

# Trade & Environment in North America

23 April / Tempe, Arizona **08**

Proceedings of the Fourth North American Symposium on Assessing  
the Environmental Effects of Trade:  
Services and the Environment

Commission for Environmental Cooperation



## **DISCLAIMER**

These proceedings include summaries of research papers prepared for the *fourth North American Symposium on Assessing the Environmental Effects of Trade: Services and the Environment*, sponsored by the CEC Secretariat. The opinions, views or other information contained herein are those of the authors, discussants, and rapporteurs and should not be taken as reflecting the views of the CEC or the governments of Canada, Mexico or the United States.

A brief note on the contents of this report

These proceedings present a summary of the symposium sessions as contributed by discussants and rapporteurs. The full texts of the ten papers in their original languages are available on the CEC web page. Other material, listed below can also be found on CEC web page at <[cec.org/symposium](http://cec.org/symposium)>.

- **Members of the Advisory group**
- **Abstracts of Research Papers in the three languages**
- **List of Participants**
- **Final Agenda**
- **Public Call for Papers**
- **Literature Review**
- **Discussion Paper--Environmental Assessment of NAFTA: Lessons Learned from CEC's Trade and Environment Symposia**
- **Discussion Paper--Positioning the CEC's Work on the Assessment of Trade and Environment Linkages for the Next Decade: An Experts Roundtable**
- **Analytic Framework for Assessing the Environmental Effects of the North American Free Trade Agreement (NAFTA)**

# Table of Contents

Opening Session	5
Keynote Address <i>Jeffrey J. Schott, Senior Fellow, Peterson Institute for International Economics</i>	6
Setting the Stage <i>Dale Andrew, Head, Trade Policy Linkages Division, OECD Trade Directorate</i>	7
Session 1: NAFTA and Services Trade Liberalization: A Focus on Mexico	9
Session 2A: Trade Liberalization and the Agriculture and Food Sector	12
Session 2B: NAFTA and the Mexican Tourism Sector	15
Session 3A: NAFTA and the Transport Sector	18
Session 3B: NAFTA and Environmental Services	22
Synthesis	27
Closing Remarks	32

# Proceedings

## Opening Session

José Carlos Fernández Ugalde, CEC Program Manager for Environment and Trade, welcomed everyone. He began by inviting the Director of ASU's North American Center for Transborder Studies, the local host, to make some introductory remarks.

Rick Van Schoik welcomed everyone to Arizona State University. He noted that the challenges of greening North America may exceed our capacity at this time, but not our will and that the university had purchased \$1500 in offsets as part of its commitment to reducing greenhouse gas emissions.

Representatives of the trade departments from each country were asked to make some introductory remarks.

Rachel McCormik (Canada) expressed her pleasure at attending and to meeting colleagues who have attended past symposia. She believes that these symposia have demonstrated their power as convening fora. Services will continue to be an important aspect of trade in North America. Since trade-related transportation has increased significantly in the past 15 years and there is a clear trade and environment nexus, Canada benefits from these discussions because the results will be useful for informing *ex ante* environmental assessments of future free trade agreements. She noted the importance of the Joint Public Advisory Committee (JPAC) session scheduled for the next day as an opportunity to hear views on how to build on the experiences of these fora. She then thanked the organizers and participants for attending.

Héctor Márquez (Mexico) began on a personal note, saying that 25 years ago he was a student at this university and this was his first trip back. He noted that the work of the CEC has been extraordinary. Fifteen years ago, trade and environment were viewed as conflicting. The CEC continued to pursue a positive relationship. Times have changed and the CEC has been instrumental in commissioning studies showing that environmental considerations do not conflict with trade. As trade officials, we must admit that the trade agenda has lagged and we need to catch up with the environmental agenda. The time for this is now. The topics at this symposium will assist us in providing support to the evolution of the CEC agenda. The resources available in Mexico are ready to assist.

Mark Linscott (United States) also thanked the organizers. The summary of the 2005 symposium noted that these meetings are truly unique, in that they bring together a wide range of interested groups and scholars to consider the environmental impacts associated with NAFTA in a sober, balanced, provocative and inclusive manner. There is now a record of some 50 research

papers that have resulted from the symposia studies. The subject of trade and services is complicated and fascinating. Finally, from his perspective as a senior trade official, he assured the participants that this process has the ability to influence future action on the part of the three NAFTA Parties and the CEC.

Felipe Adrián Vázquez Gálvez, Executive Director of the CEC, thanked the host and the organizers. He reiterated that these are exciting times for the CEC. The whole world is changing around us. Governments and North American society are demanding cooperation and transparency, wanting to know how the CEC is contributing to trade competitiveness balanced with security. The new CEC strategic plan for 2010–2015 will address these issues. We are entering a new phase of environmental cooperation in North America. In yesterday's discussion, we learned of the tremendous opportunities for cooperation in greening trade corridors. Today we will look at services and in June, at an upcoming JPAC meeting, we will talk about global environmental challenges. In conclusion, he noted that it is up to everyone to ensure that future discussions among the Ministers focus on identifying priorities, opportunities and challenges for the CEC.

### **Keynote Address**

Jeffrey J. Schott, Senior Fellow, Peterson Institute for International Economics, provided an overview and a bridge between discussions. He looks forward with trepidation to reliving the often-uninformed debate on NAFTA within the current presidential primary. NAFTA continues to be a lightning rod for concerns about the effects of globalization on trade and environment. Anti-NAFTA rhetoric is strengthening as the economy weakens.

The NAFTA critique, however, is not without some merit. Economic integration does produce winners and losers. NAFTA was not designed to cure all the ills of society, such as illegal immigration, the drug trade and growing income disparity. While much of the current US debate focuses on jobs, a continuing and increasingly important focus of concern is the impact of NAFTA on the environment.

