75-96). Perhaps more significantly, trade in intermediate goods varies widely by country depending on their export specialization. In OECD member countries, for example, trade in intermediates, on average, represents 56.2% of trade in goods and 73.2% of trade in services. (Miroudot; Lanz, and Ragoussis [2009]). The figures for Chinese Taipei are still higher, with trade in intermediate goods and services holding a 65% share of imports and a 71% share of exports, indicating that roughly two-thirds of its trade was in intermediate goods in 2008. (WTO [2009]).

that the commercial standards imposed by these new gatekeepers to global trade have become relatively more important to the success or failure of regional producers to tap the growth potential that flows from participating in world trade.

The ability of regional producers to participate in these evolving economic ecosystems is certainly defined by price -the ability to deliver inputs at the lowest possible cost is absolutely essential in global trade. But, continuing access to these ecosystems requires much more than low prices. It depends on a consistent effort to raise quality and, increasingly, to participate in the effort to create new products and production processes. All of which assumes the ability to comply with the internal controls, including accounting standards, imposed by the downstream entities that mobilize the capital and organize the production processes designed to deliver goods and services to the ultimate consumers.³

Understanding that dynamic is essential to understanding the true implications of any effort to mitigate climate change. To the extent that climate change mitigation measures conflict with this unfolding economic change, they will necessarily raise the cost of adjustment and, to the extent that they limit development, will undercut the effort to confront climate change. The stake that Latin American countries have in ensuring that any global environmental agreement reflects this economic reality is profound, both in terms of the region's economic prospects and in terms of the quality of its environment.

³ One potential question is whether, in the case of agriculture, minerals and other raw materials that make up a major share of Latin American exports, multinational corporations that dominate global value chains will take care of the required environmental upgrading regardless of location. That would prove true in the case of multinationals that are fully integrated on a vertical basis. However, even in the case of the vertically-integrated multinational, their local operations depend on local producers of various inputs, which will be obliged to adopt the carbon accounting standards that the multinational imposes on its local operations. Furthermore, the increasing de-verticalization unfolding in manufacturing has also begun to take hold in the natural resource arena, where, in forestry for example, the trend is for forest products to own less and less of their inputs and rely, instead, on owners of forest land for much of the furnish for their operations. Given that the elasticities and the market power generally favor the multinational corporation in bargaining over price and in bearing a variety of regulatory costs, the odds are that the multinationals will shift as much of the cost of compliance toward their suppliers as possible, including those areas in which Latin American exports have been concentrated in the past.

CONFRONTING CLIMATE CHANGE

Environmentalists often suggest that economic growth and development are at odds with environmental protection. Still worse, in their view, is any expansion of world trade. For them, global trade implies a necessary expansion of the carbon footprint that economic life leaves behind.

That perceived "truth", however, ignores the economic fundamentals that shape both the global economy and our collective impact on the environment. Properly understood, both economic development and trade liberalization can serve the goal of improving the environment. Gaining a clearer picture of the reasons is essential to designing measures capable of confronting the challenge climate change presents. That effort (i.e., gaining a clearer picture of how economic development and trade can contribute to a cleaner environment) starts with the fundamental premises on which both economic development and trade are based.

All development starts, as Adam Smith and David Ricardo suggested, with specialization. The only way for an individual to raise their productivity (and contribute to the broader process of economic development) is to specialize. Specialization, however, requires the freedom to engage in trade. In the absence of markets and the freedom to trade, there can be no specialization. Markets and the freedom to trade eliminate the chains that economic autarky imposes on both individuals and nations.

At a macroeconomic level, getting the microeconomics right pays dividends. The competition that markets create, in addition to the opportunity to engage in exchange, drives innovation and efficiency in the use of scarce resources. This has an obvious economic benefit -lowering the cost, in terms of capital and other inputs, of any unit of production. By extension, the same competitive forces can drive progress toward a better environment. Climate change presents an important illustration of how that works. The competition that markets and trade yield is capable of driving a similarly efficient use of energy and emissions, as it does with all other inputs.

The key, however, is to ensure that producers are obliged to internalize fully the environmental externalities their production creates. In short, the goal must be to ensure that all producers compete on the basis of energy intensity and emissions as well as other factors of production. Thus, trade could drive energy and emissions

efficiency if structured in a way that encourages the producer to internalize the full environmental cost of its production. To succeed, climate negotiations must align the incentives in the global trading system in ways that are consistent with that goal.

To do so, however, demands an appreciation of the forces shaping world trade outlined above. It is absolutely essential to understand how trade is organized in a global economy if the negotiators on climate hope to produce a positive environmental outcome.

Unfortunately, neither the decade-old Kyoto accord nor the current negotiations on its replacement meet that basic test. In one sense, that is not surprising, in that the current negotiations on climate change build on the model established by Kyoto. In broad outline, the Kyoto model sought to set an overall cap on carbon dioxide emissions as a predicate for negotiation of individual country commitments. The ultimate objective was to establish global emissions trading that would set a global price for carbon and, thereby, offer a basis for competition that would fully internalize the environmental costs of production.

What the design of the system yields, however, are negotiations over individual country commitments. Those negotiations are, in fact, negotiations over who will bear the burden of adjustment to a low-carbon global economy. In short, they set up a zero sum game that lends itself to mercantilist bargaining. In the process, the broader implications of that pattern of bargaining for the global economy and economic development, as opposed to national competitiveness, have largely been ignored. It is not hard to illustrate why.

The most obvious case is the current discussion in Europe and the US of the so-called “carbon tariffs” that were mentioned above. The potential under the Kyoto model for free riders has led to pressure for trade protection by domestic industries that fear a loss of competitiveness. The imposition of “carbon tariffs” or “carbon dumping duties” would have serious consequences for Latin American exporters, as it would for other DGC producers.

But, what has gone unnoticed is that, even in the absence of outright protectionist measures, implementation of any agreement would create serious economic dislocations, particularly in the developing world. Regardless of the method individual governments choose to meet their commitments

under any successor to Kyoto, they will have to require enterprises to measure carbon along their entire supply chain in order to ensure against carbon leakage.

The effort to discourage carbon leakage will drive global firms to create carbon accounting standards that will create a new set of practical barriers for DGC exporters. The work of the World Resources Institute and the World Business Council for Sustainable Development, mentioned above, foreshadows that effect.

In short, by ignoring how the global economy is structured, negotiators have come up with a solution that cuts across the supply chains that undergird the global economy. That will prove self-defeating unless the overall solution is designed in ways that eliminate the friction between the global goal of mitigating climate change and the national goal of economic development.

IMPLICATIONS FOR LATIN AMERICA AND THE CARIBBEAN

The implications of this dynamic for LAC are amplified by its dependence on the export of commodities. While early studies of the relative impact of climate change mitigation measures suggest that the region will suffer less than would Asian giants like China and India, that is likely to prove cold comfort to policymakers in the region.

First, the global solution currently under negotiation favors goods and services with a low weight to value ratio (i.e., low weight, high value) in terms of shipping costs and low energy input. The bulk of commodities produced in Latin America, including many agricultural products have relatively higher weight to value ratios and are energy intensive to produce.⁴

Second, as a matter of political economy, trade protection in the form of antidumping or countervailing duties imposed for environmental reasons are more likely to fall on commodities than on higher valued-added

⁴ In Moreira; Volpe, and Blyde [2008], the authors highlight the extent to which the region's exports are more “transport intensive” than those of its competitors in other regions due to the region's comparative advantage in natural resources that entail higher weight to value ratios than most other goods - “Natural resources are quintessential ‘heavy’ goods; a dollar's worth of iron ore is many times heavier than a dollar's worth of semiconductors”.

goods and services, if history is any guide. The bulk of the region's production is weighted toward commodities -particularly minerals and agriculture.

Still more importantly, however, the competitive effects between producers in different DGCs are less relevant than the competitive effects between producers in the developed and developing world. As noted above, to be effective, climate change mitigation measures must ensure that producers fully internalize the environmental costs of their production. In a global economy where supply chains reach across borders, achieving climate change mitigation goals implies a need for carbon accounting standards that reach through the ultimate producer's global supply chain and encourage upstream suppliers to compete on the basis of their own carbon footprint.

From the perspective of DGC producers, the obligation to meet the carbon accounting standards of global buyers represents an additional hurdle in their efforts to gain access to global markets. Clearing that hurdle will require efforts to address the microeconomic costs that DGC producers face in satisfying those standards. Otherwise, they are likely to find themselves in a far less competitive position than their competition in DDCs that enjoy ready access to a deeper and more liquid pool of investment capital and the technology essential to satisfying the new standards.

Just to illustrate what lies behind that statement, the following list identifies a number of the barriers or additional costs that regional producers will likely face regardless of the actual structure that mitigation measures ultimately take. It does not pretend to be an exhaustive list. It would be better viewed as minimum list of the types of added costs that both climate and development policies must address in order for the effort to confront climate change to succeed.

The list starts with higher information barriers. Perhaps the most significant cost DGC producers face generally involves the cost of information -information regarding potential export opportunities as well as the commercial standards buyers impose on their suppliers globally. Climate change mitigation measures will add to that burden in the absence of efforts designed to improve the flow of information to DGC producers regarding carbon accounting standards and the means of satisfying those standards, as well as the economic opportunities that compliance with the carbon accounting standards might create.

A *second* barrier flows from the nature of regulation itself. As in the adoption of any system of regulation or accounting conventions, the introduction of global carbon standards will introduce significant uncertainty regarding their application and the means by which the rules might be satisfied. The complexity of satisfying government regulators in multiple markets, even assuming climate change negotiations lead to a common set of global carbon accounting standards, increases the potential for conflicts.

From the perspective of global buyers, the uncertainty created by those implementation efforts translates into risk. Buyers will avoid that risk either by eliminating those suppliers least capable of contributing to reducing the global firm's carbon footprint or by reducing the prices offered to potential suppliers to offset the risk associated with buying from suppliers with a marginal capacity to satisfy the buyer's standards.

A *third* barrier flows from the cost of compliance. Satisfying sophisticated standards for carbon accounting requires a significant capital investment, in terms of acquiring the hardware and software to manage compliance, as well as the human capital within enterprises that are essential to guarantee consistent implementation of the internal controls that the accounting standards imply.

Designing carbon accounting standards and implementation in ways that build on existing norms in international trade would help reduce the cost by allowing DGC producers to draw on their installed capital to the maximum extent possible, but the new regulatory environment may also call for new technologies and institutions that could reduce these costs. In that sense, the implementation of climate change mitigation measures offers a paradigmatic example of how "aid for trade" could contribute to the overall success of DGC producers and to the ultimate success of the effort to confront climate change.

A *fourth* barrier comes from the limited economies of scale that regional producers have in their own markets. That economic fact of life is precisely why they are attracted to global markets and why the DGCs of the region have such an important stake in preserving the liberalizations in trade and investment that have been implemented in recent years.

Climate change mitigation measures will exacerbate the cost disadvantage that flows from DGC producers'

inability to take advantage of economies of scale due to their lack of access to global markets. Expanded access to global markets would help offset the costs of compliance DGC producers face, both because of the higher return exports command and because expanding their scale of production lowers the per unit cost of their compliance efforts. Efforts to expand market access and producers' capacity to engage in trade should, as a consequence, form an important part of any effort to address the effects of climate change mitigation strategies on the developing world.

A *final* barrier that will limit the ability of regional producers to cope with the implementation of climate change mitigation measures flows from their relative lack of access to capital. By raising DGC producer costs and increasing the uncertainty regarding their ability to tap global markets, climate change mitigation measures will also exacerbate the producers' traditional lack of access to capital. Increasing risk will drive up the rate of return that investors will require before investing in or expanding production in the developing world.

Developing the institutional arrangements that would allow DGC producers to participate actively in global emissions trading would help offset that effect, either by creating a new stream of income or allowing them to acquire a financial asset that could be converted to working capital or an alternative form of trade finance. In either event, thinking concretely about the question of access to capital as part of any overall strategy to secure the full participation of DGC producers in the global economy and in efforts to address climate change will prove essential to achieving better economic and environmental outcomes.

The point, plainly, is that the implementation of carbon accounting standards is likely to lie beyond the reach of many small and medium-sized Latin American producers. Unless some action is taken to shape the overall global package in ways that help address these issues, regional producers will likely find themselves unable to participate in global supply chains that increasingly dominate world trade.

MITIGATING THE RISKS OF MITIGATION

The discussion above makes the case for a greater appreciation of the risks to development from ignoring the economic implications of any global arrangement to confront the challenges that climate change presents. It also highlights the importance of that insight for LAC policymakers. What has been missing, to date, is a more comprehensive regional strategy -both on the challenges that climate change and any response represents, and also in terms of how the region might both contribute to the response to climate change and continue its drive toward development.

In my view, LAC governments can take three important steps to minimize the dislocation that might otherwise flow from any eventual climate change agreement (or the implementation of national standards by individual countries).

First, governments in the region should press for an arrangement that focuses on aligning the incentives in the global trading system in ways that encourage all producers to internalize the full environmental cost of their production. While much depends on the elasticities of demand shaping the relationship between producers in different parts of a supply chain, eliminating barriers to trade and, particularly, the subsidies that would subvert the price discipline that a global carbon price would impose would help ensure that the region's exporters are not placed at a material disadvantage by climate change mitigation policies adopted elsewhere. The goal should be to inhibit the ability of producers farther downstream from LAC exporters to force the burden of adjustment on to their upstream suppliers in the region which have less capacity to undertake the adjustments that will be necessary in the shift to a low-carbon global economy.

As a practical matter, that means a commitment to keeping downstream markets open and ensuring that subsidies or other measures adopted in downstream markets do not undercut the impact of a global carbon price on local producers in ways that would give them a material advantage over producers in LAC.

Second, Latin American governments should focus on the risks associated with various approaches to climate change mitigation as much as on whether they will bear any of the outright costs of adjustment due to specific commitments to lower emissions. In other words, while the negotiations on climate in advance of Copenhagen have necessarily focused on the commitments that countries of the region are willing to make in terms of reducing emissions (or avoiding them, in many cases), the region would benefit from a common approach to grappling with the costs of implementing any global system regardless of their own individual commitments in terms of emissions reductions.

Third, Latin American governments should invest in building the institutional capacity, in both the private and public sectors, to minimize the cost of complying with carbon accounting requirements that come their way by virtue of other countries' mitigation policies. This too should be a part of the global bargain on climate change and a part of a regional negotiating strategy.

In each instance, the goal should be to create a regional commitment to reducing emissions by encouraging development, rather than limiting it. ♦

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CONTROLLING CLIMATE CHANGE: CHALLENGES FOR LATIN AMERICA AND THE CARIBBEAN

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Countries in Latin America and the Caribbean (LAC) contain a wide variety of ecosystems and abundant natural resources. They are not major contributors to the current level of atmospheric greenhouse gas (GHG) concentrations, but unfortunately they are predicted to be highly vulnerable to the consequences of climate change. While climate change challenges LAC in many ways, the good news is that it also offers opportunities. The region has a comparative advantage in pursuing a low-carbon growth path and international climate talks suggest that mitigations efforts -notably, reducing emissions from deforestation and degradation (REDD)- can bring money and technology to the region. With a focus on implications for LAC, this paper examines the status of international talks under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC) -with an emphasis on the outcome of the UNFCCC talks held in Copenhagen in December 2009- and summarizes the climate policy options that are now being considered in the United States (US). In addition, the paper briefly discusses low-carbon energy options in the region and existing rules of the World Trade Organization (WTO) that bear on climate policies.

INTRODUCTION

Latin America and the Caribbean contain a wide variety of ecosystems and abundant natural resources. The region accounts for about 22% of the world forest area and contains the world's largest contiguous block of tropical moist forest -the Amazon Basin (FAO [2009]). While countries in LAC are not major contributors to the current level of atmospheric greenhouse gas (GHG) concentrations (which total around 430 ppm of CO₂e), many studies find that countries in the region would be highly vulnerable to the consequences of climate change. The World Bank

[2009] noted that climate change would threaten the region's most critical ecosystems. For example, the retreat of the Andean glaciers foretells water stress for at least 77 million people as early as 2020; warming and acidifying oceans will cause frequent bleaching and possible diebacks of coral reefs in the Caribbean, endangering fish species in the basin; and damage to the Gulf of Mexico's wetlands could make the coast vulnerable to more intense frequent hurricanes. With respect to the impact on agriculture, Cline [2007] estimated that, under a business-as-usual scenario, climate change by 2080 would reduce the agriculture capacity of Latin America by between 24% (ignoring

* The views expressed are their own opinions. This research was supported by the Inter-American Development Bank (IDB).

the possible beneficial effects of carbon fertilization on crop yields) and by 13% (reflecting the possible beneficial effects of carbon fertilization). Recognizing the potential risks of climate change for their economies and ecosystems, countries in the region are embracing mitigation and adaptation policies and are participating in the negotiating process to design the post-Kyoto era.

With a focus on implications for LAC, we examine the current status of international talks under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC) and climate policy options that are now being considered in the US. In addition, we briefly discuss low-carbon energy options in the region and summarize existing rules and on-going negotiations under the auspices of the World Trade Organization (WTO).

INTERNATIONAL CLIMATE TALKS TOWARD A POST-KYOTO ERA

Despite high drama, the UNFCCC Conference, held in Copenhagen between December 7 and 18, 2009, ended with few achievements. After failure to secure unanimous approval, the UNFCCC announced that it would “take note of” a three-page political document known as the “Copenhagen Accord”.¹ It is widely portrayed as a failure, both because the Accord is non-binding and, more importantly, because it is deliberately short on specifics. The chaotic negotiations in Copenhagen underscored fundamental disagreements over the legal framework and content of any future climate pact. In separate decisions, the countries gathered in Copenhagen agreed to extend on-going negotiations under two working groups through their next meetings that will be held in Mexico in December 2010. In light of the yawning gap between countries on key issues in Copenhagen, we suspect that negotiations will extend well beyond 2010. In retrospect, the Copenhagen Accord will probably be viewed as the initial step in a very long negotiating process.

To its credit, the Copenhagen Accord does reiterate the core elements envisaged in the Bali Action Plan: financial support, technology transfer, reducing emissions from deforestation and degradation (REDD), and obligations for measurement, reporting and verification (MRV). But the Accord is vaguely phrased and awfully short on specifics. The Accord adds to this list a cap on the permitted rise in the average global temperature of 2°C (two degrees Celsius) above the pre-industrial level. However, it did not lay out hard targets for the global reduction in GHG emissions that would be essential to achieve the 2°C cap.² Under the Copenhagen Accord, developed countries (DDCs) agreed to provide new and additional resources to address the needs of developing countries (DGCs), reaching collectively US\$30 billion for the period 2010-2012 and possibly mobilizing jointly US\$100 billion a year by 2020. However, the crucial details for supplying and allocating funding need to be clarified in future talks. Regarding technology issues, while countries acknowledged the importance of technology transfer, the Accord only succeeded in proposing to establish a technology mechanism to accelerate technology development and transfer for both mitigation and adaptation.

One notable element of the Copenhagen Accord was its recognition of the role of REDD activities. Without specifics, the Accord states: “We recognize the crucial role of reducing emission from deforestation and forest degradation and the need to enhance removals of GHG emission by forests and agree on the need to provide positive incentives to such actions through the immediate establishment of a mechanism including REDD-plus (REDD+), to enable the mobilization of financial resources from DDCs”. REDD is of particular importance for the region of LAC which is home of about one-fourth of world forest areas. In the following sections, we discuss two major carbon offsetting schemes under the UNFCCC that have potential to provide opportunities for the region.