He offered some thoughts on NAFTA's environmental record to date and looming challenges. He reviewed the origins of the NAAEC as an 'enhancement' to NAFTA and the recurring criticism of its lack of enforcement capacity. The side agreement was not designed with enough resolve to address problems that were decades in the making. It did direct new attention and a small amount of new resources to them. Fears of downward harmonization of standards and enforcement have not been substantiated. But it is very difficult to quantify to what extent increased trade has contributed to increasing environmental problems, such as freshwater scarcity and the burden of pollution. NAFTA has a limited mandate and there is a mismatch between the depth of the region's environmental problems and the resources available for mitigation. A trade pact cannot reverse decades of

environmental abuse. The CEC has not been given adequate support by the NAFTA governments. It is working on a shoestring budget.

The CEC could focus more attention on areas where environmental conditions are substandard, with better information on environmental conditions, and a better assessment of the environmental investment needed could inform better policy making in all three countries. The CEC could concentrate on becoming a resource for North American environmental statistics. Some progress is being made, but the pace is glacial. Also the CEC could produce an annual environmental report card in each country that would "name and shame."

NAFTA needs some upgrading. It was state-of-the-art in the 1990s, but it is due for upgrade, to take account of lessons learned in other trade agreements as well as important changes in the world economy. There are bilateral free trade agreements from which to derive best practices that could be adapted to NAFTA. A dedicated source of funding for environmental programs remains the most important gap in all existing agreements, including increased funding for the North American Development Bank.

The next US president should take up a new and constructive NAFTA initiative. The most constructive course of action would be to go green and open a new chapter on climate change. Our three countries have significantly increased our emissions. Mexico has recently adopted a mitigation strategy that puts the US and Canada to shame.

Canada and Mexico, as trading partners, have an interest in working out a regional solution in response, for example, to recent US efforts to produce alternative fuels that have the consequence of raising food prices. An additional benefit of such negotiations is that regional cooperation could promote global solutions on a new climate change regime.

The NAFTA countries should agree to a 'peace clause,' meaning not to institute, for at least three years, new trade restrictions based on the carbon footprint of imports. Secondly, the countries should examine the cost and benefits of establishing a NAFTA-wide carbon market, building on existing work by states and provinces in the US and Canada.

In conclusion, climate change initiatives could change NAFTA's profile in the US policy debate. They could create constructive channels for trilateral cooperation and help move forward global talks for a post-Kyoto regime.

## **Setting the Stage**

Dale Andrew, Head, Trade and Policy Linkages Division, OECD Trade Directorate, began by stating that the world has moved on. Within agencies, there is now a second generation that is taking up issues concerned with the impacts of trade liberalization on the environment.

He explained that he had been asked to set the stage on the environmental effects of services liberalization. He began by asking how we get a handle on what is going on with services and the linkage between their liberalization through trade agreements and the environmental impacts, and how do the papers fit into this schema?

There are four modes of supply: cross-border supply (e.g., legal advice supplied by electronic means); consumption abroad (e.g., international tourism); commercial presence (e.g., branch offices operating outside the country of ownership); and movement of natural persons (e.g., IT professionals working abroad).

What about the environmental effects? When thinking about how to assess the trade in services for environmental effects, a six-step approach was taken.

- Scoping service sectors for environmental effects
- Building scenarios of services trade liberalization
- Assessing environmental effects from economic changes (scale and structural)
- Assessing regulatory effects of rule changes
- Screening for significance of environmental effects
- Determining appropriate policy responses

A few specifics were added to the analysis, as applied by the CEC:

- Indirect and upstream effects help identify positive effects
- Certain sectors seem to pose immediate worries or opportunities
- Direct, cumulative effects from non-point sources also need attention
- Analyzing scale, structural, technology and product effects still constitute a sound approach
- Assessing domestic regulatory capability is important in all service sectors

He emphasized that it is regulation that makes all the difference.

Finally, he reviewed the papers prepared for the symposium and grouped them into following categories:

- Structural changes (Alanís Ortega, Levinson)
- Focus on worrisome sectors (Fernandez, L. Martínez and WWF)
- Links between sectors: finance and agriculture (de Windt)
- Focus on a hopeful sector: environmental services (Ferrier and EBI; C. Martínez, Balarezo and Ramírez)

## **Session 1: NAFTA and Services Trade Liberalization: A Focus on Mexico**

**Chaired by: Carlos Muñoz Villareal**

*Structural Changes in Mexico: Economic Growth, Trade Liberalization, NAFTA and the Environment.* Gustavo Alanís Ortega, president, *Centro Mexicano de Derecho Ambiental (CEMDA)*

Mr. Ortega began by explaining that his organization has participated in all the CEC trade and environment symposia. He expressed his support and respect for the CEC. He disclosed that he was representing the author of the paper and takes responsibility for any misunderstandings or errors. The paper reports on a survey conducted by CEMDA on the relationship between economic growth and environmental performance. The survey was not conclusive, however, overall the survey indicates a positive trend. The Environmental Kuznets Curve was applied.

Using overhead projections, he explained that as an economy grows it goes from agricultural production and resource extraction, to industrial production, and finally to services, such as finance and telecommunications.

Using Ethiopia and France as examples, he explained that Ethiopia is 52% agriculturally based, 11% industrial and 37% service-based. France's GDP, by contrast, is 3% agricultural, 26%, industrial, and 71% service-based. As an economy develops, a higher proportion of its GDP is based in services. Referring to the Environmental Performance Index (EPI, Yale University) reporting on 140 countries, there is an upward trend overall. Typically, the more an economy is based on services, the better its environmental performance.