¹ The Accord was originally brokered by the US, together with Brazil, South Africa, India and China (the so-called “BASIC” countries), with another 20 countries in the supporting cast. Facing strong opposition from several DGCs, the Accord was not adopted by the full assemblage of member countries. The UNFCCC works by consensus. The full text of the Copenhagen Accord is available at http://unfccc.int/files/meetings/cop_15/application/pdf/cop15_cph_auv.pdf

² The Copenhagen Accord took a bottom-up approach. Instead of setting collective mid-term and long-term targets, the Accord asks Annex I Parties to submit individually or jointly quantified economy-wide emissions targets for the year 2020, while it asks Non-Annex I Parties to list voluntary pledges reciting mitigation actions. The initial deadline for both submissions is January 31, 2010; however, this deadline will be interpreted “flexibly”, according to the UNFCCC.

REDUCING EMISSIONS FROM DEFORESTATION AND DEGRADATION (REDD)

Given the magnitude of emissions related to deforestation and degradation,³ the UNFCCC has long recognized mitigation potential from activities in the Land-Use, Land-Use Change and Forestry (LULUCF) under both the UNFCCC and the Kyoto Protocol.⁴ Due to several uncertainties, however, the Kyoto Protocol included only afforestation and reforestation but excluded REDD activities from its offset mechanisms, notably the Clean Development Mechanism (CDM). The World Bank [2009] argues that the exclusion of deforestation emissions from the CDM ignores the largest emission source of many tropical DGCs.

Given the important role of forests in the global carbon cycle and to fulfill the Bali Action Plan, countries have negotiated ways to establish an international REDD finance mechanism within the post-Kyoto framework.⁵ Many DGCs -especially forest-rich countries- argue that REDD can play an integral role in mitigating climate change and channel needed funds to DGCs. Heading toward the Copenhagen talks, a loose consensus emerged that the post-Kyoto regime should address REDD; however, many observers are wary about schemes that would reward DGCs for protecting their forests. The argument is that payments shouldn't be necessary to induce countries not to do bad things -namely allow deforestation. The Copenhagen

Accord made meaningful progress on REDD in that it explicitly recognizes the role of REDD and the need for a mechanism to funnel money to finance REDD related projects. However, the Accord leaves open the question how to resolve concerns surrounding the implementation of REDD mechanisms.

A challenge for building a coherent REDD mechanism into the future international climate change architecture is creating the necessary capacity in DGCs. Robust MRV standards and enhanced MRV capabilities are essential with respect to carbon emissions and carbon sinks associated with forest activity. Another issue is the architecture of a future REDD regime. Under this heading, a lead question is whether carbon accounting and crediting would be based on a national level or on a project level (similar to the CDM). While the project approach is more flexible, it prompts the fear of leakage via deforesting of other land tracts in the same country. Many countries have therefore supported a national approach, but the challenge is to link national oversight with project incentives. Other important issues under this heading include: the scope and baselines for REDD; the types and terms of financing options; the participation of indigenous people and local communities; the reform of tenure systems; and the connection between REDD and related industries like agriculture and mining.

Within the broad scope of international talks on the post-Kyoto framework, countries have proposed forestry options including funding from voluntary sources such as Official Development Assistant (ODA) and other public and private sources, REDD credit trading through carbon markets at both national and international levels, and a combination of both ODA and market based mechanisms.⁶ While many forestry countries -notably the so-called the Coalition for Rainforest Nations- have sought to finance REDD activities through market mechanisms, some countries

³ According to the IPCC [2007], deforestation and degradation accounted for about 17% of global GHG emissions in 2004. The World Bank [2009] estimated that net global deforestation was 7.3 million hectares on an annual average basis between 2000 and 2005, contributing about 5 gigatons of CO₂ a year in emissions.

⁴ See the text of the Convention (<http://unfccc.int/resource/docs/convkp/conveng.pdf>) and the text of the Kyoto Protocol (<http://unfccc.int/resource/docs/convkp/kpeng.pdf>).

⁵ REDD was introduced as the UNFCCC agenda item when Papua New Guinea and Costa Rica, supported by eight other Parties, proposed to accommodate REDD into mechanisms of the UNFCCC at the 11th COP Meeting in Montreal in December 2005. Two years later, the Bali Action Plan, adopted at the 13th UNFCCC COP Meeting in Indonesia in 2007, called for "policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in DGCs; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in DGCs". This comprehensive approach would extend REDD to include "conservation, sustainable management of forests and enhancement of forest carbon stocks" and is often referred to as REDD+.

⁶ Some initiatives that support DGCs in building the capacity for REDD activities are already in place. For example, the World Bank's Forest Carbon Partnership Facility (FCPF), established in 2007, has three aims: to develop national reference scenarios for emissions from deforestation and forest degradation, to create a strategy for conserving natural forest, and to design national MRV systems for REDD programs. These aims are referred to as REDD Readiness. For more details, visit the website of the FCPF available at <http://www.forestcarbonpartnership.org/fcp/>. Other examples of REDD financing initiatives in place include: UN-REDD Program; the Amazon fund; Norway's Climate and forest initiatives.

-most notably Brazil- have opposed a market-based approach. Their opposition stems from several concerns, including a possible flood of cheap REDD credits and questionable MRV capabilities in DGCs. Instead, they have advocated a fund, along the lines of the Amazon fund established in 2008, financed by donor countries. Recently, Brazil has softened its position, suggesting that a DDC could offset via REDD credits up to 10% of its total reduction commitments (Colitt [2009]). Given their diverse capabilities and circumstances, many REDD countries support a flexible and phased approach. This would allow countries to use different financial sources for different phases of REDD activity -for example, readiness, demonstration, and implementation.

REDD offers both challenges and opportunities for LAC. In 2005, forest areas accounted for about 45% of the total land mass of LAC. Between 1990 and 2005, the region lost its forest lands at an annual average rate of 0.5% (UNDP [2008]). While the region's overall contribution to the annual global GHG emissions seems modest -about 12% of global GHG emissions (including land-use change) in 2000- the region's GHG emissions from Land Use Change (LUC, essentially deforestation) accounted for about 47% of the region's total GHG emissions.⁷ Soares-Filho *et al.* [2006] estimated that, by 2050, current trends in agricultural expansion could eliminate 40% of Amazon forests, releasing approximately 117,000 million tons (Mt) of CO₂ cumulatively. The FAO [2009] concluded that, given the high dependence on trade of primary goods and the rapid pace of economic development in the region, the pace of deforestation in South America is unlikely to decline in the near future. While carbon credits might help slow the pace, no effective mechanism currently provides adequate incentives to refrain from forest clearance.⁸ If an effective mechanism related to REDD is adopted under the post-Kyoto regime, it would benefit forest communities and countries in the region, providing additional sources for money and

introducing them into a global carbon market while allowing them to achieve their voluntary emissions targets. In addition, it will help governments to reshape and improve their forest policies and management.

CLEAN DEVELOPMENT MECHANISM (CDM)

Despite rising calls for reform of the Clean Development Mechanism (CDM) -one of the three flexible mechanisms established by the Kyoto Protocol- the Copenhagen talks did not make much progress. The decision taken in the 5th Session of the Meeting of the Parties to the Kyoto Protocol (CMP 5) did not include anything new. Recognizing the work of CDM Executive Board, the decision only encouraged the Executive Board to continue its efforts including improving transparency, efficiency and impartiality, and developing baseline and measuring methodologies for activities.⁹

The CDM has the dual purpose of enabling DDCs to comply with their emissions reduction commitments and providing finance for DGCs targeted at the goal of sustainable development. The CDM system allows DDCs to earn Certified Emissions Reductions (CERs, each equivalent to one ton of CO₂e) by financing projects that reduce emissions or absorb carbon (through afforestation or reforestation) in DGCs.

Of more than 4,200 projects in the CDM pipeline as of October 2009, about 1,860 projects had been registered by the CDM Executive Board. About 75% of the registered projects have been hosted by a handful of countries -namely China (35%), India (25%), Brazil (9%), and Mexico (6%). By region, LAC is the second largest host after the Asia Pacific (74%), accounting for about 24% of total registered projects by number.¹⁰ The Inter-American Development Bank (IDB [2009]) noted that Asia has become the largest host region of CDM projects, far exceeding LAC, mostly due to the burgeoning economies of China and India. The IDB reported that China and India have a comparative advantage in hosting CDM projects due to their high

⁷ By comparison, GHG emissions from land use change accounted for about 18% of world total GHG emissions (WRI [2009]).

⁸ However, as a piece of good news, the Brazilian government announced that deforestation in the Amazon dropped about 46% between August 2008 and July 2009 -the biggest annual decline in the past two decades. This is probably a welcome side effect of the economic crisis, but the Brazilian government has improved its satellite monitoring system for detecting illegal logging (Downie [2009]).

⁹ The full text of the CMP 5 decision on *Further Guidance relating to the Clean Development Mechanism* is available at http://unfccc.int/files/meetings/cop_15/application/pdf/cmp5_cdm_auv.pdf.

¹⁰ For more details, see the UNFCCC CDM website: <http://cdm.unfccc.int/index.html>.

level of emissions and relatively low abatement costs resulting from a lower level of energy technology.¹¹

In addition to inherent comparative advantages, both international and domestic institutions have also played a key role in the rapid growth in CDM projects in China and India. International organizations, such as Asian Development Bank (ADB), the UN Development Program (UNDP), and the World Bank, have made extensive investments aimed at capacity building in China. In parallel, the Chinese government has sought to integrate CDM policies into its national climate change policies and has tried to develop a strong CDM regulatory framework. The CDM experience of China and India may offer good examples for policymakers in LAC, as well as international institutions such as the IDB, to rethink their strategies for enhancing CDM projects.¹²

While LAC -as well as other developing regions- share the view that the CDM is an important channel for new funds and technology transfer, as mentioned earlier, CDM projects have been concentrated in a handful of countries. According to the Pew Center on Global Climate Change [2009], this concentration reflects the perceived cost of doing a CDM project. Pew argues that costs differ as a function of host country characteristics, including local expertise and experience. Consequently a country that has completed more CDM projects in the past will likely host more projects in the future. China and India are clearly in the lead; LAC must work hard to catch up. Perhaps one avenue is for Brazil and Mexico to share their expertise and know-how in CDM projects with neighboring countries.

Despite criticism about questionable effectiveness and procedural shortcomings, the CDM will likely remain a core mechanism under the post-Kyoto regime. Some DDCs, including the US, have included provisions on the use of international offsets (including CERs) in their proposed or enacted national climate programs. With appropriate reforms, including strong MRV standards for determining compliance with national caps and

evaluating individual projects, the CDM or a successor mechanism to the CDM can offer a major channel for financial support to assist mitigation and adaptation actions by DGCs.¹³ Even though many issues still remain to be further discussed and resolved, the progress on REDD in Copenhagen seems encouraging. If efforts to avoid deforestation are included in the CDM or its successor mechanism under the post-Kyoto regime, LAC would benefit most given the region's great potential in forestry projects.

IMPLICATIONS OF US CLIMATE POLICIES

For obvious reasons, US policies are always important for LAC. In June 2009, the US House of Representatives passed the American Clean Energy and Security Act of 2009 (ACESA, also known as "the Waxman-Markey bill"), sponsored by Congressmen Henry A. Waxman and Edward J. Markey, by a close vote of 219-212. This comprehensive national energy and climate bill establishes a cap-and-trade program aimed at reducing GHGs economy-wide by 20% by 2020 and by 83% by 2050, both targets by reference to 2005 levels.¹⁴ ACESA also contains provisions to enhance energy efficiency, performance and product standards, R&D investment in low-carbon technologies, and complementary energy measures. The US Senate is now shaping its own bill.¹⁵ While US climate legislation seems unlikely in 2010, the House bill and the draft Senate bill provide a rough idea about the shape of US climate policies.

ACESA contains provisions that would adversely affect countries and industries in the region. To level the playing field, ACESA contains various mechanisms, including the free allocation of allowances, output-based allowances to vulnerable industries, and allowance requirements for imports. To alleviate the

¹¹ In the early years of the CDM, a majority of CDM projects in China focused on industrial gas destruction, such as HFCs and NO₂. More recently the focus has shifted to renewable energy and energy efficiency projects.

¹² The IDB [2009] provides useful analysis of international carbon markets as well as CDM related policies of major countries. It also provides recommendations for the IDB as an institution to effectively support the development of carbon markets in the region.

¹³ Under the Bali Action Plan, DGCs agreed to take "nationally appropriate mitigation actions" as part of a global deal that encompasses technology transfer and financial support.

¹⁴ The binding target in 2020 for covered entities (not the entire economy) is a 17% cut below 2005 levels.

¹⁵ On September 30, 2009, Senators John Kerry (D-MA) and Barbara Boxer (D-CA) introduced the Clean Energy Jobs and American Power Act (S. 1733), the Senate version of the comprehensive energy and climate bill that draws heavily from ACESA provisions but differs in several areas.

transition burden, about 70 to 80% of allowances created by ACESA would be allocated free for a period of years. Under the emission allowance rebate plan, energy-intensive and trade-vulnerable industries would be eligible for rebates to compensate both for direct and indirect costs imposed by the bill. If the president so decides, starting in 2020, the international reserve allowance program can be invoked to require importers of covered goods to purchase permits -when less than 85% of imports in a sector come from "well-behaved" countries (meaning countries that meet one of criteria listed in the bill).

Based on the criteria that were included in the ACESA version passed by the House, Trevor Houser (former Senior Advisor, US Special Envoy on Climate Change) has identified 42 sectors that would qualify for rebate and international reserve programs. [Table](#)

1 groups the qualifying industries into six categories: chemicals, ferrous metals, food products, nonferrous metals, non-metallic mineral products, and paper and wood products. As shown in [Table 1](#), many countries in the region list themselves among large suppliers of energy intensive products to the US. What this means is that some industries in these countries may be required to buy emissions permits at the US border unless countries meet criteria described in the bill. In addition, rebates (via free allowances) extended to US firms, in excess of their emission costs, could be perceived as subsidies that give an unfair advantage to US firms.

A verbal backlash against potential US trade measures has already erupted in China, India, and even the European Union (EU). Some countries have criticized the measures proposed in US climate

Table 1

US ENERGY-INTENSIVE IMPORTS BY TOP 10 TRADING PARTNERS, 2008

Chemicals		Ferrous Metals		Food Products		Nonferrous Metals		Nonmetallic Mineral Products		Paper & Wood Products	
Country	Imports (US\$ bn)	Country	Imports (US\$ bn)	Country	Imports (US\$ bn)	Country	Imports (US\$ bn)	Country	Imports (US\$ bn)	Country	Imports (US\$ bn)
Canada	15.42	China	7.60	Mexico	0.44	Canada	11.94	China	3.21	Canada	11.23
China	7.04	Canada	6.97	Canada	0.22	South Africa	3.23	Mexico	1.65	Brazil	0.96
Germany	5.29	Brazil	3.35	Guatemala	0.18	Mexico	2.86	Canada	1.20	Finland	0.95
Japan	4.54	Mexico	3.15	Australia	0.15	Russia	2.63	Italy	0.83	Germany	0.83
Saudi Arabia	4.09	Korea	2.31	France	0.11	UK	1.59	Germany	0.65	China	0.66
Algeria	3.88	Japan	2.31	Brazil	0.11	Peru	1.36	Japan	0.47	Japan	0.41
Trinidad & Tobago	3.58	Germany	1.97	Dominican Republic	0.08	Australia	0.99	France	0.43	Korea	0.36
Venezuela	3.37	India	1.83	El Salvador	0.07	Brazil	0.77	UK	0.19	Mexico	0.21
UK	3.25	Russia	1.72	Netherlands	0.07	Germany	0.75	Spain	0.18	France	0.17
Netherlands	2.98	Ukraine	1.48	Philippines	0.06	China	0.62	Brazil	0.17	Sweden	0.16
Russia	2.73	South Africa	1.22	Germany	0.06	Chile	0.58	Thailand	0.17	Norway	0.16
<i>Subtotal</i>	<i>56.18</i>		<i>33.91</i>		<i>1.55</i>		<i>27.31</i>		<i>9.16</i>		<i>16.10</i>
<i>World Total</i>	<i>88.44</i>		<i>45.71</i>		<i>2.02</i>		<i>31.93</i>		<i>10.81</i>		<i>17.25</i>

Source: Forthcoming analysis from the Peterson Institute for International Economics by Trevor Houser (US ITC data for the industries qualifying for free allowances and potentially subject to border adjustments under Title IV of HR2454).

legislation as a new form of protectionism. This verbal assault, well before legislation is enacted, suggests that trade measures will trigger both retaliatory actions and challenges within the WTO.¹⁶

At the same time, ACESA has the potential to benefit countries in LAC. In particular, ACESA includes provisions to establish three major financing sources for REDD in DGCs.¹⁷ First, it will establish a supplemental pollution reduction program, setting aside certain percentages of emission allowances to reward reduced deforestation in DGCs.¹⁸ Second, ACESA establishes a strategic reserve of allowances -a small set aside from allowances created for each year and auctioned quarterly beginning in 2012. Under this program, the proceeds would be used to purchase international offset credits issued for REDD activities.¹⁹ Third, under the international offset credits mechanism in ACESA, covered entities collectively can use international offset credits of up to 1 billion tons of GHG emissions annually to meet their compliance requirements. Under this program, the Administrator will issue international offset credits for REDD activities if certain criteria are met.²⁰

ACESA's combined efficiency and renewable electricity standard might also provide trade opportunities for countries in the region. The standard requires retail electric suppliers -those that sell at least 4 million megawatt hours of electric energy- to meet 6% of their power needs by 2012 via a combination of electricity generated from renewable resources and

energy-efficiency savings. That proportion increases to 20% by 2020. Eligible renewable energy sources include wind, solar, geothermal, biomass, biofuels, qualified hydro power, marine and hydrokinetic renewable energy, and a few others. In April 2009, the California Air Resources Board (ARB) approved a regulation to implement the California Low-Carbon Fuel Standard (LCFS) that requires all transportation fuel sold in California to reduce its carbon intensity by at least 10% by 2020; the regulation also aims to replace 20% of the fuel used by cars in California with alternative fuels by 2020. Similar standards have been considered by several states.

Since the US maintains high trade barriers on renewable energy imports -in particular, ethanol and other biofuels- revamped renewable energy standards at both the federal and state levels would not affect foreign producers in the short term. However, in a longer term perspective, the US may relax its barriers and create new opportunities for biofuel producers in the region. The opportunities could be substantial if the US does a full accounting of the CO₂ emissions associated with its own production of biofuels, particularly ethanol.

LOW-CARBON ENERGY AND THE AMERICAS

According to the International Energy Agency (IEA [2008]), in 2006, renewable energy sources only accounted for 13% of world primary energy supply -10% from biomass and waste, 2% from hydropower and 1% from other renewable energy sources. In addition, these sources accounted for about 18% of total electricity generation -16% from hydropower, 1% from biomass and waste, and 1% from wind.²¹ The IEA projects that, while the share of renewable energy sources in world energy supply will increase under its reference scenario through 2030, fossil fuels will remain the main energy source, accounting for more than 80% of world energy needs in 2030. In Latin America, the use of renewable energy sources accounted for 30% of primary energy supply in 2006 -19% from biomass and waste and 11% from hydropower- and about 68% of total electricity

¹⁶ For more detailed analysis of key GATT articles, WTO agreements, and the decisions of GATT panels and the WTO Appellate Body with respect to climate policy options, see Hufbauer, Charnovitz, and Kim [2009].

¹⁷ Discussions here are based on provisions included in the version that was passed by the House. The full text of ACESA, as passed by the House, is available at http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_bills&docid=f:h2454eh.txt.pdf.

¹⁸ These provisions have several goals: to achieve supplemental emissions reductions of at least 720 million tons in 2020 (and a cumulative amount of 6 billion tons by 2025) through forestry projects in DGCs; to build capacity to reduce deforestation in REDD DGCs; and to preserve existing forest carbon stocks in countries where forest carbon may be vulnerable to international leakage, particularly in DGCs with largely intact native forests. See sections 751 through 756 under Part E "Supplemental Emissions Reductions from Reduced Deforestation".

¹⁹ See section 726 "Strategic Reserve".

²⁰ See section 743 "International Offset Credits".

²¹ Renewable energy sources include hydropower, biomass and waste, geothermal, solar PV, solar thermal, wind, tide and wave energy.

generation came from hydropower.²² The IEA [2008] emphasized that it is important to increase and diversify the use of renewable energy sources in the future energy mix in order to stabilize GHG concentration at 450 parts per million (ppm).

While LAC -blessed with abundant natural resources- have the potential to transform their energy sources, the region has lagged in the world green energy revolution, mainly due to limited political and financial support (IDB [2009]). Renewable energy capacities are confined to a few countries: Brazil for ethanol and other biofuels in a major way, along with hydro capacity and wind power; Mexico and Central America for geothermal. Among these renewables, biofuels are most prominent.

BIOFUELS

Biofuels -referring to ethanol and biodiesels, mainly based on crops- offer a potential source that could address both energy security and environmental concerns. The US and Brazil are currently the largest ethanol producers, accounting for about 50% and 36% respectively of world ethanol production in 2007. The EU is the largest producer of biodiesel, accounting for about 60% of world biodiesel production (OECD [2008]). Canada, China, India and Indonesia have joined the game. According to the OECD [2008], the production of biofuels could double in the coming decade.

Brazil has been a pioneer since the government launched its national alcohol program called "*Proálcool*" in 1975.²³ While the share of biofuel production in total transport fuel consumption accounted for only 3% in the US in 2007, it accounted for more than 20% in Brazil (OECD [2008]). Encouraged by Brazil's success,

other Latin American countries have promoted the production and use of biofuels.

One downside of biofuel expansion is that it could impair food security. It is often claimed that biofuel production ranks among the drivers of the 2006-2008 price shock. Contrary to conventional wisdom,²⁴ some studies report that biofuels are not cleaner than fossil fuels if land use changes are taken into account. Fargione *et al.* [2008] calculate that converting rain forests, peat lands, savannas, or grasslands to produce food-based biofuels will vastly outweigh the carbon saving from burning biofuels rather than fossil fuels, and create a "carbon debt" of 17 to 420 times more CO₂. Evidently, the critical factor in determining whether biofuel is a "good thing" from a GHG emissions standpoint, or a "very bad thing", is induced land change. If land use change can be avoided, through supplementary controls, then biofuel has enormous promise, and so does production in Latin America.

In most countries, the production of biofuels depends on public support policies that may well distort international trade. The US and the EU are conspicuous in supporting biofuel production. The support takes various forms including subsidies, tax incentives, and consumption mandates. In the case of the US, more than 200 support measures are provided to biofuel producers (World Bank [2007a]). To single out the important measures, the US enacted the Volumetric Ethanol Excise Tax Credit (VEETC) in 2005 to provide ethanol blenders with an excise tax credit of 51 cents per gallon of ethanol through 2008; this tax credit was reduced to 45 cents starting in 2009 by the farm bill. The US also provides tax credits of US\$1.00 per gallon for producing or blending advanced biodiesel and US\$1.01 per gallon for producing cellulosic biofuels. The Energy Independence and Security Act (EISA) of 2007 expanded the renewable fuel standard (RFS) that was established by the Energy Policy Act of 2005, requiring that US transportation fuel contain 9 billion gallons of renewable fuels in 2008, increasing

²² Hydropower's large share of total electricity generation in the region is mainly due to Brazil which has a huge capacity for water storage.

²³ Brazil, historically a leading sugarcane producer, has a long record of biofuel production, dating back to early twentieth century. However, it was the 1973 world oil crisis that led the Brazilian government to actively seek alternatives to gasoline. The government launched a national alcohol program called "*Proálcool*" in 1975 that aimed at introducing a blend of gasoline and anhydrous ethanol into the market and providing incentives for the development of vehicle engines that could use hydrated ethanol as fuel.

²⁴ For example, according to the OECD [2008], ethanol based on sugarcane and ethanol based on corn generally reduce GHG emissions by 80% and 30% respectively over the whole production and use cycle, relative to emissions from fossil fuels. The main feedstock for ethanol produced in the US is corn while ethanol produced by Brazil is based mainly on sugarcane.

annually to 36 billion gallons in 2022. Since 1980, the US has also imposed a 54 cent per gallon specific tariff plus a 2.5% *ad valorem* tariff on imported ethanol (GAO [2009]). Brazil from time to time announces that it may challenge US ethanol tariffs in the WTO.²⁵ Whether that happens, it is evident that if the US kept the same level of public support, but abolished its trade barriers, the importation of biofuels from Latin America would be immense.

The push for biofuel production in LAC could be one way to achieve both development and environmental goals -provided the land use change conundrum can be solved. The IDB [2009] observes that most countries in the LAC have vast expanses of land available for the expansion of biofuel feedstock cultivation, without compromising the food supply. Even if the food supply is unaffected, the key question is whether land use changes can be avoided.

WTO AND CLIMATE CHANGE

Elsewhere we have written at length on the WTO dimensions of measures to control GHG emissions.²⁶ Here we merely sketch the contours of a critical debate both for the world trading system and efforts to limit climate change. An early UNFCCC declaration, echoing the chapeau of GATT Article XX, stated that measures taken to combat climate changes should not distort international trade. In recent UNFCCC talks, public officials in the EU, the US, China and India have begun to lay down verbal "markers" on the appropriate role of

trade measures.²⁷ Basically, the EU and the US assert their right to impose border controls on imports of energy-intensive products from countries that do not adequately constrain their GHG emissions. China and India assert that border controls will violate WTO rules and all but promise a legal challenge. Less contentious at the moment, but perhaps not in the future, are the ample subsidies that may be given, through the free allowance of emission permits, to trade-intensive, energy-intensive domestic firms.

The Doha Declaration called for negotiations on "*the reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services to improve market access to those goods and services*".²⁸ WTO members have devoted considerable effort to these mandates, but like much else in the Doha Declaration, results are yet to be achieved. However, the reduction of barriers to trade in biofuels, as well as the reduction of subsidies, would be of particular interest to LAC.²⁹ The reduction of barriers to other environmental goods and services could also do much to promote the adoption of green technology throughout the world, including LAC.³⁰

²⁵ International trade in biofuels is very small but Brazil has remained the largest exporter of ethanol to the US, mainly due to its low production cost and partly due to the duty-free status granted by the US to Caribbean Basin Initiative countries. The US granted a duty free status on a number of products including ethanol to Caribbean Basin Initiative countries. If at least 50% of the feedstock is grown in member countries, countries can export ethanol duty free. Alternatively, Caribbean Basin Initiative countries can still export volumes of up to 7% of US ethanol consumption duty free if more than 50% of the feedstock comes from nonmember countries. Imports of ethanol have been far below the 7% cap (GAO [2009]).

²⁶ See Hufbauer; Charnovitz, and Kim [2009], Hufbauer and Kim [2009a], and Hufbauer and Kim [2009b].

²⁷ Even though the Copenhagen Accord is silent over trade-related issues, the tension over trade and competitiveness issues was palpable during negotiations. The US pushed hard for the right to impose border measures on imports to be included in a draft deal. In parallel, many DGCs pressed DDCs to renounce any use of border measures as part of their domestic climate policies.

²⁸ See Paragraph 31 (iii) of the Doha Declaration, (http://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_e.htm#tradeenvironment)

²⁹ For more information, see Brühwiler and Houser [2008], and Elobeid and Tokgoz [2006].

³⁰ For more information, see WTO/UNEP [2009], World Bank [2007b], and Hufbauer and Kim [2009c].

CONCLUSION

While climate change challenges LAC in many ways, the good news is that it also offers opportunities. The region has a comparative advantage in pursuing a low-carbon growth path. International climate talks suggest that mitigations

efforts -notably, REDD- can bring money and technology to the region. Of course, it is a long way to convert regional potential into regional reality. Countries must carefully assess their policies and strategies. A key component of success in meeting the climate challenge will be increased cooperation between countries in the region. ♦

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TACKLING CLIMATE CHANGE IN LATIN AMERICA AND THE CARIBBEAN: ISSUES FOR AN AGENDA

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Latin America is extremely vulnerable to climate change. While the negative effects of climate change tend to affect all the region's countries, their physical and socioeconomic heterogeneity means there are a variety of factors of vulnerability, and the social and sectoral distribution of the impact varies from one country and/or subregion to the next. It is on account of this diversity that the importance attached in national agendas to emissions mitigation or climate disturbance adaptation-related issues varies greatly from one subregion to another, and even within certain subregions. Countries' national positions in multilateral climate negotiations are influenced by their emissions profile and perceptions of vulnerabilities, opportunity cost assessment, the country's relative size, and foreign policy aspects. The heterogeneity of the region's countries hampers regional cooperation initiatives geared both to adaptation and mitigation, and to coordinated action in multilateral negotiations. The picture is different when we look at the subregions: in Central America and the Caribbean, the impact of global warming tends to be more consistent, facilitating cooperation initiatives and the adoption of joint negotiating positions; in South America, however, the diversity of conditions is far more extreme. Here, the pursuit of variable geometry alliances and of issue-centered cooperation seems to make more sense.

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INTRODUCTION

The climate change agenda is a major challenge for Latin America and the Caribbean (LAC). The region is extremely vulnerable to climate variations, which have such negative impacts as the scarcity of water resources, the savannization of forests and desertification of areas now used for agriculture, the flooding of coastal areas, and the loss of biodiversity.

The region's vulnerability is compounded by the patterns of consumption and production adopted by most of its countries, and consequent intensive generation of carbon emissions. Despite the region enjoying comparative advantages in carbon-intensive goods production, the absence of effective policies to control land use changes has made it possible for deforestation to transform native forests and woodland into land for grazing and agricultural production, thus contributing to the hike in emissions.

While the negative effects of climate change tend to affect all countries in the region, the high degree of physical and socioeconomic heterogeneity between them means that factors of vulnerability vary and the social and sectoral distribution of impacts is different from one country and/or subregion to another. Because of such diversity, the degree of importance attached in national agendas to issues relating to the mitigation of greenhouse gas (GHG) emissions or adaptation to climate disturbance regimes varies significantly from one subregion to another, and sometimes even within them.

To meet these challenges the region's countries need to be prepared to apply policies, regulations, and instruments at national level in order to steer investors, producers, and consumers toward low-carbon patterns of consumption and production. At the same time, they must be trained to defend their interests in the complex international climate change negotiations.

There is room for regional cooperation on both fronts. However, given the heterogeneity that characterizes LAC countries, cooperation -if it is to be effective- must be issue-based and subregionally, bilaterally, or multilaterally implemented, depending on the likelihood of converging interests.

The work is organized as follows. Section II contextualizes the issue, analyzing the implications

of climate change for the region and the challenges presented by the phenomenon for Latin American countries. These challenges are quite heterogeneous in terms of the various countries' qualitative and quantitative emissions profiles, and of their vulnerability to climate change. Section III contains a description -not intended as exhaustive- of the national strategies adopted by Latin American countries to deal with climate change. These internal strategies "dialogue" with the international negotiating process to coordinate climate change mitigation and adaptation efforts summarized in Section IV. Section V analyzes Latin American countries' participation in climate change negotiations by looking at the negotiating positions adopted by five countries in the region (Argentina, Brazil, Costa Rica, Mexico, and Peru) in some of the most controversial issues in those negotiations, such as mitigation commitments, financing, technology transfer, and reducing emissions from deforestation and degradation (REDD) activities. Last, Section VI explores the issue of cooperation over climate change among the region's countries, and identifies the challenges, possibilities, and limits of such cooperation.

TACKLING CLIMATE CHANGE IN LATIN AMERICA AND THE CARIBBEAN

Despite their geographical and topographical heterogeneity, LAC are highly vulnerable to climate change. In addition to rising average temperatures and increasingly frequent extreme weather events, the scenarios designed by the Intergovernmental Panel on Climate Change (IPCC) anticipate major physical impacts with significant economic and social implications. Under these scenarios, climate change will have a negative impact on the availability of today's abundant water resources in the region. This will, in turn, create serious risks of savannization of forests and desertification of areas currently intended for agriculture, flooding in coastal areas, and a significant loss of biodiversity across the various different ecosystems. On the basis of these impacts, the agriculture, power generation (hydroelectric), and fishing sectors will be particularly badly affected.

The region's vulnerability has, in recent years, manifested in increased climate variability, and ever more intense and numerous extreme events like floods,

droughts, hurricanes, and cyclones, which entail high economic and social costs.

The adoption of unsustainable production and consumption practices has also contributed to increased regional vulnerability to climate change. The most notable case is the result of changes in land use, by virtue of which deforestation clears the way for the conversion of native forests and woodland into areas for grazing or agricultural production. Other economic and social factors, like population pressure, poverty, and disorderly and accelerated urban growth, also make the region's vulnerability to climate change more pronounced.

Although some impacts of climate change tend to affect the region as a whole (rising average temperatures and the intensification of extreme events), their distribution across LAC will be asymmetrical, given the region's characteristic physical and socioeconomic heterogeneity. A high proportion of the population in Caribbean countries is located in low-lying coastal regions, making them particularly vulnerable to rising sea levels. On the other hand, countries where agricultural activity has little effect on the composition of Gross Domestic Product (GDP) are less vulnerable to the desertification of arable land than those depending heavily on agriculture, especially if it is irrigated land.

However, no country in the region will be immune to the effects of climate change and several will suffer a variety of impacts which will reflect their internal topographic and geographic diversity. This is the case with the Andean countries, which are simultaneously vulnerable to the desertification of agricultural land, the reduced availability of water resources (related to the reduction of the Andean glaciers), rising sea levels, and rising Pacific temperatures.

Despite being highly vulnerable to climate change as a region, LAC's contribution to the phenomenon is a modest one compared with the developed countries (DDCs) and China. However, it is far from negligible and has been on the increase between 1990 and 2005, reflecting not only the evolution of a unique regional emissions profile, but the performance of the main Latin American economies, whose emissions grew faster than the world average between 1990 and 2005.

The region's share of world GHG emissions in 2005 (excluding those to do with changing land use) was slightly lower than the region's world

economic importance: 7.9% and 8.5% respectively. If emissions associated with changes in land use -a fairly significant phenomenon in the region, especially in South America- are included in the calculation, the regional share of total emissions exceeds their impact on world GDP. In this case, the region's three major economies' joint share in global emissions reaches almost 9% of the world total (as opposed to just 5.2%, excluding emissions related to changes in land use). In other words, taking the various sources of GHG emissions into account, the region's contribution to climate change exceeds its share of world GDP (WRI [2010]).

To a large extent, this result is bound up with the buoyancy of the region's agricultural sector over the last fifteen years and the fact that the expansion of agricultural production, often in "border" areas, is grounded in unsustainable land occupation and production practices, like deforestation by illegal burning.

This development led to a unique regional emissions profile, with livestock and forestry accounting for 32% of total GHG emissions, agriculture, changes in land use, and forestry, 31%, and the energy sector (including transportation), 31% (CEPAL [2009]).

Where emissions are concerned, the aggregate region's results also largely reflect the performance of two countries that are of some relevance as emitters from a global perspective: Brazil and Mexico, the only ones at regional level whose GHG emissions exceed 1% of the world total.

Even recognizing the role of these two countries as "global emitters" (the more so as "regional emitters"), it is wise not to exaggerate the similarities between them. Even from the viewpoint of their prominent place in the league table of emitters, there is a clear distinction between the two countries. In 2005, Brazil lay fourth (behind China, the United States - US, and the European Union - EU) and accounted for 6.6% of total GHG emissions, while Mexico lay tenth, with 1.6% of global emissions (WRI [2010]).

The two countries' emissions profiles exhibit more differences than similarities, Brazilian emissions being largely related to deforestation and changes in land use. Between 1990 and 2005, Brazil was the main emitter of GHG linked to deforestation, accounting for 32.4% of such emissions (World Bank [2009]), and

contributed 9.7% of emissions from farming activities.¹ On the other hand, Brazil's share of emissions associated with power generation was just 1.3% in 2005, largely reflecting the high impact of renewable energy sources in its energy mix.

Mexico's share of emissions associated with deforestation and farming is far lower than Brazil's, while energy-related emissions are relatively more important due to the high impact of fossil fuels (over 86%) in the Mexican energy mix (World Bank [2009]).

The region's other countries' shares of global emissions are well below those of Brazil and Mexico. Of all the Latin American countries in 2005, only Venezuela was above 1% of global emissions. Argentina (0.8%), Bolivia (0.5%), and Colombia (0.4%) are the other countries in the region whose emissions are of any relevance. Twenty-one Latin American countries -including the Caribbean and Central America- do not, individually, represent even 0.1% of global emissions.

The region's high vulnerability to climate change, combined with the concentration of regionally and globally relevant emissions sources in two countries, has a two-fold effect on the region's climate change agendas:

- *First*, all countries in the region tend to attach great importance to the adaptation agenda, a priority that intensifies as each country's factors of vulnerability to global warming increase; and,
- *Second*, although no country can be exempted from mitigation efforts, in the case of the region's two major GHG emitters, Brazil and Mexico, these efforts only affect domestic and global political agendas, and, therefore, ongoing multilateral negotiations.

These features will have an impact both on national strategies to meet the challenge of climate change, and on the negotiating positions of the region's countries at world level.

¹ If the league table of GHG emissions does not take into account changing land use, Brazil drops to seventh, representing 2.68% of world emissions. Mexico drops just one place because, unlike Brazil, changing land use and deforestation are not the country's main source of emissions. Data available in English at <http://cait.wri.org/>.

NATIONAL STRATEGIES TO TACKLE CLIMATE CHANGE IN LATIN AMERICA AND THE CARIBBEAN

The signing of the United Nations Framework Convention on Climate Change (UNFCCC) -and the later signing of the Kyoto Protocol by the region's countries- did not involve adopting emissions reduction targets or international commitments to take voluntary action liable to be quantified and supervised. Still, the signatory parties to the Convention (excepting the Least Developed Countries - LDCs) undertake to submit, within preset deadlines, national communications containing national inventories of anthropogenic GHG emissions not controlled by the Montreal Protocol, identify the impacts of climate change, map sectoral and regional vulnerabilities to the phenomenon (using IPCC-developed scenarios), and outline policies and measures put into practice (or yet to be implemented) by countries to deal with climate change.

Thirty Latin American countries submitted their first national communications. Argentina and Uruguay also submitted their second. Mexico has already submitted the first three communications and the executive summary to the fourth.² The drafting of national communications in itself represents a considerable technical and institutional effort, mobilizing teams from various different public bodies, research institutes, universities, and so on. In several small countries in the region, the national communication was drafted with the support of resources from cooperation organizations for the development of DDCs (Germany, Spain, the United Kingdom) or multilateral institutions such as the United Nations Development Programme (UNDP) or the World Environment Fund (WEF).

² Like all the non-Annex I Parties of the UNFCCC, each Latin American country signing the Kyoto Protocol "Each non-Annex I Party shall submit its initial communication within three years of the entry into force of the Convention for that Party, or of the availability of financial resources (except for the least DDCs, who may do so at their discretion)". The frequency of subsequent communications is set by the Convention's Conference of the Parties (COP). So, for example, Decision 8 of COP 11, adopted in 2005, incorporates guidelines on the development and financing of the second and third national communications of non-Annex I countries, in which the guidelines of another decision, taken at COP 2 in 1996, are refined and deepened. The decisions of the successive COPs regarding national communications set the deadlines for Annex I countries to draft and submit their reports, but contain no such demands for non-Annex I countries.