To conclude, polluters locate their production in jurisdictions with flexible legislation and regulations. Using another overhead, he explained that Mexico, in the years since NAFTA came into effect saw first a decrease in the service sector, then it stabilized, and now it is growing again. The environmental effects of these phenomena are not conclusive. Based on information that we have and evidence from the EPI, it appears that the environmental implications are not significant, though generally they show some improvement.

*Pollution and International Trade in Services.* Arik Levinson, Associate Professor, Economics Department, Georgetown University

Professor Levinson began by saying that his presentation would be neither theoretical nor empirical, rather he chose to be subversive. His claim is that pollution and international trade and services are not linked at all.

Everyone in the room agrees that services are an increasing component of developing countries' economies and that environment and trade have important linkages. These linkages have been formalized. The question is whether the two are linked. Services account for a tiny fraction of overall pollution. Some services do pollute, but those that do are least likely to be traded across international borders.

He proposed a matrix. He divided the world into polluting services and non-polluting services, internationally traded services, and services not internationally traded.

Financial services, banking, legal, etc., are regularly traded across borders, but they are not pollution-intensive. But what about pollution-intensive services that are not traded, such as transportation or dry-cleaning? What is harder to imagine are services that are both pollution intensive and traded across borders—that is what we are here to talk about today—and that corner of the matrix is relatively empty.

He went on to define trade and services as cross border trade. Next, using data from the US Bureau of Economic Analysis and an EPA-generated model, he defined pollution intensity as the amount of pollution emitted for every million dollars of output. Referring to an overhead, he provided a summary of his research and provided examples showing how he concluded that the empty box in his matrix was substantiated.

The paper concludes that international trade has important links to the environment, and service industries are important to international trade, but international trade in services bears little relation to the environment. Why? Because services contribute relatively little to overall pollution, and those industries that are traded internationally are among the least polluting.

**Discussant:** Irene Henriques, Associate Professor, Schulich School of Business, York University

Dr. Henriques began by discussing the Kuznets Curve and the relationship between inequality and per capita income. Very simply, when a country starts growing, there will be increases in inequality, then a threshold is reached and inequality decreases as the country becomes richer.

An environmental Kuznets curve is the graphical representation that environmental degradation increases over time while a country is developing then, after a critical average income level is attained, degradation begins to decrease. There is evidence that this holds true for sulfur dioxide emissions and DDT use, for example. There is little evidence that it holds true for energy, land, biodiversity, greenhouse gas emissions and resource use, however.

She then asked how this could be applied to the service sector, as attempted in the first paper. She hypothesized that the historic differences between countries (societal, legislative) are all important confounding elements. Canada has not changed much in the last five years and in the US, agricultural production has decreased significantly. In Mexico, the agricultural sector has also decreased and the industrial and service sectors have remained relatively stable, as has the rest of the world. She proposed that Gustavo Alanís Ortega run a regression and look at the Mexican situation and strengthen the argument by controlling for these other factors in his model. She predicted it would show that NAFTA has improved environmental performance.

Concerning the second paper, she noted that the data are for 2002. She was not surprised to see the service sector as the least polluting. She then argued that the tourism industry be included in any discussion. Goods and services are inextricably interconnected. She suggested that the question be looked at more holistically. She applauded the author's analysis of the data on pollution and trade intensity.

She then articulated several questions that she felt flowed from the paper: Have increased trade and services across time led to greater emissions? Are the correlations between services, trade and pollution statistically significant? Tourism is a service that may have significant environmental impacts not only on emissions but also on biodiversity. What is the environmental impact of increased tourism? How does one account for irreversibility? She suggested that a more empirical approach would be helpful.

She concluded that the second paper complemented the first paper in arguing that moving towards services reduces environmental degradation.

### **Question Period:**

Key points raised in the question period were:

- The importation of used cars from the US into Mexico requires better regulation. Mexico has vehicle emissions standards in place; the challenge is effective enforcement.
- Foster joint actions to motivate the NAFTA countries to prohibit the sale of substandard motor vehicles.
- The challenge of effective enforcement applies to all sectors.
- Mexico would benefit by creating a position for an environmental ombudsman.
- Tourism services need to be included in any analysis in Mexico, considering the potential impacts on biodiversity.
- It is very difficult to acquire data on tourism and other trade services leading to difficulties in conducting analysis.

- Many professional services are now supplied electronically and are almost impossible to track and measure. When this is taken into account, the claim that services are not growing is questionable.
- E-commerce and its associated warehousing for example, is a huge and growing trade area that is very difficult to measure.
- The relationship between income and the environment is not the same across all pollutants, all countries or time periods. Economic growth and the environment are not at odds with each other.

## **Session 2A: Trade Liberalization and the Agriculture and Food Sector**

**Chaired by: Clive George**

*Liberalization of Financial Services under NAFTA and Its Effect on the Environmental Performance of the Agricultural Sector in Mexico.* Claudia S. de Windt, Senior Legal Specialist, Chief, Environmental Law, Policy and Good Governance, Department of Sustainable Development, Organization of American States

Ms. de Windt began by noting that this is the first time that the OAS has closely studied NAFTA. She described the paper as a work in progress. When the authors began the analysis, they intended to look at the three countries, but quickly realized that this was too ambitious and focused their efforts only on Mexico. Their working hypothesis was that NAFTA-driven financial liberalization affects credit policies and credit availability, and that in turn has important environmental effects. She described their survey-based methodology with financial institutions and associations. Secondary data were also consulted. The most important challenge was lack of data on the links between finance, environment and agriculture.