Regarding the identification of the emissions profile and the mapping of the foreseeable impacts of climate change, drafting the first national communication can be considered a first step toward developing national climate change plans or strategies, given the institutional effort involved and the results produced. National communications identify priorities in mitigation and adaptation, and in institutional training, the production of studies, and research, and so on. They therefore make up a solid (and internationally comparable) base for the subsequent development of national climate change plans. Nevertheless, few countries in the region seem to have taken the next step, namely, drafting and (starting) the implementation of national climate change plans. Those who have moved forward in this direction have done so in recent years.

Chile has been a pioneer in this field. In 1998, it established the National Climate Change Strategy Guidelines, although only defining this policy in detail in 2006. After the policy adopted in 2006, Chile passed the National Climate Change Plan, covering 2008-2012, and anticipates the development of national and sectoral mitigation and adaptation plans to be implemented between 2010 and 2030 before the first decade of the century is out.

National plans for climate change strategy are a fairly recent occurrence in the region's two main economies, Brazil and Mexico. The Interministerial Climate Change Commission, which contained a significant number of government bodies, and the Brazilian Climate Change Forum, which also brought contributions from state and non-governmental entities, were set up in Brazil in 2007 with a view to developing the National Climate Change Plan. The Plan was formulated in 2007-2008 and subjected to public consultation in 2009.

In Mexico, an Intersecretarial Climate Change Commission, chaired by the Secretariat of the Environment and Natural Resources, and comprising six other secretariats, drew up a National Climate Change Strategy in 2007. Subsequently, in 2009, the same body published a Special Climate Change Program, which consolidates the guidelines already submitted, while specifying and quantifying the mitigation objectives by area and program, and moving forward in defining the stages of the national adaptation program.

The drafting of national plans in this area in these countries is certainly a reflection of the scale of the issue on the region's foreign policy agendas over the

last two or three years, especially, those of the major emerging Latin American economies.

But the issue of climate change in these countries has also become politically and institutionally dense in the field of internal policy, with the inclusion of new social and economic actors, like the business sector (e.g. the industrial and agroindustry sectors), and with a new series of initiatives that have had a strong political and media impact.³

Its more conspicuous role in the internal political agenda is largely due to the fact that it is in the major countries of the region that the debate over an active position on mitigation change makes some sense. This is not just because these countries' emissions are more than merely marginal to global warming, but because their economies' mitigation potential creates significant opportunities for the business sector.

Therefore, it is no coincidence that Brazil and Mexico's national plans give high priority (and devote a great deal of room) to the "mitigation opportunities" identified in various different sectors of the economy, especially, in those that currently account for a significant portion of GHG emissions.

On the other hand, in the smaller economies, although the identification of mitigation efforts is always present in national documents, these focus on mapping vulnerabilities and impacts, and on the issue of climate change adaptation. For these economies, mitigation efforts represent a modest contribution to global emissions reductions objectives, and therefore contribute little or nothing to mitigating the effects of climate change. In addition, the mitigation efforts they adopt have no impact in terms of reducing adaptation costs, which are in essence due to the performance of the major global emitters. In contrast, adaptation is the only strategic policy dimension on which their governments can act unilaterally.

Beyond the relative importance attached by the region's countries to mitigation and adaptation

³ Motta Veiga and Rios [2008] describe the processes by which sustainable development issues were introduced in the international agenda of various economic actors in Brazil. Again in the case of Brazil, Viola [2010] refers specifically to the consolidation of climate change-related debates and policy initiatives as a foretaste of the meeting in Copenhagen in December 2009.

initiatives, certain economic sectors are given priority in the vast majority of national communications and in Latin American countries' climate change plans. The concerns associated with some of these sectors arise mainly in the area of adaptation issues. This is true of water resources, agriculture, energy use in transportation, and coastal areas (extreme weather events, like hurricanes and rising sea levels). In the case of sectors like energy production and forestry, concerns and initiatives center mainly on mitigation objectives, which are also highly prominent in some countries where forests are concerned.

The main internal challenge facing the region's countries in their efforts to respond to climate change-related risks and opportunities is to integrate defined mitigation and adaptation objectives with their sectoral policies in areas like energy, transportation, industry, and agriculture. The search for consistency across these policies is paramount if successful initiatives in one sector are not to be neutralized by adverse developments in another.

Where mitigation and adaptation objectives are concerned, one premise to establish consistency between internal policies is for national emission inventories to be periodically updated so that climate change actions and initiatives have the proper focus. Many countries in the region base their national policies and strategies on inventories developed ten or fifteen years ago and do not, therefore, consider the structural transformations that have taken place since.

So, when updating the emission data generated by large sectors with a view to drawing up the National Climate Change Action Plan (2008-2012), the Chilean government found that, compared to the previous inventory, there had been a sharp rise in emissions in the transportation and power generation sectors. In the last case, this development was explained by the reduction in natural gas consumption (which used to be imported from Argentina) and the increased use of high-carbon fuels.

In Brazil's case, between 1994 (the year of the only existing detailed official emissions inventory) and 2009, the industrial structure of transportation and commodities production underwent major changes. *"According to calculations by the Environment Ministry released in October 2009, emissions by the energy, industrial, agricultural, and waste treatment sectors rose 40% between 1994 and 2007, and those*

due to deforestation fell 20%. (...) The changes introduced in the electricity system by President Lula's administration, with a significant increase in fossil-fuel electricity generation, have altered the carbon intensity of the electricity system" (Viola [2010]).

The discovery of large offshore "pre-salt" oilfields in Brazil and the growth of mining activities in various countries in the region suggest the changes in the emissions profile will continue and must be taken into account by sectoral policies and national strategies on climate change in the region's countries.

The difficulty of meeting the challenge of climate change in the region still lies in financing mitigation and adaptation actions. This question is the subject of ongoing multilateral negotiations, as external financial resources are indispensable, especially for small countries, and least developed and most vulnerable economies. In this sense, the most prominent countries in the region in the post-Kyoto negotiations have made compliance with voluntary targets conditional on the transfer of financial resources from DDCs. However, in the case of these countries, it is not clear whether the contribution of external resources -other than those that might be obtained through market mechanisms, Clean Development Mechanism (CDM) projects, or REDD- is an indispensable component in achieving the mitigation and adaptation objectives set by these countries.

CLIMATE CHANGE NEGOTIATIONS

The 15th Conference of the Parties (COP 15) was held in Copenhagen in December 2009. The objective was to reach an agreement on fresh commitments to reduce GHG emissions or tackle the difficulties involved in adapting to global warming. After two weeks of intense negotiations, no agreement between all countries had been reached. At the end of the Conference, the so-called Copenhagen Accord was unveiled: a document that does not constitute a formal agreement. The 193 countries *"took note of the Copenhagen Accord"*, but did not pledge to accept it.

The first stage of the international climate change negotiations was the signing of the UNFCCC at the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro in 1992. Then, in 1995, the First Conference of the Countries Ratifying the Convention on Climate Change, also

known as the Conference of the Parties or COP 1, was held in Berlin, and, in 1997, the Kyoto Protocol was adopted, in which the industrialized countries (Annex I nations) pledged to cut their GHG emissions by at least 5% compared to 1990 levels, between 2008 and 2012.

Negotiations began at COP 13 in Bali in 2007, with commitments to reduce emissions starting in 2012.⁴ The Bali Action Plan negotiation was carried out in parallel with the aim of executing joint cooperation actions. This negotiation was the first to include the participation of developing countries (DGCs), who would be required to adopt Nationally Appropriate Mitigation Actions (NAMAs). These measures will be supported by the DDCs through financing, capacity building, and technology transfer, and must in turn be measurable, reportable, and verifiable (MRV).

THE MAIN NEGOTIATING AREAS

The objective of the current negotiating round is to reach an agreement on commitments to address the most relevant issues on the climate change agenda in the period starting in 2012. The most salient issues up for discussion are:

- a. *Common long-term goals:* The definition of a shared vision regarding long-term actions and objectives to reduce emissions.
- b. *Emissions mitigation:* Commitments and/or the definition of national and international action to reduce GHG emissions.
- c. *Climate change adaptation:* The definition of the countries' climate change adaptation actions.
- d. *Development and technology transfer:* Development and technology transfer actions to provide support for mitigation and adaptation actions.
- e. *Financing:* The availability of financial resources to support mitigation, adaptation, and technological cooperation actions.

⁴ The negotiations toward a post-Kyoto agreement continued at COP 14 in Poznan (2008) and COP 15 in Copenhagen (2009) without countries reaching consensus over the commitments to be made after 2012.

Two parallel processes are being negotiated. The first focuses on the provisions of the Bali Action Plan, its objective being to define long-term actions related to the above issues. The second is to do with the revision of the commitments of the Kyoto Protocol -that expires in 2012- and will have to set new emissions limits for Annex I countries for the periods after 2012.

The dynamics of the negotiations framework of the UNFCCC are heavily marked by the gap between DDCs and DGCs. This gap largely reflects the recognition of the differences in the countries' historical responsibilities in terms of GHG emissions and, therefore, global warming. This recognition is embodied in the Convention under the principle of common but differentiated responsibilities in the efforts to mitigate emissions.

DGCs attempts to exert their influence in these negotiations prompted the creation of groups or alliances. The most important of these is the so-called G77,⁵ which aligns itself with China in climate negotiations.

Despite seeking a common position, the G77 is made up of smaller blocs reflecting a wide array of interests. These include the Alliance of Small Island States (AOSIS) and the Least Developed Countries (LDCs). The first bloc comprises over 40 countries that are particularly vulnerable to rising sea levels and, consequently, extremely sensitive to global warming. Indeed, many of them have already suffered a partial loss territory. LDCs form a group of 49 nations that protect themselves from making any commitments that might incur costs on account of their adverse economic situation. There are countries in both groups that will be severely affected by rising temperatures, but they are too small for their efforts to reduce emissions to make an impact on global warming. They are therefore demanding significant reductions in GHG emissions by the main emitter countries and financing to implement adaptation measures.

But the G77 also comprises emerging countries like Brazil and India that are on their way to becoming major emitters. The group also aligns itself with China, which is now the world's largest emitter, with 23% of the total, and the country with the highest emissions

⁵ This group was formed in 1964 in the scope of the UN Conference on Trade and Development (UNCTAD) and currently takes in over 130 countries.

growth in the world. While acting jointly in preparing for the Copenhagen Conference, the G77 subgroups expressed themselves independently, sometimes with opposing stances over the two weeks of intense negotiations in the Danish capital.⁶

One of the main recent developments in the negotiating process was the participation of the US, today the world's second largest emitter, accounting for 20% of total emissions. In 1997, the US Senate passed the Byrd-Hagel Resolution, which meant rejecting the Kyoto Protocol. President Clinton signed the Protocol in 1998, but never submitted it to the Senate for ratification. The Bush administration rejected the Protocol. This means that, despite being the second largest individual GHG emitter, the US stands outside any commitments regarding emissions reduction targets.

The Obama administration raised expectations of a change of position by the US. However, the pressures for the US to accept commitments in Copenhagen sparked a wide-ranging internal debate on the danger of US companies being at a competitive disadvantage in the global market as a result of limits imposed on the internal emission of GHG. The concern is all the greater due to the loss of competitiveness to emerging countries like China, India, and other DGCs that have no commitments to equivalent emissions reduction targets.

Given this risk, various bills pending in the US Congress introduced provisions designed to levy duties on imported products in the event of any future US commitments to reduce emissions being imposed on local companies. In other words, such bills foresee measures that may represent higher costs for imported products and/or subsidies for domestic producers with high levels of GHG emissions.

The House of Representatives approved a bill on June 26, 2009, containing a national program of measures to achieve substantial reductions in carbon emissions in the US and so make the transition to an economy with a clean energy mix in the period 2010-2050 viable. This is the American Clean Energy and Security

Act (ACES) of 2009, known as the Waxman-Markey Reform. The bill was then sent to the Senate, where it was amended, but has not yet been approved. Without the guarantee of endorsement by the legislature, the US negotiators found it difficult to make any ambitious commitments in the COP 15 negotiations.

The EU countries joined the Kyoto Protocol and have been taking mitigation initiatives. For the new global agreement, the EU is proposing that DDCs reduce their emissions by 30% until 2020, with 1990 being taken as the base year for the calculation. Also concerned by the effects on competitiveness and, furthermore, by the risks of high-carbon production transfer due to certain countries not adopting mitigation commitments, the Europeans are beginning to discuss the adoption of a "carbon rate" on imported products in case emerging countries prove unwilling to make comparable mitigation commitments.

For their part, the emerging countries contend that the principle of "common but differentiated responsibilities" constitutes a pillar of the UNFCCC that should not be overlooked. This means that, while committed to actions in favor of reducing emissions resulting from a "business as usual" emissions pattern, the emerging countries are not subject to the adoption of mandatory targets. To implement national mitigation actions, they must in return receive financing from DDCs, as laid down in the UNFCCC. This is the stance the G77 has been defending.

Under present circumstances, the DDCs' significant progress toward adopting more ambitious targets seems to increasingly depend on emerging countries making mitigation commitments. Some believe that, in order to encourage such commitment, it is necessary to threaten the imposition of trade barriers. For others, trade barriers contribute to the breakdown of the climate of cooperation, as they hold up negotiations toward an agreement.

THE RESULTS OF COPENHAGEN

The Copenhagen Accord is a three-page document that, despite displaying progress on various issues, was not unanimously adopted, a necessary requirement for it to be considered legally valid. The main achievement was that the largest global emitters -including the developed and emerging countries-

⁶ Interestingly, Mexico is the only Latin American country that does not belong to the G77. It has taken an independent stance over climate change negotiations. As will be seen further on, Mexico submitted a financing proposal that differs from the positions defined by the G77.

agreed on the need to implement significant reductions in GHG emissions in order to prevent average global temperatures rising more than 2°C. This was the first time these countries have agreed to set a limit for the increase in average global temperatures, although specialists had recommended the limit should be 1.5°C.

The countries pledged to cooperate over reaching the emissions limit as quickly as possible, at both national and global levels, and acknowledged that the DDCs must do so over a shorter space of time than the DGCs. Despite stating that Annex I countries should commit to implementing quantitative targets to reduce emissions, the document presents no figures, only mentioning that the DGCs are to adopt voluntary mitigation measures. The two groups of countries are to submit their targets or voluntary actions by January 31, 2010.

One issue that sparked a serious dispute, mainly between the US and China, over the two weeks of meetings in Copenhagen was the question of transparency and supervision of emissions reductions. While the US insisted that mitigation measures, including DGCs, should be measured, reported and verified, the Chinese negotiators argued that this showed a lack of respect for national sovereignty.

The Copenhagen text states that compliance with emissions reduction commitments and financing provided by DDCs is to be measured, reported, and verified. However, for DGCs the commitment to supervision is confined to actions with international financing. Actions adopted without international financing are to be reported on only through national communications.

Another aspect that provoked serious controversy in the preparations for Copenhagen was the announcement in the agreement of a commitment to set up a US\$30 billion financing fund by 2010-2012 to be distributed evenly between adaptation and mitigation. The most vulnerable DGCs, and the less DDCs, small islands, and African countries are to have priority in the allocation of financing for adaptation actions.

Again on the subject of financing, the document includes the objective of jointly mobilizing US\$100 billion a year until 2020. According to the text, the fund will include a share (yet to be determined) of public and private resources. For the administration of the financing fund's resources, the document proposes the creation of a Copenhagen Green Climate Fund, to be

established as the operating entity of the Convention's financing mechanism.

An important step was taken in the regulation of REDD mechanisms. The Copenhagen Accord recognizes the need to provide incentives for these actions, even via the REDD+ mechanism,⁷ to enable the mobilization of DDCs' financial resources.

The document also reports the concern to step up development and technology transfer,⁸ and establishes a Technology Mechanism aimed at accelerating technology transfer for adaptation and mitigation actions, although it does not explicitly state what instruments are to be used.

The document conspicuously makes no mention of the continuation of the negotiations in 2010, although it does conclude by referring to the need to carry out an assessment of the Accord's implementation in 2015.

The US, China, India, South Africa, and Brazil took the initiative in drafting the document. Some countries expressed emphatic opposition to the agreement, including four Latin American countries: Venezuela, Bolivia, Cuba, and Nicaragua. In response, the 193 countries taking part in the Conference agreed to "*take note of the Copenhagen Accord*", which, as mentioned above, means the document is not legally valid.

Although the text of the document says nothing on the subject, the negotiating process is ongoing in 2010: the next Conference of the Parties (COP 16) is scheduled for the end of the year in Mexico City.

⁷ The REDD mechanism lays down that countries willing to reduce emissions caused by deforestation and forest degradation should receive financial compensation. COP 15 adopted a broader definition of this mechanism, now called REDD+. The new definition provides positive incentives for emissions reduction caused by deforestation and forest degradation, and makes provision for the role of conservation, sustainable forest management, and the increase in carbon reserves in DGCs' forests.

⁸ Brazil is proposing the creation of a mechanism such as an international register associating each NAMA adopted by a developing country with the financial and technological support it receives. See the document, "*Brazil Views and Proposals on Paragraph 1 of the Bali Action Plan*". Bonn, April 2009.

LAC COUNTRIES AND CLIMATE CHANGE NEGOTIATIONS

The position taken by individual countries in climate change negotiations is influenced by various factors relating to the impacts associated with mitigation and adaptation, cost and opportunity assessment, the country's size, and various foreign policy items. Viola [2010] identifies seven specific factors that could determine the different national negotiating positions. The following are important for the region's countries:

- Emissions profiles: total, *per capita*, growth rate, and position in the world emissions ranking;
- Perceptions of the country's vulnerability by the main social actors;
- Emissions reduction costs related to the energy mix, share of forests in the territory, etc;
- Perceptions of losses and gains for the country in the transition to a low-emissions economy; and,
- Historical doctrines and alliances related to the main lines of the countries' foreign policy.

As mentioned in the second section, all countries in the region consider the adaptation agenda a priority, but the issue's relative importance in their negotiating positions varies according to their degree of vulnerability. Furthermore, the mitigation agenda tends to take up more room in countries required to adopt commitments to reduce emissions due to their relative importance in terms of global emissions. In Latin America these countries are Brazil and Mexico.

Analysis of the positions defended by some Latin American countries during the COP 15 negotiating process reveals sometimes subtle differences of interests and priorities in these discussions. *Table 1* contains a stylized summary of the positions of five countries (Argentina, Brazil, Costa Rica, Mexico, and Peru) in some of the most controversial issues in these negotiations: mitigation commitments, funding, technology transfer, and REDD activities.

Brazil, the region's largest emitter, generally takes a more cautious stance toward mitigation commitments. Although the language used by all the countries analyzed

is similar, the Brazilian stance seeks to subordinate the implementation of each voluntary action (NAMA) by the DGCs to support from the DDCs through financing and technology transfer. That is, in the event of there being no financing, the country would not be required to adopt mitigation actions.

This stance contrasts with Peru's, which, of all five, is the country most concerned about its vulnerability to the effects of global warming. As well as calling for the DDCs to adopt ambitious emissions reduction targets, the Peruvian government suggests that DGCs submit a "bold and voluntary" mitigation proposal, jointly representing a 30% emissions reduction compared to "business as usual" up to 2020 and 40% up to 2050.⁹

Without affecting the negotiating positions, various DGCs on the road to Copenhagen, including four Latin American countries, announced voluntary commitments to reduce emissions. Brazil and Guyana made known their objectives to reduce emissions compared to the "business as usual" path by 2020, Mexico announced a 50% reduction target by 2050 compared to 2000, and Costa Rica stated that it intends to achieve neutrality in emissions by 2021.

Mexico bases its stance on the question of financing and has submitted a detailed proposal to set up a Global Climate Change Fund as a complement to existing mechanisms. The Mexican proposal suggests that each country's contribution to the Fund should be in line with the principle of common but differentiated responsibilities and proposes that countries' contributions to the Fund be calculated on the basis of three indicators: GHG emissions, population, and GDP.¹⁰

But Brazilian negotiators were reluctant for DGCs to make any commitments to contribute to financing funds until the Copenhagen Conference, when President Lula announced a willingness to contribute to financing activities in the poorest countries. Furthermore, the Brazilian position has been very emphatic in demanding ambitious financing commitments from the DDCs.

⁹ Peruvian position. 15th World Climate Change Summit. 2009. Ministry of the Environment.

¹⁰ The document was submitted by Mexico to the ACCRA Conference in August 2008: "*La intensificación de la labor relativa al suministro de recursos financieros y a la inversión en apoyo de las medidas de mitigación y adaptación de la cooperación tecnológica*".

Table 1

A COMPARATIVE TABLE ON NEGOTIATING POSITIONS IN SELECTED COUNTRIES

	Mitigation - Goals / NAMA	Financing	Technology Transfer	REDD
Argentina	<p>Emissions reductions for DDCs should include: aggregate reductions of at least 45% by 2020 and at least 95% by 2050 against the base year, 1990.</p> <p>Development of NAMA by DGCs on a voluntary basis should include descriptions of national circumstances and training needs, mitigation technologies and financial support.</p>	<p>Financing commitments by DDCs should be in line with the principle of common but differentiated responsibilities.</p> <p>Urgent financing support for adaptation action for all highly vulnerable DGCs.</p>	<p>Creation of an institutional structure in the ambit of the Convention to promote technology development and transfer.</p> <p>International cooperation in research and development will help to settle the issue of intellectual property rights, which will be divided between the parties involved.</p>	<p>REDD activities should receive suitable financing or technical support from DDCs.</p> <p>The type of support and the scale of activities must be decided by the country implementing the REDD action.</p> <p>Financing and technological support for the conservation and sustainable management of forests in DGCs must be provided by DDCs.</p>
Brazil	<p>The scope of individual countries' mitigation actions in Annex I must be proportional to their historical responsibility for rising global temperatures.</p> <p>Countries not listed in Annex I and implementing NAMA should do so in accordance with sustainable development objectives.</p> <p>Creation of an international registry associating any action taken by DGCs to financial and technological support from DDCs.</p>	<p>It must be predictable, stable, new and additional for the implementation of priorities identified at national level.</p> <p>It must come from obligatory contributions by DDCs as part of their commitments under the Convention.</p> <p>It must be complemented by the creation of new international and regional mechanisms.</p>	<p>The Convention states that technological support is an obligation of DDCs and that the extension of any action implemented by DGCs will depend on the level of financial and technological support they receive.</p> <p>Any technological support must be MRV.</p> <p>Approaches must be adopted that combine the combined protection of intellectual property rights with facilitation of access to shared technologies, and the example of decisions by other intellectual property-related forums, such as the Doha Declaration on the TRIPS Agreement and Public Health will be taken as a benchmark.</p>	<p>The credits for REDD activities must not be widely used.</p> <p>REDD must not be included in the CDM.</p>

A COMPARATIVE TABLE ON NEGOTIATING POSITIONS IN SELECTED COUNTRIES

Table 1

	Mitigation - Goals / NAMA	Financing	Technology Transfer	REDD
Costa Rica	All DDCs must adopt goals that are MRV and DDCs should participate in NAMA associated with access to MRV technology, financing and training. Countries in Annex I should reduce emissions by 25%-40% against 1990 levels.	Financing proposals should focus on adaptation action.	Demand for technology transfer should be concentrated in adaptation action.	Countries not listed in Annex I will be favored by REDD activities that are MRV. Inclusion of REDD activities in the CDM.
Mexico		Creation of a Global Fund against Climate Change (Green Fund) to be agreed multilaterally and established as a financial scheme to complement existing mechanisms. All countries must contribute to the Fund in strict accordance with the principle of common but differentiated responsibilities. Differentiation of responsibilities and the capacity to contribute must be determined on the basis of the use of three indicators: <ul style="list-style-type: none"> • GHG emissions; • Population; • GDP. 		Implementation of international programs geared to supporting technology development and transfer suited to regional needs. They must operate through regional centers and contribute to cooperation in the sectoral centers' research.
Peru	Countries in Annex I must reduce emissions by at least 45% by 2020 and 95% by 2050 against the base year, 1990. DDCs must submit a bold voluntary mitigation proposal with a view to obtaining 30% reductions in relation to the current trajectory of emissions by 2020 and 40% by 2050. Peru announced its commitment to zero deforestation and a 47% reduction in emissions in 10 years.	A binding commitment from DDCs with MRV financing for adaptation and mitigation activities over the next 4 years. Creation of a global tax on fossil fuel production of US\$0.5/barrel to create resources earmarked for an additional financing fund using DDC contributions. DDCs must participate in financing in accordance with the polluter pays principle. Elimination of financing schemes for countries with rising emissions. Adaptation financing on the basis of the vulnerability of ecosystems.	International cooperation over research that combines ancestral knowledge with modern technology. Cooperation should foster DDCs knowledge transfer to DDCs, as well as among them.	Establishment of global policies and incentives to support efforts to control deforestation, conservation and sustainable forests management (REDD and REDD+).

Source: Authors' elaboration.

Peru is showing great interest in the availability of and access to financing. Not only does it argue that the DDCs should undertake binding commitments to finance adaptation and mitigation actions over the next four years, but is even suggesting the establishment of a world tax on fossil fuel production to generate resources for a financing fund to complement the contribution of DDCs. Peru is also advocating that DGCs should contribute to financing on the principle that the higher a country's emissions levels, the higher its contribution to the fund. But the Peruvian position also demonstrates a concern for the criteria of resource distribution, particularly the tendency to give priority to the less DDCs and small islands, and contends that the allocation has to be determined on the basis of the vulnerability of ecosystems.

The concern for development, technology transfer, and access to technology is apparent in the positions made known by all countries. In addition to financing associated with technological development, the treatment of intellectual property rights is another sensitive question in this regard. Both Argentine and Brazilian documents refer to this issue. For Argentina, international cooperation in research and development would facilitate treatment of the issue of intellectual property rights. What is more, the Brazilian document refers to the Doha Declaration on the TRIPS Agreement and Public Health as an example of a solution to the similar problem of compatibility between the protection of property rights and access to technologies.

On the question of the REDD mechanism, Brazil took a contrary stance to most Amazon countries. Countries like Peru, Colombia, Chile, and Costa Rica defended the inclusion of financing DDCs for REDD activities under the CDM.¹¹ But Brazil is resisting such a proposal because of its concern to avoid any risk of calling into question national sovereignty over the Amazon. In recent years the pressure from state governments in the Amazon region and Brazilian business organizations has increased, with both groups showing an interest in obtaining financing for activities in this area. This pressure is not rejected in certain sectors of the Brazilian government.

¹¹ CDM is created to make the Quito Protocol more flexible in order to help DDCs (Annex I) meet their emissions reduction targets and promote mitigation actions in DGCs. The CDM allows countries listed in Annex I to produce or buy certified emissions reductions through projects developed in countries not listed in Annex I. In return, these countries gain access to financial and technological resources.

The comparison of the positions adopted by these five countries on the issues selected reveals that, while there is some convergence over principles, such as that of common but differentiated responsibilities, there are many nuances in the proposals and positions advocated by the region's countries. The preponderance of certain factors in the formation of national overviews is sharply reflected in the negotiating positions. However, unlike trade negotiations, the classification of positions into defensive or offensive in climate change negotiations is not obvious and does not contribute to an understanding of the fundamental questions about the regional agenda.

Brazil is the country with the most cautious stance, but it is also the nation on which most demands are made in the region, due both to its economic importance and its ranking in the league table of major emitters. The combination of its high emissions profile and the importance of the historical doctrines and alliances of its foreign policy have been responsible for the country's positioning throughout the negotiating process. However, the perception of the benefits of a transition to a low-carbon economy has moved certain civil society groups to pressure the government to take up more offensive positions. The announcement of voluntary targets by the Brazilian government on the eve of the Copenhagen Conference is a reflection of that pressure.

At the other extreme, Peru is the country most aware of vulnerability among those analyzed, and it is this perception that affects Peruvian positions on the most important issues in the negotiations. As well as vulnerability, Peru's position is influenced by the identification of opportunities in the area of biofuels, REDD activities, and access to financing. The case of Costa Rica bears some similarity to Peru's in that it combines concern with vulnerability and a perception of opportunities in terms of REDD activities. Argentina and Mexico incorporate perceptions of opportunities for access to financing and concerns over vulnerability. However, where Argentina is concerned, its alignment with the G77 positions dominates the formulation of its positioning.

Only the Central American and Caribbean countries managed to form coalitions with consensus stances and wide-ranging content. In South America, a document from the General Secretariat of the Andean Community of Nations (*Comunidad Andina de Naciones - CAN*) presents an assessment of the impacts of climate change on member countries, but

contains no common negotiating positions ahead of COP 15. An attempt by Presidents Lula and Sarkozy to bring together the countries of the Amazon region failed due to lack of support from many of the countries. The corollary was a declaration that was thin on content. There is no record of documents from the Southern Common Market (MERCOSUR) or Union of South American Nations (UNASUR) defining positions on climate change.

This framework reflects the characteristic homogeneity of the subregions. The Central American and Caribbean countries are relatively homogeneous in terms of factors affecting the formation of positions: none of them is a significant emitter, they all have sharp perceptions of the risk of vulnerability, and many identify economic opportunities in the transition to low-carbon economies and access to financing for adaptation.

On the other hand, national conditions in South America are varied. For Brazil, the importance of the mitigation agenda far exceeds that of the adaptation agenda, not only because of the commitments the country is called upon to make in the negotiations, but the perception that it is unlikely to be a potential beneficiary of funding for adaptation activities. The southern countries (Argentina and Uruguay) are not significant emitters and their mitigation agendas focus on the changing composition of the energy mix, unlike the Amazon countries, which have sound opportunities for mitigation measures in the reduction of deforestation and forest degradation. Furthermore, the perception of vulnerability accentuates the priority given to these countries' adaptation agendas.

It emerges from a comparison of the content of the document resulting from the Copenhagen Conference with the positions defended by the region's countries that the course negotiations have taken it a long way off living up to most Latin American countries' expectations. Those with a sharp perception of vulnerabilities must have been frustrated at the absence of any ambitious and binding targets from the DDCs, and the declaration that the global temperature should not be rise above 2°C, given that they had been defending the 1.5° ceiling.

The question of financing must also be a source of concern, not simply because the proposed figures are a long way off international organizations' estimates of resource requirements, but because the priorities

in financing for adaptation activities are aimed at the most vulnerable less DDCs, small islands, and the African countries. Only the Caribbean islands feature in such priorities in the region.

The negotiations on the REDD mechanism, on the other hand, are making progress. The matter is of interest to most countries in the region, but the paragraph on the issue in the Copenhagen text specified no incentives to encourage REDD and REDD+ actions.

Albeit not a subject in climate change negotiations, the relationship between these negotiations and international trade opens up a complex and demanding agenda for Latin American countries. The need to adopt internal policies aimed at reducing GHG emissions has raised concerns about their effects on competitiveness. Some DDCs are thinking about adopting unilateral border adjustment measures so as to levy duties on carbon-intensive products imported from countries that have a significant share of trade, but make no significant mitigation commitments.

In addition to border adjustment measures (the application of tariffs on imported products, the requirement of purchasing emissions licenses, or the granting of subsidies for local producers to adapt to cleaner production), the technical rules and regulations, and sectoral agreements in the area of sea and air transportation tend to impact negatively on the region's commercial interests.

The sectors most affected by the border measures will be those whose production generates most emissions: iron and steel, aluminum, cement, paper, and chemicals. The Latin American countries display revealed comparative advantages in most of these industries, which means they are extremely likely to be subject to new trade barriers in the future (Aguilar, Bouzas and Molinari [2009]).

According to these authors, 5% of exports from Latin American countries to the US and 6% of exports to the EU in 2008 originated in the most environmentally sensitive sectors. Brazil, Mexico, Venezuela, and Argentina would be the countries most vulnerable to any border adjustment measures adopted by DDCs.

If the sectoral agreements in the area of sea and air transportation become full-blown measures that drive up transportation costs -which is extremely likely- the Southern Cone countries will be the hardest hit,

due not simply to their distance from the centers of consumption, but to their tendency to export products with low unit weight-value.

Last, it would be advisable to analyze technical regulations and standards, which are already affecting exports from the region and, therefore, require investments in the adaptation of products and production processes to ensure access to certain markets. Natural resource-intensive sectors, biofuels, automobiles, and food are particularly sensitive to regulation. For Latin American countries, these areas are of particular interest to exporters.

Despite not featuring on the negotiating climate change agenda, concern over the risks of adopting unilateral protectionist measures led to some DGCs -Brazil included- proposing the incorporation of a paragraph on the issue in the document being negotiated in Copenhagen. The final document did not, however, incorporate treatment of the question.

CHALLENGES, OPPORTUNITIES, AND LIMITS FOR COOPERATION IN LATIN AMERICA

While the negative effects of climate change tend to affect all countries in the region, their great physical and socioeconomic heterogeneity means that factors of vulnerability differ, and the impacts' social and sectoral distribution varies according to country and/or subregion. This means that, despite all countries attaching a high priority to questions adaptation, they tend to vary from one country to another.

The relative importance attached by Latin American countries to the emissions mitigation agenda varies, depending on their share in the league table of major emitters, and on the costs and opportunities identified by economic players in the transition to a low-carbon economy. Countries with a sharper perception of the risks of global warming are more likely to call for emissions reductions. But the countries highest placed among the largest emitters (Brazil and Mexico) take a more cautious stance. In the case of Brazil, the main emitter in the region, the mitigation agenda has taken on an importance far in excess of the adaptation agenda.

This high degree of heterogeneity hinders cooperation initiatives at regional level, both in terms of agreeing adaptation and mitigation policies and of achieving

coordinated action in climate change negotiations. The scenario is different when it comes to subregions. There are two subregions (Central America and the Caribbean) where the impact of global warming tends to be more homogeneous, thereby facilitating cooperation initiatives. This helps to explain the fact that these subregions issued joint position documents for climate change negotiations.

In South America, the diversity of geographic, economic, demographic, and social situations is far greater and holds back cooperation. There is a degree of convergence in the Andean countries, but, in MERCOSUR, there is more heterogeneity. Here, the pursuit of variable geometry alliances and issue-based cooperation makes more sense. For example, it is possible to identify a common agenda among the countries of the Amazon region to deal with questions related to rainforest preservation and negotiations over REDD and REDD+ mechanisms.

The climate change agenda is extremely exacting for Latin American countries. It entails developing a national overview of the issue, implementing new regulations and policies that lead to profound changes in the production process and consumer habits, achieving high levels of coordination between various government bodies, investing in research and development, and training, and integrating foreign policy with national priorities in the area of climate change.

Climatic disturbances can, for example, affect agricultural production, as well as trade flows and food security in South American countries (CAN [2008]). This process may demand a deepening of regional integration, with the strengthening of the institutional architecture and coordination of regional policies, as suggested in the CAN General Secretariat document. There is a set of initiatives to improve physical and energy integration, water access and food trade guarantee agreements, technology participation for crop adaptation and biofuel production, which could be part of one or several regional cooperation programs to tackle the region's vulnerability to global warming.

The development of national regulations is a major challenge, particularly since it is an area where there is not a great deal of experience. The exchange of information and national experiences, the organization of regional seminars to analyze regulatory models that can help identify benchmarks, and the training of public officials

and regulators to formulate and implement policies is also an area of great importance to cooperation.

The regulatory question is closely bound up with market access conditions for exported products. In certain sectors, technical standards and regulations related to the carbon intensity of the production processes and products may have decisive impacts on the market access opportunities for exports. These regulations affect various products in which the region has revealed comparative advantages or resources to develop the production of new goods (e.g. biofuels). It is important to ensure the convergence of each country's sectoral regulatory models if they are to act as trade facilitators within the region and beyond.

The need to address the problem of deforestation and degradation of the Amazon rainforest poses a challenge that should elicit the combined efforts of the Amazon countries. There are countless opportunities for cooperation in this field, involving the development and availability of technologies, financing for the implementation of joint initiatives, the adoption of new regulations, the

expansion of civil defense capabilities, and the negotiation of international mechanisms. Cooperation in this area requires sound regional institutions. It would, then, be advisable to strengthen the Amazon Cooperation Treaty Organization (necessarily surmounting the institutional problems faced by the organization since its foundation) or the creation of an Amazon Climate Initiative aimed at reducing deforestation and adapting to climate change (CINDES [2008]).

The success of regional cooperation over climate change requires the identification of convergences of common interests and challenges, the treatment of which can be enjoyed through joint actions. Although high vulnerability to climate change is a common challenge to the Latin American countries, the region's intense heterogeneity limits any ambitious, far-reaching regional cooperation programs. Nor are the current subregional economic integration blocs the best spaces for cooperation in this area. Cooperation for mitigation and adaptation in Latin America requires the development of issue-based variable geometry alliances. ♦

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I N T E R V I E W S



PANEL INTERVIEWS ABOUT CLIMATE CHANGE

The well-known heterogeneity of Latin American and Caribbean (LAC) countries is reflected in their vulnerability to climate change and in the distribution of its impact which is specific to the different sub-regions. This helps to account for the fact that the agenda to face this phenomenon changes from one country to another with regard to the urgency and balance between mitigation and adaptation. With a view to bringing together and comparing the variety of perceptions and positions, this section sets forth the outcomes of the interviews held with a group of experts. The outlined questionnaire aims at highlighting the visible impacts of climate change and the expectations for forthcoming decades; the perceptions that national players have of the climate change agenda negotiations; the evaluation process and the outcomes of the Copenhagen Conference; the potential incidence on the review of the national strategy; and the prospects for regional cooperation in future mitigation and adaptation efforts. The panel of experts was selected on the basis of its sub-regional representation. Therefore, this issue of Integration & Trade includes the opinion of experts from North, Central and South America as well as from the Caribbean.

1. Which are the most visible aspects and characteristics of climate change in your country? What are the prospects for the upcoming decades?
2. Which are the most relevant concerns of climate change negotiations in your country? Who are the most relevant actors in this debate?
3. From the point of view of the interests in your country and of the Latin America and the Caribbean agenda, how do you evaluate the Copenhagen results?
4. Considering the Copenhagen results and conclusions, will it be necessary to review the national strategy in your country in relation with the international negotiations? In which areas and how? Do you see elements for the articulation of regional strategies?
5. Are there chances for regional cooperation in the efforts for mitigation and adaptation? In which areas?