As a result of the peso crisis in 1994–95 and the need for capital, the Mexican government accelerated the financial liberalization process projected under NAFTA by increasing foreign ownership of banks through mergers and acquisitions. These changes and the resulting legislation greatly affected the credit market in Mexico. Credit to farms dropped very rapidly. She explained that from 1994–2000 there was a drop of 20%, and from 2000–2005, a drop of 60%. In general, research has shown that larger banks tend to prefer lending to large businesses or large-scale farmers.

The results of their survey showed preferences toward farm efficiency, large-scale farming and, therefore, crops such as maize and beans, which are grown primarily in northern Mexico. Environmental pressures in this region of Mexico, such as soil erosion, reduction in soil fertility, salinization, agrochemical residues, and groundwater contamination and scarcity, could potentially be exacerbated by the lending criteria of private banks, which focus on efficiency rather than on sustainability, under the assumption that

this will increase profitability and reduce risks. It is clear that in order to achieve the required efficiency, these producers may have to resort to increased use of pesticides and fertilizers.

Problems are many and derived from various sources. Post-NAFTA private farm credit policies, implemented by foreign-owned financial institutions in Mexico, have contributed to a general decline in credit availability for agriculture. These policies have become an incentive for large-scale export-oriented farming and have potentially stimulated overproduction of maize and beans in northern Mexico. Finally, she noted that liberalization of financial services, accelerated by the peso crisis and agricultural liberalization, have potentially contributed to certain environmental pressures in the agricultural sector but they cannot be considered as the sole source of such pressures.

Recommendations from the paper included conducting further research on linkages addressed in the paper; challenges should be addressed in an integrated approach through dialogue at the national and regional levels, taking into account the roles of different stakeholders and bridging the gap in access to credit between small- and large-scale farmers; promoting a shift in production and reallocation of resources toward crops that provide comparative advantages from a sustainability perspective; and establishment of a specialized type of soft credit for farmers who choose to join an organic certification scheme.

**Discussant:** Chantal Line Carpentier, Sustainable Development Officer, UN Department of Economics and Social Affairs

In this assessment, one would typically expect to see review of the banking sector, deregulation and impact on farm credit and impacts on the environment, then a pre- and post-NAFTA assessment with reference to the situation in Mexico with likely a counter-reference to another region in the world. According to Dr. Carpentier, what we find instead is a good section on the banking sector and on deregulation. The paper provides some information for access to farm credit. But impacts on the environment and the pre- and post-NAFTA differences are not in the paper. She noted that the limitations of the paper had been fully disclosed by the presenter.

She then reviewed the section on methodology, noting that it comprises 20 of 32 pages of the report. While very informative, it could better be placed in an annex. There are 1.5 pages on the environmental impacts, which could be strengthened.

In terms of access to farm credit, she observed that the researchers had the courage to go out and collect primary data from the banking sector. The paper would be enhanced by a more detailed discussion on this research while respecting confidentiality agreements. The market for maize and beans

was already strong before NAFTA; therefore, it is not clear to what degree or why the post-NAFTA period has influenced the movement of the market.

She asked, how does one go from correlation to causation—which is always a challenge in these types of assessments. How do we account for the peso crisis? The paper would benefit from some further discussion. Is there a geographic distribution to the data?

Regarding impacts on the environment, she expressed disappointment. There was no discussion of causation or clear correlation. NAFTA did not lead to the intensification of agriculture. This is a global trend, pre- and post-NAFTA. She suggested that farmers themselves should be interviewed. The CEC's work on coffee showed the benefit of this kind of approach.

She suggested that the choice of crops is a failure of good management decisions and the wrong incentives for the farmers—not the result of NAFTA. No banking institutions take sustainability into account. This is a global problem. Things are changing towards socially responsible investment, but it is still a long way off. She warned against strong statements such as “achieving efficiency by sacrificing environmental benefits.” The implicit suggestion is that farmers do not have any capacity now to engage in soil management, etc. This link has not yet been made.

She referred to two recent sets of reports on unsustainable agricultural practices worldwide. The first, from IAATSD, had 400 contributors.<sup>1</sup> Its conclusion is that if we want to continue feeding the planet, we will have to change our practices. The other report is from the Food Program and Cornell University, which promotes a biological/ecosystemic approach.<sup>2</sup>

Finally, she provided examples of how small-scale creative technologies can provide significant results and warned about alternative crops (maize) that can have adverse effects and increase environmental impacts. She concluded by emphasizing that this is a very interesting paper that would benefit from further investigation of the link between financial services and environmental impacts.

### **Question Period:**

Key points raised in the question period were:

- There is a substantial degree of investment by Spanish banks. It would be very interesting to understand the reforms of the Spanish banking center since Franco and how they might apply to policies followed in

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<sup>1</sup> International Assessment of Agricultural Knowledge, Science and Technology for Development report, 2008. <<http://www.agassessment.org/index.cfm?Page=IAASTD%20Reports&ItemID=2713>>.

<sup>2</sup> P. Marenja and C.B. Barrett. 2009. State-conditional fertilizer yield response on Western Kenyan farms. *Am J of Ag Econ*. February.

- Mexico. Does ownership affect behavior? It would be interesting to investigate.
- What drives the chain? To what degree did NAFTA influence the peso crisis? There is some evidence from experience in Argentina to suggest a link. This can lead to huge social and environmental effects.
  - A two-crop system has not only had a negative effect on biodiversity, but also a climate change effect in terms of sinks. We are measuring only the narrow, the known, and the old. Need to look at new systemic effects.
  - Even without clear correlation and causation, there is enough coincidence to assume that there are some links and trends. In the end it does not matter what the driver is—there has been a shift. We need to begin a dialogue to address the environmental challenges. We should apply the precautionary principle.
  - The burden of proof is on the researchers. We need to prove if there is a negative impact from trade liberalization.
  - The CEC should make efforts to magnify the emphasis on reforming farm policy in Mexico in the direction of greater sustainability. Integrate farm policies with financing policies.
  - What is the role of domestic development banks? Is there a benefit for re-integrating international development banks?