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 MARIO MOLINA


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MARIO MOLINA (MM). *He was born in Mexico City in 1943. His studies in physical chemistry brought him to the University of California in Berkeley where he also obtained his Ph.D. In 1974 he co-authored a paper that appeared in the renowned science Magazine "Nature". The article, published well before the first measurements of the Antarctic ozone hole became available, described how chlorofluorocarbon (CFC) gases that were widely used in industry at the time destroy the atmospheric ozone layer which protects life on Earth from the sun's harmful UV-radiation. In 1995, he was honored with the Nobel Prize in Chemistry for his work on ozone depletion. As Professor of Chemistry and Professor of Earth, Atmosphere, and Planetary Sciences at the Massachusetts Institute of Technology, he continued his research on the various ways in which human society affects atmospheric chemistry. In 2004 he joined the faculty at the University of California in San Diego.*


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JORGE RODRÍGUEZ QUIRÓS (JRQ). *He is currently Minister of the Environment, Energy and Telecommunications of Costa Rica (2009-2010). He was Vice-Minister, Ministry of Natural Resources, Energy and Mines (MIRENEM), 1986-1990; Vice-Minister of the Environment, Energy and Telecommunications, 2006-2009; President, Steering Board, National Fund for Forestry Financing (FONAFIFO). He was awarded "La Simiente" prize in 2000 for Natural Resource Development, the highest award granted annually by the School of Agricultural Engineers to its members.*



INTERVIEW TO CAROLINA BURLE SCHMIDT DUBEUX

Senior fellow at the Center for Integrated Studies on Climate Change and the Environment (Centro Clima) COPPE / Federal University of Rio de Janeiro - Brazil, she holds a Ph.D. in Energy and Environmental Planning. Throughout her career she has carried out many studies linking climate change mitigation options with socioeconomic development. She was one of the technical coordinators of The Economics of Climate Change in Brazil (The Brazilian Mini-Stern Report), a study which estimates the adaptation costs of climate change, supported by the Brazilian Academy of Sciences



1. Which are the most visible aspects and characteristics of climate change in your country? What are the prospects for the upcoming decades?

Brazil is a huge country and, therefore, its regions have different climate features. Save for the North where we have the greatest tropical forest worldwide -the Amazon- and the Northeast where climate conditions are relatively adverse because it is mostly semi-arid, the climate is overall favourable for farming, mainly in the Center-West, allowing the country to have an agrobusiness sector which is very important for its economy.

A downscale carried out by the National Institute of Space Research (*Instituto Nacional de Pesquisas Espaciais- INPE*) of the Hadley Center climate model used for simulations throughout this century points out to a high risk run by a great part of the Amazon Forest of turning into a savannah. It also indicates more intense and frequent droughts in the Northeast, heavier rainfall and floods along the coastal areas and in the urban centers of the Southeast and Southern regions and an increase in temperature with stronger heat waves and extreme rain events in the Center-West.

This climate scenario brings about diverse consequences to the economy. The main ones will be felt by the agricultural and energy sectors. In the first case it is due to the natural sensitiveness of plants to water shortages and high temperatures. In the second, because high temperatures increase demand for climatization and therefore for energy, while water shortages impact the electricity supply system as it is mainly generated by hydropower plants (85%).

The study "The Economics of Climate Change in Brazil" (*Economia da Mudança do Clima no Brasil*) recently estimated that these impacts will have high adaptation costs of around US\$2 trillion in 2050. However the highest cost is related to an increase in the economic

disparities among the country's regions. The northeastern economy is already suffering the impacts of adverse climate and will undergo a more important impact than the South and Southeast, leading to the need for greater support to the populations living in that area.

It must be highlighted that there are still many uncertainties in the simulation of future climate changes, their physical and economic impacts at the global and regional levels, which requires science to permanently reassess its estimates.

2. Which are the most relevant concerns of climate change negotiations in your country? Who are the most relevant actors in this debate?

Brazil's concerns are similar to those of most developing countries (DGCs) which, in essence, refer to supporting the costs of reducing emissions to be added to the existing high costs of development efforts. This becomes even more serious in an extremely competitive and globalized market. In the case of Brazil, two peculiarities must be borne in mind: the Brazilian energy matrix, which is already very clean, makes our emissions abatement marginal costs be higher comparing to other countries; and the difficulties of curbing deforestation, given the complexity of the economic dynamics which encompasses the whole process of wood exploitation and the opening of agricultural frontiers.

Regarding the domestic decision-making process, until approximately two years ago, only the government played a relevant role. Nowadays, thanks to the actions of local political groups and mainly of the press, the debate increased and climate change became an important concern in the Brazilian society agenda. Likewise, but for different reasons, a significant part of the Brazilian industrial sector -mainly the export sector- became very interested in the matter, leading the government to open communication channels with society and its segments of interest, which allowed Brazil to adopt a forefront position in Copenhagen, at the last United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP), when it announced a pioneer deviation of emission trends by 2020.

3. From the point of view of the interests in your country and of the Latin America and the Caribbean agenda, how do you evaluate the Copenhagen results?

The Copenhagen outcomes fell short *vis-à-vis* the size of the challenge. However, the path outlined in the Bali roadmap leads negotiations along a reasonable course as it reinforces the principles of the Climate Convention where DGCs will not be called to face big shares of mitigation costs required to cope with the stabilization of greenhouse gas (GHG) concentrations in the atmosphere. I believe Brazil views Copenhagen as a step forward towards a global emission reduction agreement which regretfully evolves slowly.

4. Considering the Copenhagen results and conclusions, will it be necessary to review the national strategy in your country in relation with the international negotiations? In which areas and how? Do you see elements for the articulation of regional strategies?

Brazil has been playing a leading role in Latin America and can help bring the other countries together around clean development strategies financed by developed countries (DDCs). Of

course, countries with an economy based on oil and gas exports will tend to be less cooperative. But Brazil can and must play an important regional role.

It must be underscored that Brazil has come much closer to countries such as India and China, whose future emissions can compromise the 2°C temperature stabilization goal towards the end of this century than to the rest of Latin America. This can be understood to the extent that a small number of countries with a high level of emissions can more easily coordinate and negotiate than a big number of countries with low emissions, either individually or collectively. That is why recently BASIC was set up (including Brazil, South Africa, India, and China) which will indeed have its weight in setting up a new climate agreement as envisaged for the Mexico meeting.

5. Are there chances for regional cooperation in the efforts for mitigation and adaptation? In which areas?

No doubt there are great chances of regional cooperation. The development of partnerships to address topics of bilateral or multilateral interests can bring about significant gains for the parties. In the case of mitigation actions, Brazil can contribute in the area of renewable energies, biofuel, reforestation and many other topics that can easily be adapted to the specific conditions of each country. Regarding adaptation, Brazil has great knowledge on climate modeling and climate related impacts, using high level IT. It also has many research institutions capable of developing prospective analysis and offering cost-effective solutions as, for instance, in the field of genetic modification for adaptation of crops and coastal engineering, among other solutions.





INTERVIEW TO ALIETO ALDO GUADAGNI

Economist graduated from the Universidad Nacional de Buenos Aires (UBA). He carried out postgraduate studies at the Universidad de Chile and holds a PhD from the University of California, Berkeley. He taught at UBA, the Catholic University and Bologna University. He was also a professor of International Economic Relations at the Ortega & Gasset Institute and at several Inter-American Development Bank (IDB) programmes. He is currently an advisor to the DiTella Institute and gives postgraduate courses at the Universidad DiTella and Universidad Católica Argentina. He is a member of the National Education Academy of Argentina.



1. Which are the most visible aspects and characteristics of climate change in your country? What are the prospects for the upcoming decades?

Should current polluting emissions continue at the current pace worldwide, there will be an ever growing impact on climate. Within this scenario it can be expected that at least half the areas under greater flooding risk in our country will be exposed to even greater rainfall in the future. At the same time a gradual warming and potential deterioration of the mountain ecosystems of the Andes is foreseen as well as the regression of forests in subtropical areas. The Andean areas started having trouble with water availability which could even compromise the amount of water resources for the full operation of the installed capacity at important hydroelectric plants in the Cuyo area and Comahue Basin in Argentina. In other Andean countries there may be water supply problems as in Quito, Lima and La Paz. These forecasts based on climate change evidences also lead to predicting that farming activities may drop in the next few years in many (although not all) regions of our planet. Climate change will affect farming because of an increase in temperature, greater rainfall variability and extreme climate events such as drought and floods. However, this will favour regions located in extreme latitudes such as Canada, Scandinavia, Poland, Russia and Ukraine. The negative impact will be fully felt in developing countries (DGCs), thus affecting the yield of wheat in Southern Asia, rice in Southeast Asia and corn in the South of Africa. Negative impacts (of over 20%) are also foreseen in farming yields in most of Brazil and a reduction, although more moderate, is also predicted in our country. Furthermore, climate change will also have a negative impact on the spreading of dengue throughout bigger areas in the subtropical region of Argentina, in Paraguay, and in the East of Bolivia.

2. Which are the most relevant concerns of climate change negotiations in your country? Who are the most relevant actors in this debate?

The main Argentine concern with regard to the climate change agenda refers to the necessary modifications that cannot be postponed any further and that should be introduced in the energy production and consumption matrix since gas and oil account for over 90%, with a strong share of gas which represents half of total consumption. We must not forget that Argentina follows Russia as the country that most depends on gas worldwide. This decade we have been making an intensive and indiscriminate use of subsidies provided to fossil fuel energy which pollutes the environment. But when significant fiscal resources are allocated to consumption subsidies instead of to investments looking into an environmentally friendly future, the restructuring of the current energy matrix based on hydrocarbons is hindered. In order to further promote new clean energies and energy conservation it is essential to gradually phase out subsidies to fossil fuels in a sustainable manner since they are not only costly at a fiscal level but, furthermore, contribute to degrading the environment, and disproportionately benefit the wealthiest. The gradual phasing out of current subsidies to polluting fossil fuels will foster energy efficiency and conservation and will moreover be the best way to favour and promote new clean energies that must be urgently encouraged. We must recall that energy subsidies in Argentina are the highest in the whole of the Americas, after Ecuador and Venezuela that are oil producing countries and members of the Organization of the Petroleum Exporting Countries (OPEP). The price of fossil-based energy must cover all costs, including negative environmental externalities as was mentioned in the Pope's last encyclical. This can be one of our contributions to collective efforts meant to preserve the global environment. There are several Non-Governmental Organizations (NGOs) that stand out in the debate meant to clarify public opinion on climate change, particularly Greenpeace that has set forth important proposals as well as *Fundación Bariloche* and the *Instituto General Mosconi* in the sense of building a new energy use matrix that is more respectful of our planet. San Luis Province has also demonstrated leadership in the matter, promoting the creation of a Climate Change Commission in the Federal Environment Council which is preparing a final climate diagnosis. The global climate issue is so far not on the Parliamentary agenda but it is important to place it there so as to define constructive proposals for the forthcoming COP 16 meeting in Mexico.

3. From the point of view of the interests in your country and of the Latin America and the Caribbean agenda, how do you evaluate the Copenhagen results?

The recent Climate Change Summit concluded by merely "taking note" of the so-called "Copenhagen Agreement" since it was not adopted by consensus. This means that so far it is simply a "political" agreement that lacks binding legal efficacy. With regard to the mitigation efforts it is interesting to point out that Bruno Rodríguez, Cuban Minister of Foreign Affairs deemed that *"the goal of two degrees centigrade is unacceptable and would have countless catastrophic consequences, particularly for small island states"*. This position was permanently held at the Summit by the 42 members of the "Small Island Alliance", which fear they may disappear from our planet. The time has come to understand that global problems call for effective global solutions and global institutions to implement them. The Copenhagen Agreement, with all its limitations, could be considered from a more optimistic view as the "first" step towards building a globally efficient response to the climate threat. Let's hope that at the forthcoming meeting in Mexico we can make up for lost time. But before that the world will be on the look out to see the attitude of the US Senate that must consider in the next few months whether it adopts the environmental legislation proposed by Obama. If such

legislation is not passed before the Cancun meeting it will be much more difficult to move forward in having legally binding international commitments among nations.

4. Considering the Copenhagen results and conclusions, will it be necessary to review the national strategy in your country in relation with the international negotiations? In which areas and how? Do you see elements for the articulation of regional strategies?

A national strategy that furthermore aims at a greater regional scope must include measures that will only be effective if they are framed within public policies agreed upon by consensus among the country's political forces, taking into account that their effectiveness will depend mostly on their application beyond one presidential term in office. Indeed it is possible to have a "green" economic development which requires a long-term strategy including policies, investment and technological changes which aim at continued growth but without pollution. All this goes beyond a four-year presidential term. It is important for Argentina to go to COP 16 in Mexico with a proposal that has been duly coordinated and agreed upon by consensus at the national level at least by the Southern Common Market (MERCOSUR) member countries. An example in this regard is the European Union (EU) that a few years ago decided that a "common market" necessarily calls for a "joint environmental policy" to avoid artificial dislocations of productive investments attracted by more permissive rules. In this regard, MERCOSUR has a lot to learn from the European Environment Agency (EEA) and from the EU Environment Committee. If environmental rules affect investments and productive technologies are not common to all as is the case nowadays in the EU, it is impossible to aim at having optimum resource allocation within a region. Let us also say that the conflict between Argentina and Uruguay with regard to the location and technology of the Botnia pulp mill is a good example of what happens when there are no common technological regulations between nations that are a part of the same geographical space and that, furthermore, intend to build a common productive space. The EU has common environmental regulations applicable in any part of the common territory.

5. Are there chances for regional cooperation in the efforts for mitigation and adaptation? In which areas?

There is broad margin for regional cooperation in mitigation and adaptation for which it is important to have an agenda on environmental initiatives reflecting cooperation demands. In the case of Argentina, we must point out the following ten environmental policy initiatives which must be a part of a cooperation effort. These lines of work of course do not disregard other possibilities.

1. Investments in hydroelectric and nuclear plants. We must not insist on thermoelectric plants that use coal and do not foresee the capturing and storing of polluting gases, such as the plant that is currently being built in Santa Cruz.
2. Investments in new clean energies (wind, solar and tidal power). Promotion of "second generation" bio-fuel based on waste.
3. Technological streamlining of public transport in big urban centres: Greater Buenos Aires, Rosario, Córdoba, Mendoza and Tucumán, tapping the valuable experience of Curitiba (Ligeirinho), Bogotá (TransMilenio) and Santiago de Chile (TranSantiago).

4. Rehabilitation and streamlining of the cargo railway and urban and inter-urban passenger system. Expansion of river transport.
5. New harmonized technical standards in MERCOSUR for improving efficiency in the use of fuel in the automotive industry.
6. Energy efficient processes in the manufacturing industry, regulated by MERCOSUR.
7. Energy-efficient electric devices.
8. New construction codes to ensure energy conservation and efficiency.
9. Preservation of forestry resources.
10. Design of a fiscal policy (public spending plus taxes) targeted to energy efficiency and conservation in all sectors. This fiscal policy should include all negative environmental externalities in the taxes.



INTERVIEW TO CARLOS FULLER AND KENRICK LESLIE

CARLOS FULLER. *Has been Belize's Principal Negotiator on Climate Change since 1990. He participated in negotiating the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. In that capacity he also represented Belize at the United Nations Conference on Environment and Development, the United Nations Small Island Developing States Conference and the World Summit on Sustainable Development.*

KENRICK LESLIE. *Is the Executive Director of the Caribbean Community Climate Change Centre (CCCCC) in Belize. Has considerable experience in the fields of physics and meteorology. Prior to becoming associated with the Climate Change Centre he was a Senior Principal Scientist in the Applied Physics Laboratories of AlliedSignal Corporation now Honeywell Corporation in Morristown, New Jersey in the United States. He has also contributed much to the development of meteorology and climatology in the Caribbean. He has worked as a meteorologist in the meteorological services of Trinidad and Tobago, Jamaica and the Bahamas. Established the National Meteorological Service of Belize and served as its first Director from 1972 to 1981. In addition he served on the Board of Governors of the Caribbean Institute of Meteorology and Hydrology (CIMH) from 1972 until 1981. During this same period he also served as Rapporteur to the World Meteorological Organization, Regional Association IV comprising North America, Mexico, Central America and the Caribbean.*



1. Which are the most visible aspects and characteristics of climate change in your country? What are the prospects for the upcoming decades?

Belize has a subtropical climate with a wet season which starts in June and ends in November. The dry season is from February to May. The transition from December to February is marked by the passage of cold fronts from the north. High temperatures range from the high 80s along the coast to the mid 90s in the interior. The low temperatures range from the mid 70s along the coast to the mid 60s inland. Annual rainfall is 60 inches in the north and 200 inches in the south. Belize is affected by tropical cyclones about once every 3 years. However, very strong hurricanes occur once every 10 to 20 years.

Observations over the past 30 years show that average temperatures have risen by about one degree. The minimum temperatures in particular are rising. The number of tropical cyclones and in particular very strong hurricanes affecting the country has increased since 1998. The incidence of extreme rainfall events and consequent flooding has also increased in the past decade. These trends verify the computer model simulations which indicate that temperatures will continue to rise in Belize and that more extreme rainfall events will occur with heavier rainfall in shorter periods, but also more extended and intense dry periods. Not much change in the total annual rainfall is expected.

2. Which are the most relevant concerns of climate change negotiations in your country? Who are the most relevant actors in this debate?

Climate change negotiations are spearheaded by Mrs. Ann Gordon, Deputy Chief Meteorologist of the National Meteorological Service and Mr. Carlos Fuller, Deputy Director of the Caribbean Community Climate Change Centre. The National Meteorological Service is the agency responsible for all aspects of climate change in Belize.

Belize is extremely vulnerable to the adverse effects of climate change. Consequently, the focus of negotiations is for a very robust international regime which would ensure that global warming is contained to within 1.5°C above pre-industrial levels. Since some level of climate change is inevitable because of historical emissions, adaptation is a very high priority for the country. Funding and technology for adaptation are therefore equally important.

3. From the point of view of the interests in your country and of the Latin America and the Caribbean agenda, how do you evaluate the Copenhagen results?

The results from Copenhagen were disappointing. The two most important outputs should have been amendments to the Kyoto Protocol defining a new commitment period post 2012 for Annex I Parties with provisions for the inclusion of emissions from international aviation and shipping and stronger monitoring for the forestry sector, and a new legally binding instrument for long-term action for all Parties to address climate change including mitigation, adaptation, finance, and technology.

The two *Ad Hoc* Working Groups could not complete their work. Several of the sticking issues had to be resolved at the political level. Unfortunately, because of larger geo-political issues the results of the political intervention could not be considered and adopted by the Conference of the Parties (COP).

In addition, the Copenhagen Accord was incomplete as Parties were given until 31 January 2010 to indicate their emission reduction targets with no common baseline defined. Parties were also requested to associate with the Accord by 31 January 2010 if they so desired without knowing what was the level emission reduction being contemplated by Annex I and other large emitting countries.

The results post 31 January 2010 indicate that although the Accord calls on Parties to limit global warming to 2°C, the targets submitted would only limit global warming to 3.5°C. This is extremely detrimental to vulnerable countries like Belize and will require these countries to undertake even more extreme and expensive adaptation measures.

4. Considering the Copenhagen results and conclusions, will it be necessary to review the national strategy in your country in relation with the international negotiations? In which areas and how? Do you see elements for the articulation of regional strategies?

The results from Copenhagen strengthen our resolve to negotiate for strong international mitigation. Financial and technical support for adaptation will be linked to the level of ambition in mitigation, i.e. the less ambitious the mitigation targets the more resources that will be required for adaptation.

Belize has always negotiated within its traditional negotiating groups: Caribbean Community (CARICOM), Alliance of Small Island States (AOSIS) and Central America. It will continue to do so and will use its influence to build alliances with other groups with similar concerns to forge a strong coalition.

5. Are there chances for regional cooperation in the efforts for mitigation and adaptation? In which areas?

Belize has been involved in regional projects in adaptation and mitigation since 1995 and believes that there is scope for much more collaboration. First of all capacity building initiatives at the formal and informal levels are more cost effective and efficient at the regional level. More regional training activities must be developed and funded. There is much scope for pilot adaptation and mitigation activities in the Caribbean and Central America. In mitigation these include the introduction of renewable energy systems in households, public buildings and remote communities. Public transportation is inefficient and unsatisfactory in many countries. This offers opportunities for the introduction of more efficient fleets and more effective traffic management. Waste disposal is a problem in many countries and provides opportunities for the introduction of sanitary landfills which could address methane emissions.