## **Session 2B: NAFTA and the Mexican Tourism Sector**

**Chaired by: Claudia Schatan**

*NAFTA, Tourism and the Environment in Mexico. Luz Aída Martínez Meléndez, Master's Candidate, Department of Natural Resources and Environmental Economics, University of Vermont*

Ms. Martínez explained that the purpose of the study was to determine if and how NAFTA has influenced the tourism sector in Mexico and what are the effects on the environment, based a series of analyses and introducing a set of variables and indicators. She acknowledged some constraints, including benchmarking of tourist and foreign investment flows before and after 1994 because of methodological differences. The analysis was restricted to the commercial presence of hotels and restaurants. It is important to note that there is evidence that most of the foreign investment that took place up to 2006 was in restricted (protected) zones.

NAFTA has provided a climate of greater certainty for investors, but it is not the main driver behind these investments. Mexican tourism was deregulated long before NAFTA and was an important part of the Mexican economy prior to NAFTA. Historically, Mexico has been a preferred destination. She noted that other variables, such as currency devaluation, natural disasters and safety concerns have more influence on tourism than NAFTA.

A qualitative analysis of the environmental law framework was conducted on tourism, finding evidence of the importance of the CEC citizen submissions process regarding enforcement failures with respect to tourism developments in Mexico, noting Cozumel as an example. She also explained that Chapters 11 and 12 of NAFTA also have implications for tourism, such as dispute resolution mechanisms. There are many tourism-related claims currently being heard in the Mexican courts.

An in-depth economic and environmental analysis was conducted on Cancun and, on balance, the study concluded that the greatest negative impacts of tourist inflows are the CO<sub>2</sub> emissions due to air travel, the increased water consumption and production of solid waste, and the increases in energy consumption.

In conclusion, she noted:

- NAFTA is not promoting the liberalization of tourism
- Liberalization of foreign investment in tourism existed before NAFTA
- Foreign direct investment is focused on other sectors than tourism
- More foreign direct investment and tourism flows from the US than Canada
- Tourism is more sensitive to other variables
- The CEC has effectively promoted compliance through the citizen submissions process
- More power and tools should be provided to citizens to promote sustainable tourism development
- More effort is required in fostering compliance with environmental regulations

Finally, she observed that sustainability is more a voyage than a destination.

*Tourism, Trade and the Environment: Tourism and Coastal Development in the Mexican Portion of the Mesoamerican Reef.* Vanessa Pérez-Cirera, Conservation Director, WWF-Mexico, and, Gina DeFerrari, Meso American Priority Leader, WWF-US (presented by Ferdinando Garcia)

Ms. Pérez-Cirera presented an analysis of the relationship between trade, tourism development and its impacts on the environment for the Mexican portion of the Mesoamerican Reef. The reef reaches from the Yucatan Peninsula to Honduras. It is a rich ecosystem and challenges us to provide protection. Also relevant is that in the early 1970s the Mexican government promoted tourism development as an economic driver for the country. It was very successful. Cancun now attracts 14% of all Caribbean visitors. There were also large foreign investments.

This integrated planning model is now being repeated in 20 other locations. In this case, "integrated" means things like service centers, airports, golf courses, etc. He asked what have we learned from the Cancun experience

and was NAFTA a major driver for foreign investment? Specifically, was the considerable foreign direct investment in the area a result of NAFTA? Thirdly, did this investment result in improved environmental performance?

Tourism is one of the biggest threats for a coastal environment. In this region, the destruction of coastal habitats is a serious concern. These impacts are emissions, destruction of habitats and fragmentation of ecosystems. This could be balanced by increased revenue into conservation management and mitigation funds.

There exist regulatory and voluntary tools for environmental management in coastal areas. For example, there are laws to protect mangroves. How well are they being used or applied? In Quintana Roo, for example, since 2002 there are data to measure the effectiveness of their application. The data show that there are some positive results, but implementation and enforcement are still challenges.

The paper also discussed the real financial contribution of tourism to Mexico. For example, since 2004, revenues have dropped because of currency devaluation and fears of terrorism. There is also evidence that a large portion, up to 80%, of tourist dollars stay in their country of origin.

The paper concluded that there is no link between NAFTA and foreign direct investment to the tourism sector and that a significant increase of tourism development has not produced a greater use or an increase in environmental regulations. In fact, existing regulations to preserve landscapes and ecosystems become a lightning rod for conflicts between tourism development and environmental management. Finally, even with protected zones, regulations, and voluntary tools, we need improved capacity building.

**Discussant:** Gabriel Duque, Senior Advisor, Andean Development Corp.

Mr. Duque provided a conceptual framework. Services represent more than two-thirds of the world's GDP. It is very difficult to define and there is no single international classification standard. In some cases, services are heavily regulated in order to control the quality of the service. The tourism sector is no different. Tourism contributes significantly to the global economy. Measuring is done in different ways. Using GATS-WTO classifications there are four modes: cross border, consumption abroad, commercial presence and movement of natural persons. Tourism is generally measured through the 2<sup>nd</sup> and 3<sup>rd</sup> modes.

International services trade agreements are basically sovereign contracts in which each country agrees to eliminate or reduce barriers; non-tariff, regulations, approval procedures, etc. Tourism is the most liberated, non-discriminatory sector in GATS.

How then can environment impacts from NAFTA be measured? He concluded that due to lack of data, it is simply not possible.

Reviewing the papers, he further concluded that there are many difficulties in assessing environmental effects of trade agreements. These include:

- Defining the scope (sectors and issues) and how this can be justified
- Establishing a link between the agreement and economic and regulatory effects or changes
- Identifying and measuring environment effects and impacts
- Making policy recommendations regarding compliance

Finally, he noted the challenge of coordination between authorities responsible for individual sectors and environmental management, the further need for coordination among all levels of government, and the importance of participation by the private sector and civil society.

#### **Question period:**

Key points raised in the question period were:

- Can the CEC provide training and guidance for foreign investors and foreign governments on the Mexican context?
- Are there existing mechanisms available to slow the pace of coastal development? One is a robust environmental impact assessment process. Older facilities remain a challenge. Voluntary mechanisms could assist
- There should be more focus on remediation initiatives
- Mexico is introducing competitiveness and sustainability and environmental management as criteria for evaluating tourism development. The CEC could assist Mexico by reiterating the need for such criteria

### **Session 3A: NAFTA and the Transport Sector**

**Chaired by: Hussein Abaza**

*Transportation Services, Air Quality and Trade.* Linda Fernandez, Associate Professor of Economics, Department of Environmental Sciences, University of California

The objective of the paper was to assess the environmental impact of trade liberalization on the cross border transportation on two international borders between three countries, using econometrics. Transportation services are important to the economies of the NAFTA countries. Traffic congestion and delay at the borders result in two negative consequences: poor air quality and delayed trade flows. Econometric analysis and panel data are applied in

this study to assess whether transportation services related to NAFTA have resulted in more pollution at border ports of entry and whether policies under NAFTA have helped to alleviate delays and reduce air pollution.

Panel data consisted of variables that included air pollutants, frequency and magnitude of transportation flows, including commercial trucks and passenger vehicles.

She discussed results from the economic analysis of transportation, air quality and trade at both the US-Mexico and the US-Canada borders and provided several scales of analyses: at individual port levels, at one border level, and across the two borders.

She emphasized Laredo because it is the land-based port of entry that receives the largest volume of traffic, with Detroit in second place. One reason for this flow is the North American SuperCorridor highway that runs from Winnipeg, Manitoba, through the United States, enters Mexico at the port of Laredo-Nuevo Laredo, and from there continues on to Mexico City.

The paper concludes that there are prevailing conditions that will continue to link the baseline city air quality on each side of the border with port air quality. The presence of *maquiladoras* also means that the transportation (principally by truck) of empty and loaded containers is a constant for the ports-of-entry and this influences air quality at the border.

Both currency devaluation and NAFTA have resulted in increases in air pollution due to the scale of increases in traffic flow. Infrastructure changes at the border can also have an impact, as the investigation with Laredo's road access indicates. Any attempt to enhance such road access through available funding sources would be meaningful. Technology and fuel changes also appear to be relevant for the limited location implementation that been attempted so far. Where policies are aimed at technology changes, there is evidence of change in the air quality along both borders.

*Environmental Implications of Trade Liberalization on North American Transport Services: The Case of the Trucking Sector.* Linda Fernandez, Associate Professor of Economics, Department of Environmental Sciences, University of California

This paper provided an assessment of the environmental impacts of trade liberalization on the cross border trucking sector, using econometrics and panel data from 1994 at ports of entry on both the Canada-US and Mexico-US borders.<sup>3</sup> The connections between trucking, air quality are described for

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<sup>3</sup> Ed. note: This sentence is misleading. As the author explains in her paper (p. 8), the data she used for her regression analyses are much more comprehensive in nature and time interval than is suggested here. Briefly, she drew upon air quality data from EPA, Canada, and Mexico for both sides of both borders (early 1990s to 2006), monthly traffic flow data from the US Bureau of Transportation Statistics for various

the US, Canadian and Mexican trucking services industries. Then, the econometric methods and data from North America were described that help measure the impacts of the trucking sector on traffic and trade flow, as well as the environmental impacts on air quality along the borders.

The final part of the research evaluated the effectiveness of policies to ameliorate air quality impacts of trucking. Even though many policies for improved port-of-entry operations may be under discussion rather than at the implementation stage among the NAFTA Parties, attempts are made to draw upon port-specific differences at both the US-Canadian border and the US-Mexican border.

The results of the various policies that were tested show measurable impacts on truck transportation at both borders and air quality. Diesel engine policy helps at ports along both borders, in terms of reducing nitrogen oxide and particulate matter. The fuel policy is rather recent; however, preliminary results indicate some promise. The FAST (Free And Secure Trade) policy addresses air pollution quite effectively by processing commercial truck traffic more efficiently. The Laredo road infrastructure shift does impact particulate matter and carbon monoxide—indicating that more roadways for processing vehicles more quickly make a difference. Formal congestion pricing may be considered in the context of addressing air emissions based on positive experience in El Paso.

**Discussant:** Brian Copeland, Professor, University of British Columbia

He began by asking two questions: How does trade liberalization affect the environment via the transport sector, and what policy changes can mitigate these effects?

Conceptually, it is useful to think of three channels. The first is scale effects, where the assumption is that more production and consumption pushes up demand for transport services, and then there is more pollution.

The second is composition effects, whether they are coming from changes in patterns of production, including outsourcing, changes in patterns of consumption, or trade diversion. Composition effects are complicated by trade diversion, which comes about with trade liberalization. In the case of NAFTA, there is increased north/south trade but this is offset by lower internal and other international trade—e.g., China. This can shape transportation corridors by reallocating the pattern of trade. The overall demand for transportation services may or may not be increased.