In adaptation, sea level rise is exacerbating coastal erosion and the contamination of aquifers in all countries in the region. Incidences of vector borne diseases are rising and interventions must be developed and deployed. Forest fires are becoming more frequent and warning systems must be developed and implemented. More scientific farming practices are required which employ agrometeorological techniques and forecasts at longer timescales.

Such interventions should be undertaken in several countries and evaluated. Those deemed successful should be replicated in other countries that have similar circumstances.





INTERVIEW TO MARIO MOLINA

He was born in Mexico City in 1943. His studies in physical chemistry brought him to the University of California in Berkeley where he also obtained his Ph.D. In 1974 he co-authored a paper that appeared in the renowned science Magazine "Nature". The article, published well before the first measurements of the Antarctic ozone hole became available, described how chlorofluorocarbon (CFC) gases (that were widely used in industry at the time) destroy the atmospheric ozone layer which protects life on Earth from the sun's harmful UV-radiation. In 1995, he was honored with the Nobel Prize in Chemistry for his work on ozone depletion. As Professor of Chemistry and Professor of Earth, Atmosphere, and Planetary Sciences at the Massachusetts Institute of Technology, he continued his research on the various ways in which human society affects atmospheric chemistry. In 2004 he joined the faculty at the University of California in San Diego.



1. Which are the most visible aspects and characteristics of climate change in your country? What are the prospects for the upcoming decades?

Mexico is a country that is most vulnerable to climate change since it is located between two oceans and in the Northern Hemisphere where temperature variations and the exacerbation of climate phenomena are greater. In the last decade, the intensity of hurricanes and cold fronts has increased thus producing severe damage to coastal tourist infrastructure and severe floods in densely populated areas where there are also important oil and farming-related activities.

Additionally, the national territory is splitted by the Tropic of Cancer. Therefore, the northern part has vast arid areas and in the south, the tropical ecosystems have great biological diversity. It is estimated that temperatures in the northwest of the country -known as the Sonora Desert- are already one centigrade higher, thus increasing water stress in the area. Most of the models that forecast changes in rainfall during this century should, if the current upward trend of greenhouse gas (GHG) emissions continue, agree that rainfall will decline by up to 20% in the states surrounding the Gulf of California. This drop in rainfall will have significant effects on agriculture and cattle raising.

On the other hand, tropical ecosystems in the southeast of the country will be equally affected by changes in the rainfall pattern, thus altering the natural evolution of many endemic species which are currently a part of our cultural heritage. Coral reefs in the Caribbean will face changes in sea alkalinity and as is happening in other latitudes they have started dying in an irreversible coral bleaching process.

There are also areas in Mexico where it will be possible to increase productive activities since the weather will be milder and humidity will decrease. However a negative outcome is expected from climate change in our country.

2. Which are the most relevant concerns of climate change negotiations in your country? Who are the most relevant actors in this debate?

The main concern in Mexico is related to the funding sources for mitigating GHGs and adapting its economy and urban and productive infrastructure to extreme climate phenomena and climate change, overall.

Not all required actions to reduce GHG emissions can be carried out through mechanisms set forth in the Kyoto Protocol. Indeed, the greatest potential in our country can be found in the industrial sector where technological change is necessary to increase energy efficiency and competitiveness at the global level. Ironically, these two premises practically exclude the country from the so-called Clean Development Mechanism (CDM) which only includes projects that meet "additionality" criteria which leave aside profitable projects to favour those on renewable energy or those of low economic feasibility. The Mexican Government proposed the creation of the "Green Copenhagen Fund" as an alternative mechanism to promote a more efficient reduction of emissions through measures, including new norms and laws established by different government levels.

Europe and the United States (US) are essential players to face the problem of climate change and have offered resources to developing countries (DGCs) like ours. Such an offer is a direct response to a claim by many nations that will be affected by CO₂ emissions historically accumulated in the atmosphere and coming from industrial development that has not favoured them directly or at the same level as other countries, which nowadays have a great material and technological wealth. Should the resources offered by those countries be more equitably channeled through the different funds set up by the United Nations (UN), the funds could be more efficiently distributed and targeted to the core of the problem, without the need for market rules which are necessarily governed by the scarcity of trade in goods, in this case carbon credits or bonuses.

Emerging countries like China, India, Brazil and Mexico are also very important players in the enhancement and extension that everybody expects of the Kyoto Protocol and the United Nations Framework Convention on Climate Change (UNFCCC). Equally important actors are the countries that face the risk of disappearing or being dramatically affected by climate change as some island countries or those located mostly in areas with extreme climate conditions.

3. From the point of view of the interests in your country and of the Latin America and the Caribbean agenda, how do you evaluate the Copenhagen results?

As far as the Mexican agenda is concerned, Copenhagen was a productive meeting that showed specific progress since the green fund proposed by President Felipe Calderón was formally established and our country was designated to host the forthcoming Conference of the Parties (COP 16) to be held in Cancun in November this year, although all this is not enough. The Copenhagen meeting is a great challenge to us because many people, organizations

and countries are hoping that an agreement will be reached in Mexico on numeric goals for reducing GHGs in 2012-2020 as well as on the financial and technological fluency which was not achieved in Copenhagen.

We wish to view COP 16 as a meeting to be held within the context of the United Nations (UN) and in the Americas, including Latin American but also North American countries. Several development and cultural exchange and trade partnerships have been set up in this continent and could be enhanced by including the climate variable, more so if the US and the rest of the emerging economies decided to integrate their national or sector-based strategies into a global climate governance regime.

With regard to Latin America, it is already suffering the severe consequences of climate change because of extreme climate events whose effects have been worsened by the economic vulnerability and social organization of the region's countries. Copenhagen provided no specific answers to repair damages suffered and expected to be suffered by millions of persons.

Although it is essential to face climate change with determination and enough economic resources that can be easily accessed, as well as with a broad deployment of new technologies and sustainable forms of urbanization and industrial production, there is no way to force international agreements if these are resisted by the countries that emit the most or that have greater historical responsibilities.

4. Considering the Copenhagen results and conclusions, will it be necessary to review the national strategy in your country in relation with the international negotiations? In which areas and how? Do you see elements for the articulation of regional strategies?

The answer is YES since as a country we must develop a national strategy that includes all sectors and has GHG reduction goals for the medium and long term. Our aspiration of achieving a 50% reduction of GHG emissions by 2050 calls for detailed planning decade after decade, based on the possibility of the Copenhagen Green Fund being nurtured with economic resources that will be accessed.

Likewise, in our capacity of COP 16 hosts we must deploy a diplomatic strategy to catalyze and materialize international agreements to really tackle the problem of climate change, including all parties under tension or whose positions have not been appropriately weighted in the past. It is necessary to underscore that the negotiation rules and procedures before and during the conferences of the parties have been exhausted and move ahead slowly. At each UN Conference, operation and rules must be fixed; COP rules were adopted a long time ago and have changed very little in 20 years. We believe it would be very timely to set different procedures and create new regulations within the Framework Convention and the Kyoto Protocol to overcome current stagnation, opening up different paths to agreement.

At present, awareness about climate change is widespread. As time goes by there is more scientific information and a positioning of the countries and their political and economic communities. The groups of diplomats and government officials that negotiate on behalf of their countries thus receive greater internal and external pressures, including social demands which go beyond their institutional competencies. Many heads of state, for instance, cannot go beyond what is mandated by their Parliaments or their time in office. Anyhow, this is also an opportunity to talk about agreeing on deeper scopes and dimensions, with a greater social backing and a more expeditious response by the emitting sectors involved.

Latin America has very similar climate and management problems. This is a region where it is necessary to intensify the development and transfer of low carbon emission technology, a region where there is insufficient funding for economic growth. We are, however, a region in which it is easier to achieve sustainable development given our great diversification of energy sources and the ancestral environmental awareness of our peoples.

5. Are there chances for regional cooperation in the efforts for mitigation and adaptation? In which areas?

There is room for cooperation in Latin America, mainly in the sectors of energy, transport, sustainable construction and the fight against deforestation, in which there are very successful mitigation projects that have proprietary solutions. For instance, since the CDM was established within the Kyoto Protocol, there has been an intensive exchange of experiences and a development of methodologies which has helped our projects in these fields to be accepted, thus increasing the region's funding possibilities. Anyhow, this is not enough. It is necessary to have new funding sources and more promptly replicate the most successful projects for GHG reduction. We would all like to learn from low carbon experiences with bio-fuel in Brazil; quick transport systems financed with carbon bonds in Colombia, Green Mortgages in Mexico for low-cost sustainable housing or the momentum of wind energy in Costa Rica.

Our industrial GHG emissions are not as high as in developed countries (DDCs) but -according to preliminary figures- we do have a great level of deforestation and changes in land use. The defense and loss of tropical forests such as the Lacandon or Amazon jungles is a problem shared by all in this continent and that could be greatly solved through new international agreements in the field of climate change. Payment of forest environmental services may no longer be a local matter to become a worldwide issue. In Latin America, rural communities that have forests lag behind in the technological field and are isolated without justification given current progress in communications. The fight to halt climate change during this century should improve the standard of living of millions of people who are still at the margins of development.



INTERVIEW TO JORGE RODRÍGUEZ QUIRÓS

He is currently Minister of the Environment, Energy and Telecommunications of Costa Rica (2009-2010). He was Vice-Minister, Ministry of Natural Resources, Energy and Mines (MIRENEM), 1986-1990; Vice-Minister of the Environment, Energy and Telecommunications, 2006-2009; President, Steering Board, National Fund for Forestry Financing (FONAFIFO). He was awarded "La Simiente" prize in 2000 for Natural Resource Development, the highest award granted annually by the School of Agricultural Engineers to its members.



1. Which are the most visible aspects and characteristics of climate change in your country? What are the prospects for the upcoming decades?

Based on the reports of the Intergovernmental Panel on Climate Change, Costa Rica is located in an area where climate change impacts are foreseen to be especially serious. In the last three years, several mass media in Costa Rica have reported that the dry season in the north of the country will be stronger. Little rainfall reduces grain harvesting and threatens livestock. The growing demand for water could bring about severe problems for agricultural production and human consumption. Meanwhile, in the Southern Caribbean, severe floods will happen more often. Deficient urban growth will affect more and more people every day with sewer and stream overflows. And, of course, climate change worsens epidemics, diseases and endangers over 160 thousand species in the country.

Vis-à-vis these events, a Second National Communication was prepared and published by the National Meteorology Institute, showing that if the water level in dams declines, the resource cost will increase. However, some of the dams are not being fully exploited and will be able to store more water when available. In turn, new dams should be created in the Caribbean springs where climate scenarios show greater rainfall. Another potential initiative is to foster cultural changes and promote efficient energy use. We must dare act and adapt something that is unavoidable.

2. Which are the most relevant concerns of climate change negotiations in your country? Who are the most relevant actors in this debate?

The relevant actors in this debate are the emerging economies, which undoubtedly include Brazil, India and Mexico. These are countries that have no liabilities but emit a lot. In this regard, as stated in Copenhagen already 15 years ago when we participated in the first Conference of the Parties (COP), our country highlighted the importance of environmental services provided to our planet by countries with tropical forests for fixing carbon and mitigating climate change.

Convinced of the above, we promoted aggressive policies for preserving forests and recovering forest cover with the hope that the Clean Development Mechanism (CDM) would provide the necessary support to improve the contribution of developing countries (DGCs) to global mitigation efforts. But this did not happen.

We, however, represent a country that despite the fact that it has no binding obligations, has undertaken the most ambitious liability that any nation can have of becoming a neutral country in greenhouse gas (GHG) emissions, with the hope that other countries will likewise take on their responsibility to reduce emissions but also to provide resources so developing nations can face the social, environmental and economic challenges of climate change.

3. From the point of view of the interests in your country and of the Latin America and the Caribbean agenda, how do you evaluate the Copenhagen results?

Even when no global agreements were reached to reverse our planet's warming as expected, there was consensus on the need to protect forests and detain deforestation given its contribution to the planet's global warming. In Copenhagen the 192 member nations of the United Nations Framework Convention on Climate Change (UNFCCC) accepted the need for an international regime to halt deforestation and protect forests, thus supporting the Costa Rican thesis. This should be considered a great success for the country after a struggle of years and many difficulties along the way.

On the other hand, a bilateral agreement was signed between the United States (US) and China which is important because the US shows unfulfilled obligations. China has no obligations but it is becoming the second most important emitter of GHG worldwide. I believe this exchange of ideas between both countries will bring about an important collateral reduction. Any activities they carry out will have an impact on total emissions.

4. Considering the Copenhagen results and conclusions, will it be necessary to review the national strategy in your country in relation with the international negotiations? In which areas and how? Do you see elements for the articulation of regional strategies?

Costa Rica has embraced the notion of environmental justice and has enshrined the right to a healthy and balanced environment in the Constitution. In order to guarantee this right, we have established the country's first tax on carbon in a DGC for the last 13 years so as to raise funds to financially support forest conservation and forest cover recovery policies that are providing our planet with an environmental service to mitigate climate change.

The Costa Rican strategy is thus clear. It is essential to obtain financial resources and consolidate the transfer of technology. Our main global commitment is to develop a low-carbon emission economy by 2021. In order to reach this goal, it is necessary to transfer technologies according to the mechanisms stated in the Framework Convention.

The problem is that any delay in the processes hinders timely availability of resources. These resources will allow us to have more and better technologies. At the regional level, Central American countries have not agreed much on the topic. They think the main aspect to consider is the capturing of resources through adaptation. We must understand that the threats of Climate Change may become opportunities in our country.

5. Are there chances for regional cooperation in the efforts for mitigation and adaptation? In which areas?

Of course, there is room for regional cooperation in the field of funding, transfer of technology and capacity building. We must invest to mitigate and adapt to climate change, particularly in DGCs that given their geographical position, their low income levels, their greater dependence on agriculture and their weak infrastructure suffer more as a result of drought, hurricanes and floods that have worsened in the last few years.

We must considerably increase international cooperation. Last year member countries of the Organization for Economic Cooperation and Development (OECD) allocated US\$120 billion to international aid for development, less than half the amount they are obliged to provide according to international agreements.

We must design several ways of transferring information and technology, ensuring that the successful experience of a little corner in our world becomes an imperative elsewhere. We must build an international platform against global warming which will allow us to quickly channel assistance, information and technology from one country to another.

We must forge creative and robust alliances between the public and private sectors which will allow us to turn environmental conservation into an asset and not an expense for our companies, something that Costa Rica has done successfully.

Using just a percentage of the US\$13 billion that will be allocated to military spending in the next 10 years, we could cover the whole of the costs for stabilizing GHG emissions worldwide. We are still in time to establish a sustainable and lasting peace with nature. Saving our planet is cheaper than annihilating it.





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TRADE AND REGIONAL INTEGRATION: SELECTED INDICATORS

This section will regularly review data measuring trade and integration dimensions in the region. The purpose is to provide a brief regional overview every six months.

NEWLY RELEASED DATA

Table 1

EXPORTS BY INTEGRATION GROUP, 2009 (Provisional Data, % change from 2008 to 2009)

Exporting Region	Destination								
	MERCOSUR	MERCOSUR + Chile + Bolivia	Andean Community	ALADI ¹	CACM	Latin America ²	NAFTA	Hemisphere	Total World
MERCOSUR	-21	-22	-23	-24	-34	-24	-39	-29	-22
Andean Community	-36	-39	-17	-30	-18	-25	-19	-22	-17
ALADI ¹	-23	-25	-26	-27	-32	-26	-25	-26	-24
CACM	-34	-23	-34	-21	-14	-14	-13	-13	-11
Latin America ²	-23	-25	-26	-27	-24	-25	-25	-25	-23
NAFTA	-22	-22	-15	-17	-23	-18	-24	-24	-21
Total Hemisphere	-23	-23	-20	-20	-23	-20	-25	-25	-22

 Table 1

EXPORTS BY INTEGRATION GROUP, 2009 (Provisional Data, US\$ millions)

Exporting Region	Destination								
	MERCOSUR	MERCOSUR + Chile + Bolivia	Andean Community	ALADI ¹	CACM	Latin America ²	NAFTA	Hemisphere	Total World
MERCOSUR	32,755	41,824	7,842	56,830	1,082	58,602	25,655	83,767	217,304
Andean Community	3,571	6,335	5,840	18,123	1,330	22,443	26,363	48,834	78,461
ALADI ¹	49,447	63,164	21,944	101,627	6,634	114,215	283,222	396,952	632,966
CACM	60	184	166	1,311	5,742	8,180	10,287	18,031	23,611
Latin America ²	49,510	63,355	22,130	102,976	12,469	122,545	293,884	415,508	657,399
NAFTA	39,149	50,636	23,559	218,229	17,902	247,248	767,474	891,141	1,601,229
Total Hemisphere	84,931	109,148	42,018	311,332	27,464	355,722	867,805	1,098,663	2,029,006

STRUCTURE OF EXPORTS BY INTEGRATION GROUP, 2009 (Provisional Data, % Distribution)

Exporting Region	Destination								
	MERCOSUR	MERCOSUR + Chile + Bolivia	Andean Community	ALADI ¹	CACM	Latin America ²	NAFTA	Hemisphere	Total World
MERCOSUR	15	19	4	26	0	27	12	39	100
Andean Community	5	8	7	23	2	29	34	62	100
ALADI ¹	8	10	3	16	1	18	45	63	100
CACM	0	1	1	6	24	35	44	76	100
Latin America ²	8	10	3	16	2	19	45	63	100
NAFTA	2	3	1	14	1	15	48	56	100
Total Hemisphere	4	5	2	15	1	18	43	54	100

Notes: Estimates of Venezuela's exports use partner country import data.

¹ Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay, and Venezuela. Cuba is not included.

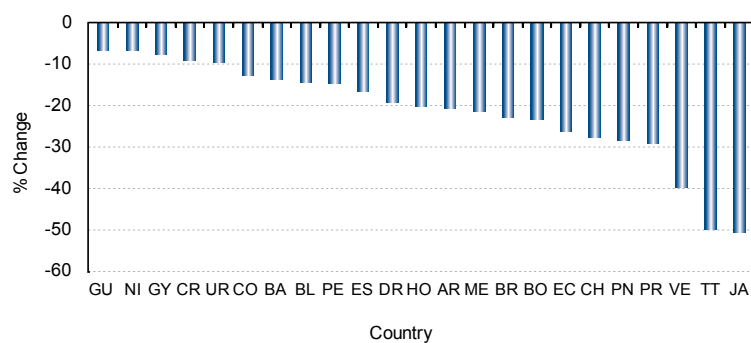
² Includes Panama and the countries of ALADI and the CACM.

Source: IDB, Integration and Trade Sector, based on INTradeBID, ALADI, SIECA, and official country data.