Third, there are technique effects. These are changes in mode of transport, differences in emissions intensity of transport equipment across countries,

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vehicle types (early 1990s to 2006), trade volume data (container volume flows from early 1990s to 2006), and Customs and Border Patrol data on wait times at both borders for 2004 to 2007.

and changes in emission intensity due to regulatory changes. These may or may not be influenced by trade agreements.

Why does this matter? Fuel prices do not fully internalize environmental costs. Professor Copeland referred to a study by Parry and Small (2005)<sup>4</sup> where it was determined that in the US it would cost 21 cents per gallon of gasoline to internalize environmental costs. This leads to another question: is there too much trade? Should we be eating locally grown food rather than transporting food from other regions. There is scope for other types of policies to reduce per-unit of trade.

Professor Copeland reviewed previous work, which focused more on emissions and traffic flows. The present paper looked at one aspect of this 'big picture'—the effects of trade on air quality at border stations, and what policies could be put in place to improve air quality? He suggested that the paper could have benefited from more background information to answer the question: is there a problem? Is there any evidence that air quality is worse at border stations than elsewhere?<sup>5</sup>

What was learned from the paper? The conclusions showing traffic flow effects on air quality must be seen as mixed. It was not clear when panel data versus time series were used. Also, functional forms (bus, container) may have been a bit forced.

Finally he asked: is it really due to NAFTA? Things are changing over time for lots of reasons. The case was not made for a clear NAFTA link.<sup>6</sup>

### **Question period:**

Key points raised in the question period were:

- This is an entry and exit story (both ways). Any policy needs to be addressed at a binational level.
- Getting data into forms where it can be matched is a huge challenge, e.g., air quality data, wait times, traffic flows, methods in use at the port location, etc.

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<sup>4</sup> Parry, Ian W.H., and Kenneth A. Small. 2005. Does Britain or the United States Have the Right Gasoline Tax? *American Economic Review* 95: 1276–89.

<sup>5</sup> Ed. note: In fact, air quality at a baseline city on each side of the border per time period is accounted for by a variable in Fernandez' regression analyses.

<sup>6</sup> Ed. note: The reviewer's comments miss the point of Fernandez' paper. Despite its title, what the paper sets out to do is, as she clearly states in her methodology, "...to estimate the impact of policy-induced changes in trucking flow at ports and air quality by exploiting the geographic incidences of such policies. Comparisons between ports versus baseline cities can be included in running fixed effects analysis to properly measure the correlation between the air quality and traffic flows." This she clearly does, concluding that recent policy changes mandating cleaner engines and fuels and reducing the waiting times have helped to reduce vehicle-caused pollution from its high point in 1999. Fernandez seems to accept that increases in truck traffic at the borders are due to NAFTA, but does not explicitly substantiate or attempt to explore this connection, as it is outside the thrust of her study.

- Border congestion is more of a problem from south to north (Mexico-US). What are the causes at the US ports of entry? Seasons, type of product, synchronization and infrastructure are all factors.
- By focusing on the border area, the possibility is that we will develop solutions that are not cost-effective and move the problem to somewhere else. The CEC should address the problems of air pollution from trucking at a more macro level.
- A report card requirement measuring air quality at border crossings is recommended. Border crossings are handling more than they were built for. There are infrastructure and capacity issues. We need data on the environmental impacts from larger volumes and increased wait times in order to influence policies and decision-making to get the resources needed for improvements. Trucking will only increase.
- FAST is the worst way to combat terrorism. We need to set goals and priorities.
- Look at the environmental impacts of trucking and transportation in the NAFTA region as a whole and coordinate policy making among the countries.

### **Session 3B: NAFTA and Environmental Services**

**Chaired by: Mark Linscott**

*The Evolution of the Environmental Services Industry in Mexico, 1995–2005.*  
Grant Ferrier, President, Environmental Business International, and George Stubbs and Fiona O'Donnell-Lawson, Project Contributors

He began by explaining the methodology he used to develop the paper and provided some data highlights, comparing Mexico's growth in the environmental market with the global market. For example, over the decade of research (1995–2005) there has been steady growth in Mexico's economy, as high as 11% in 1995. The environmental market in Mexico accounted for 0.59% of the Mexico's GDP in 2006, up from 0.44% in 1995.

The paper focuses on the question: To what extent has NAFTA been the driver of developments in the environmental industry in Mexico since 1995?

NAFTA has spurred economic growth, the entry of multinational corporations into Mexico and some increased awareness and attention on environmental issues (public and ENGO for example) have also contributed. NAFTA has not resulted in Mexico being a pollution haven as many feared when NAFTA came into effect. Most foreign companies moving into Mexico have imported their own corporate environmental standards and operating practices. In fact, the presence of more multinational firms had the effect of accelerating the baseline of voluntary environmental operating standards.

Very importantly, environmental regulations and enforcement are the principle drivers of environmental business in the earlier stages of environmental market evolution. Lack of enforcement capacity is considered a significant deterrent to growth. Despite this, growth in the environmental market in Mexico has been between 5% and 10% annually since 1995 and although this growth has been faster than that of the Mexican economy overall, it still lags behind environmental market growth in other nations at a similar stage of development.

While the environmental market in Mexico has grown at a respectable rate, the growth of the national environmental industry in Mexico has not grown at an equal rate, widening a trade deficit in goods and services. The most recent EBI estimates a \$5.1 billion environmental market in Mexico with a domestic environmental industry of \$2.3 billion that accounts for few exports, and hence a \$2.8 billion trade deficit.

Environmental companies operating in Mexico reported increased cooperation amongst environmental industry companies from all countries, but also a higher level of competition as the market matures. Importantly, while Mexican companies have large market share in the past 10 years, their capacity to address a number of environmental problems has increased dramatically.