REGIONAL TRENDS

Figure 1

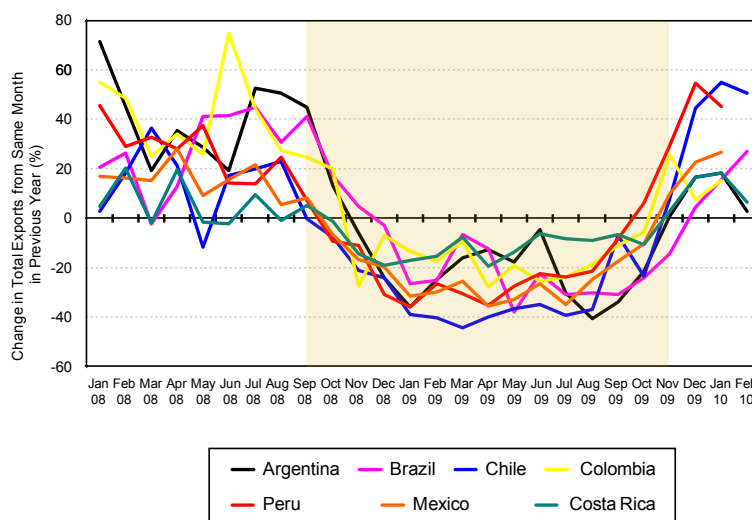
CHANGE IN EXPORTS 2008-2009 (Provisional data)



Source: IDB, Integration and Trade Sector, based on INTradeBID, ALADI, SIECA, and official country data.

Figure 2

EXPORT PERFORMANCE DETERIORATED STARTING IN 4TH QUARTER 2008 AND IS NOW STARTING TO RECOVER



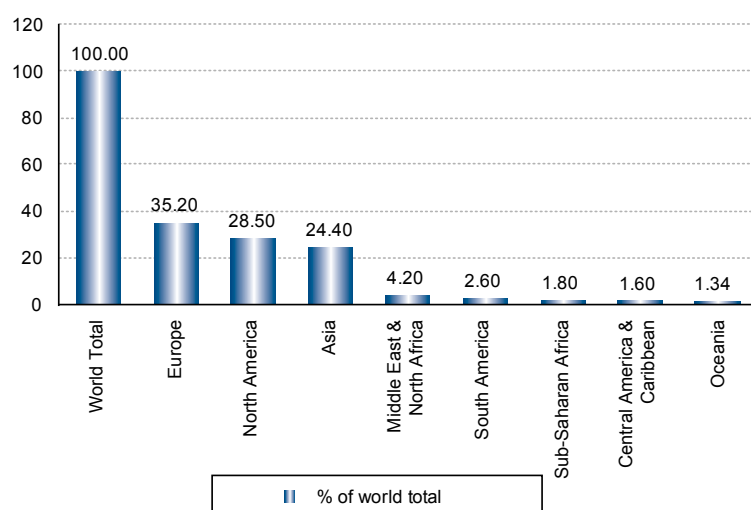
Source: IDB, Integration and Trade Sector, based on INTradeBID, ALADI, SIECA, and official country data.



ANNEX ON CLIMATE CHANGE STATISTICS

Figure 1

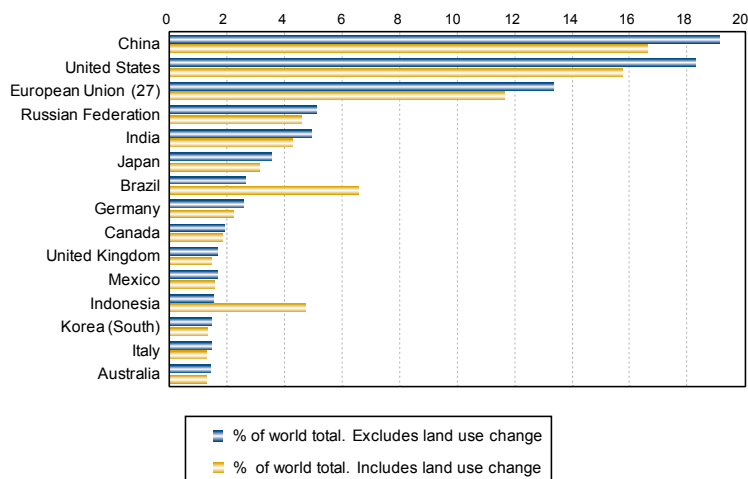
CUMULATIVE EMISSIONS BY REGION, 1950-2006
EXCLUDES LAND USE CHANGE
(As % of World Total)



Source: Climate Analysis Indicators Tool (CAIT), Version 7.0. Washington DC: World Resources Institute. 2010.

Figure 2

TOP FIFTEEN GHG EMITTERS IN 2005 (As % of World Total)

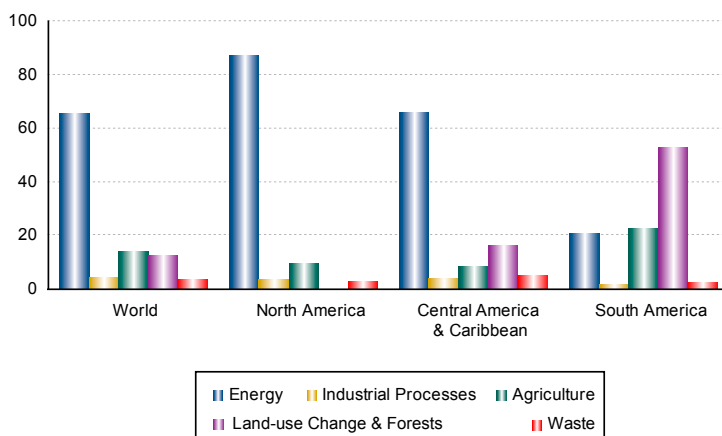


Note: Total greenhouse gases (GHG) include: CO₂, CH₄, N₂O, PFCs, HFCs, SF₆.

Source: Climate Analysis Indicators Tool (CAIT), Version 7.0. Washington DC: World Resources Institute. 2010.

Figure 3

GHG EMISSIONS BY SECTOR IN 2005 (Percentages)

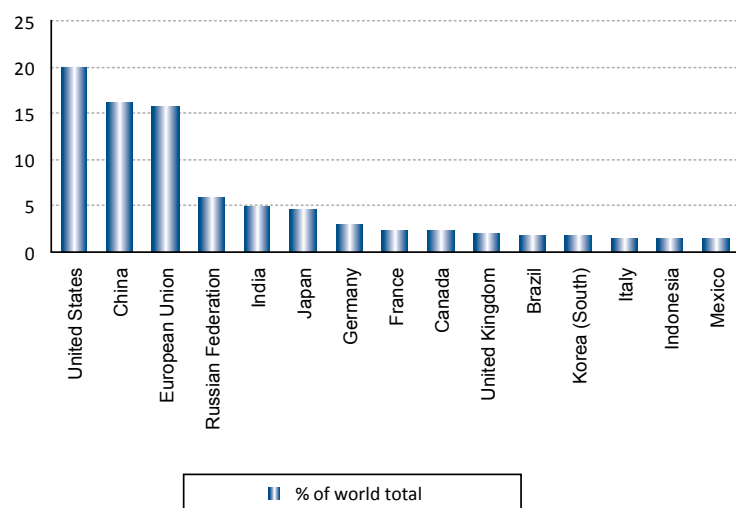


Note: Values for land-use change and forests are less than zero for North America.

Source: Climate Analysis Indicators Tool (CAIT), Version 7.0. Washington DC: World Resources Institute. 2010.

Figure 4

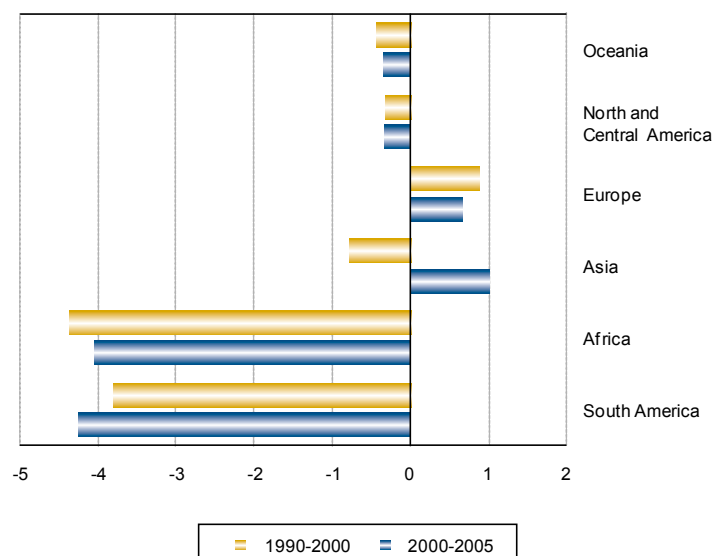
TOP FIFTEEN ENERGY CONSUMERS IN 2006 (As % of World Total)



Source: Climate Analysis Indicators Tool (CAIT), Version 7.0. Washington DC: World Resources Institute. 2010.

Figure 5

ANNUAL NET CHANGE IN FOREST AREA BY REGIONS, 1990-2005 (Million ha per year)




Source: Food and Agriculture Organization - FAO [2005].

InTradeBID (INTEGRATION HUB)

InTradeBID

The Inter-American Development Bank develops specialized databases, models and tools to monitor and assess the impact that integration and trade has on the Region.

[Learn about InTradeBID](#)

			
Market Access <ul style="list-style-type: none"> • Rules of Origin • Tariff Reduction • Quotas • Sanitary and Phytosanitary Measures (SPS) • TPL (Tariff Preference Level) • Tutorial 	Legal Framework <ul style="list-style-type: none"> • Complete Texts of Agreements • Indexed Tools • Double Taxation Agreements • Tutorial 	Toolkits <ul style="list-style-type: none"> • Tools for Trade Negotiations • Tools for Private Sector • Interactive Trade Map • Trade Facilitation • Correlations between Versions of Harmonized Systems • United States Tariff Quotas • Digital Origin Certification • Tutorial 	Statistics and Indicators <ul style="list-style-type: none"> • Catalinal • Trade Trends • WTO Tariffs • Bilateral Trade • Tutorial

The Inter-American Development Bank (IDB) develops specialized databases, models and tools to monitor and assess the impact that integration and trade has on the Region.

InTradeBID is a database that provides access to accurate and updated information about trade agreements. It includes a set of applications that facilitates the understanding, analysis and practical application of trade agreements. Divided in two main modules, one for trade agreements and another for trade statistics, the database includes an interactive trade map of countries involved in 46 trade agreements.

GLOSSARY

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A COMPILATION OF KEY TERMS ON CLIMATE CHANGE*

A

Adaptation: *Adjustment in natural or human systems to a new or changing environment. Adaptation to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory and reactive adaptation, private and public adaptation, and autonomous and planned adaptation.*

Additionality: *In the Clean Development Mechanism (CDM) context this refers to whether the carbon offsets generated by a project are backed up by emission reductions additional to those that otherwise would occur without the financial and technical incentive of the CDM mechanism. An activity's emissions as they would have been in the absence of the CDM project constitute the baseline against which additionality is measured. The creation and sale of offsets from a CDM project lacking additionality may lead to an increase in emissions to the atmosphere, relative to the emissions released if the potential purchaser of the offset instead directly reduced their own emissions at home.*

Afforestation: *Planting a new forest on land that has either never or not recently been forested.*

American Clean Energy and Security Act (Waxman-Markey Bill): *On May 15, 2009, US Representatives Henry Waxman and Ed Markey formally introduced the Clean Energy and Security Act (HR 2454), a legislative proposal to establish a national renewable energy standard and an economy-wide cap and trade program in US.*

B

Bali Action Plan: *The Bali Action Plan, adopted at the Eleventh Session of the Conference of the Parties (COP 11) to the United Nations Framework Convention on Climate Change (UNFCCC) held in 2007 in Bali, specifically calls for the implementation*

* In *Integration & Trade Journal* N° 30.

of the Convention (UNFCCC) through long-term cooperative actions beyond 2012 and urgently recognizes the need to reach an agreement at COP 15. In order to achieve this goal, it created the Ad Hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA) to lead the negotiations. The Bali Action Plan is built upon four key elements: mitigation, adaptation, technology and financing.

Biofuel: A fuel produced from organic matter or combustible oils produced by plants. Examples of biofuel include alcohol, black liquor from the paper-manufacturing process, wood, and soybean oil. Second-generation biofuels: Products such as ethanol and biodiesel derived from woody material by chemical or biological processes.

Biomass: any organic matter which is available on a renewable basis, including agricultural crops and agricultural wastes and residues, wood and wood wastes and residues, animal wastes, municipal wastes, and aquatic plants.

(

Cap-and-Trade: An approach to controlling pollution emissions that combines market and regulation. An overall emissions limit (cap) is set for a specific time period and individual parties receive permits (either through grant or auction) giving them the legal right to emit pollution up to the quantity of permits they hold. Parties are free to trade emission permits, and there will be gains from trade if different parties have different marginal pollution abatement costs.

Carbon Dioxide (CO₂): A colorless, odorless, non-poisonous gas that is a normal part of Earth's atmosphere. Carbon dioxide is a product of fossil-fuel combustion as well as other processes. It is considered a greenhouse gas (GHG) as it traps heat (infrared energy) radiated by the Earth into the atmosphere and thereby contributes to the potential for global warming. The global warming potential (GWP) of other GHGs is measured in relation to that of carbon dioxide, which by international scientific convention is assigned a value of one (1).

Carbon Dioxide Equivalent: The amount of carbon dioxide by weight emitted into the atmosphere that would produce the same estimated radiative forcing as a given weight of another radiatively active gas. Carbon dioxide equivalents are computed by multiplying the weight of the gas being measured (for example, methane) by its estimated global warming potential (which is 21 for methane). "Carbon equivalent units" are defined as carbon dioxide equivalents multiplied by the carbon content of carbon dioxide (i.e., 12/44).

Carbon Finance: Resources provided to projects generating (or expected to generate) GHG (or carbon) emission reductions in the form of the purchase of such emission reductions.

Carbon Footprint: The amount of carbon emissions associated with a particular activity or all the activities of a person or organization. The carbon footprint can be measured in many ways, and may include indirect emissions generated in the whole chain of production of inputs into an activity.

Carbon Intensity: *The amount of carbon by weight emitted per unit of energy consumed. A common measure of carbon intensity is weight of carbon per British thermal unit (Btu) of energy. When there is only one fossil fuel under consideration, the carbon intensity and the emissions coefficient are identical. When there are several fuels, carbon intensity is based on their combined emissions coefficients weighted by their energy consumption levels.*

Carbon Leakage: *In the climate change context, the process whereby emissions outside of a mitigation project area increase as a result of emission reduction activities inside the project area, thus reducing the effectiveness of the project.*

Carbon Taxes: *A surcharge on the carbon content of oil, coal, and gas that discourages the use of fossil fuels and aims to reduce carbon dioxide emissions.*

Certified Emission Reductions (CER): *Reduction of GHGs achieved by a Clean Development Mechanism (CDM) project. A CER can be sold or counted toward Annex I countries' emissions commitments. Reductions must be additional to any that would otherwise occur.*

Clean Development Mechanism (CDM): *One of the three market mechanisms established by the Kyoto Protocol. The CDM is designed to promote sustainable development in developing countries (DGCs) and assist Annex I Parties in meeting their GHG emissions reduction commitments. It enables industrialized countries to invest in emission reduction projects in DGCs and to receive credits for reductions achieved.*

Climate: *The long-term average weather of a region including typical weather patterns, the frequency and intensity of storms, cold spells, and heat waves. Climate is not the same as weather.*

Climate Change: *Refers to changes in long-term trends in the average climate, such as changes in average temperatures. In the Intergovernmental Panel on Climate Change (IPCC) usage, climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity. In UNFCCC usage, climate change refers to a change in climate that is attributable directly or indirectly to human activity that alters atmospheric composition.*

Conference of Parties (COP): *The Meeting of Parties to the United Nations Framework Convention on Climate Change (UNFCCC).*

[

Ecosystems: *A community of organisms and its physical environment.*

Emissions Trading: *A market mechanism that allows emitters (countries, companies or facilities) to buy emissions from or sell emissions to other emitters. Emissions trading is expected to bring down the costs of meeting emission targets by allowing those who can achieve reductions less expensively to sell excess reductions (e.g. reductions in excess of those required under some regulation) to those for whom achieving reductions is more costly.*

G

Greenhouse gases (GHGs): Those gases, such as water vapor (H₂O), carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄), ozone (O₃), hydro fluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride, that are transparent to solar (short-wave) radiation but opaque to long-wave (infrared) radiation, thus preventing long-wave radiant energy from leaving Earth's atmosphere. The net effect is a trapping of absorbed radiation and a tendency to warm the planet's surface.

H

Host Country: The country where an emission reduction project is physically located.

I

Intergovernmental Panel on Climate Change (IPCC): Established in 1988 by the World Meteorological Organization and the United Nations Environment Program, the IPCC surveys worldwide scientific and technical literature and publishes assessment reports that are widely recognized as the most credible existing sources of information on climate change. The IPCC also prepares methodologies and responds to specific requests from the subsidiary bodies of the UNFCCC. The IPCC is independent of the UNFCCC.

K

Kyoto Protocol: An agreement under the UNFCCC that was adopted in 1997 in Kyoto, Japan, by the parties to the UNFCCC. It contains legally binding commitments to reduce GHG emissions by developed countries (DDCs).

L

Land-Use, Land-Use Change and Forestry (LULUCF): A set of activities including human-induced land use, land-use change, and forestry activities which lead to both emissions and removals of GHGs from the atmosphere. A category used in reporting GHG inventories.

Leakage: Process by which emitters relocate activities to avoid regulation.

M

Mitigation: *A human intervention to reduce the emissions or enhance the sinks of GHGs.*

N

Nationally Appropriate Mitigation Actions (NAMAs): *The Bali Action Plan envisages, under clause 1(b)(ii), enhanced national/international action on mitigation of climate change, including, inter alia, consideration of Nationally Appropriate Mitigation Actions by DGC parties in the context of sustainable development, supported and enabled by technology, financing and capacity building, in a measurable, reportable and verifiable manner voluntary actions proposed by DGCs, that require to be supported and enabled by technology transfer, capacity building and financial transfers by DDCs.*

R

Reducing Emissions from Deforestation and Degradation (REDD): *Refers to a suite of actions aimed at reducing greenhouse gas emissions from forested land. Financial incentives for REDD are potentially a part of the policy response to climate change.*

Reforestation: *This process increases the capacity of the land to sequester carbon by replanting forest biomass in areas where forests have been previously harvested.*

U

United Nations Framework Convention on Climate Change (UNFCCC): *A convention adopted in May 1992 with the ultimate objective of the "stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system".*

V

Vulnerability: *The degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variability to which a system is exposed, as well as the system's sensitivity and adaptive capacity.*

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READERS' CONTRIBUTIONS AND PRESENCE IN THE NEW STAGE OF THE INTEGRATION & TRADE JOURNAL

I*ntegration & Trade* sets out to lay down communication mechanisms with its readers, who are also potential contributors. The Journal will progressively apply four editorial modalities.



The first, through calls for papers, is somewhat like the dynamics applied in the past, but will now be restricted to specific issues. These will then be the topics according to which respective issues are organized. To this effect, any announcements and invitations to submit articles will be issued at the relevant time. Any articles received will be assessed and those selected will be published.

See our ongoing Call for Papers:

Article Submission for *Integration & Trade Journal* 31

**“PHYSICAL INTEGRATION FOR THE INTERNATIONAL
INTEGRATION AND REGIONAL CONNECTIVITY OF
LATIN AMERICA AND THE CARIBBEAN”**

Deadline for paper submission: **July 31, 2010.**



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The second modality aims to gather feedback from readers on issues and matters dealt with in previous issues of the Journal. It consists of a Comments Section comprising opinions on published articles, panels, or interviews.



Third, the Journal will promote more open modalities of interaction: on the one hand, a standing invitation to submit reviews of books and publications related to the disciplines and focus of the Journal and its readers.



On the other, and as the fourth modality, a section of readers' letters dealing with information or facts pertaining to the Journal's main issues.

In all cases, rules and guidelines on focus, length, and format will be provided for submitting works in all four of the above modalities. ◆

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