Changes in the decade since NAFTA came into effect in the environmental market and the environmental industry in Mexico have not been dramatic, nor principally the result of NAFTA. Rather they are part of a fairly predictable pattern of evolution of environmental markets and industries. NAFTA has acted as a catalyst for some components but it has not had the impact of institutionalizing environmental quality across federal, state and local governments.

*Effects of Trade Liberalization on Provision of Urban Solid Waste Collection, Recycling, and Final Disposal Service: The Case of Mexico's Northern Border Region.* Claudia María Martínez Peralta, Environmental Promoter, Sonora State Commission for Ecology and Sustainable Development

She explained that Mexico, and in particular the northern border region, is facing serious challenges caused by deregulation and by accelerated urbanization. One of the most difficult to manage and resolve is the provision of urban solid waste collection, recycling, and final disposal services.

Her study focused on ten cities in the region, where nearly 10% of Mexico's total waste is generated. In 2005, nearly 56% of urban solid waste in the region was produced by Tijuana and Ciudad Juárez alone (1.1 million inhabitants each). The average rate of growth is 4.4%. Public services are challenged to meet urban needs. Nowhere is this more pressing than in waste management. Per capita urban solid waste generation varied from 0.74 kg/day in Anáhuac, a city of fewer than 20,000 inhabitants to 1.91

kg/day in Mexicali. An estimated 40% of the volume is made up of recyclables such as plastics, glass and metals. Standards vary considerably, with collection and disposal being managed either by local governments or private services.

She noted several policy implications. Citizen participation in preventing generation of waste and consumption practices; land fill management and regulation (private and public); increasing professionalism in services for waste management; and the regulation of recycling.

Finally, she concluded that although these cities have regulatory instruments governing the management of sanitation services, these have not functioned properly because they are rarely enforced, due to the inadequate technical capacity and knowledge by the personnel responsible for providing the service. The situation has become further complicated by de-regulation.

*Growth in the Supply of Municipal Environmental Services to Communities on Mexico's Northern Border (1995–2005).* Tomás Balarezo Vásquez, Regional Planning Manager, and Alberto Ramírez López, Special Projects Manager, Border Environment Cooperation Commission

Their paper began with the premise that NAFTA fostered structural changes throughout the US-Mexico border region. This transformation made border cities and towns springboards for global competition. Since NAFTA came into force, the Mexican economy has generally shown dynamic performance, as reflected in the home construction sector. A strong, orderly homebuilding sector is a sign of a strong economy and that expectations for urban services are generally being met, such as garbage collection, drinking water and wastewater treatment.

In contrast, however, the fact is that the border region's environmental infrastructure has not evolved on par with the region's rapid economic growth. In the early years of NAFTA, the demand for urban services far exceeded what was available at the time. This is particularly important for the 14 cities in the border region where 30% of the total population of northern Mexico lives.

Population growth and the development of the *maquiladora* industry have put pressure on the region's natural resources, especially water which is likely the region's most critical issue. There are huge infrastructure challenges in the supply and quality of drinking water and management wastewater.

Air pollution problems associated with the large number of vehicle have also increased as has greenhouse gas production. Air quality standards in many of the border cities exceed levels that are judged as contributing to asthma and other respiratory diseases. This has been substantiated by other studies. Waste management issues, including hazardous waste and the illegal trade in

used tires, have exceeded the authorities' capacities to intervene, manage or enforce.

The Border Environment Cooperation Commission (BECC) and the North American Development Bank (NADBank) are taking up these new challenges and have developed and funded environmental infrastructure projects involving drinking water systems and wastewater and municipal waste management. Paving projects are also being carried out to reduce particulate emissions, water conservation programs are being initiated in agricultural areas, and alternative power projects are underway.

Again, as in previous papers, a strong case was made for capacity building in Mexico to address existing and emerging environmental challenges.

**Discussant:** Dale Andrew, Head, Trade Policy Linkages Division OECD Trade Directorate

He commended the authors on the quality of the papers and their research. He stepped back from the data and threw back to the presenters a few questions in order for them to step away from the data and pull out the most important points. Environmental services was supposed to be one of those sectors of services liberalization that offered some hope. Why then are all of the speakers registering disappointment? What can be done to allow environmental services to contribute more?

He reduced each of the papers to one sentence. The first paper concluded that the Mexican based environmental services industry has not increased in comparison to the environmental market (domestic demand, including imports). The second paper suggests that despite BECC contributions to projects, overall environmental services have not expanded in pace with economic and demographic growth and, in particular, with the explosion of exports from over 2800 *maquilas* at the border. What are the underlying reasons? The last paper raised the question of how can we improve the private sector's contribution to urban solid waste management?

His three resulting generalizations were:

- Improving environmental protection by the use of such services as clean up, control and prevention is not only a matter of improving the supply side by eliminating trade barriers and introducing foreign competition. We also have to look at the demand side. The need for better regulations came up again and again. What forms of regulatory reforms are needed? He discussed the OECD's stages of regulatory reform, beginning with de-regulation, regulatory quality improvement and regulatory management.
- It seems that the business to business environmental services continue to be the poor child in delivering environmental services. We

still have a model of relying on municipalities to deliver public services. Is this ill suited in the changing business environment? Is there an increased role for public/private alliances?

- Although exporting more, why do US-based environmental services industries continue to lag in their potential to service the Mexican markets? What are the factors behind low value of Canadian exports of environmental services to Mexico? Why are European and Japanese firms stepping in?

Grant Ferrier responded to the first question. He emphasized the role of qualified US companies in taking up the challenge to solve these problems and this is facilitated by free trade and movement of people. He noted that some of the biggest movements in Mexican environmental markets in the past decade are in water management. These tend to be municipal entities in Mexico. Water rates in the developing world are subsidized. Financial risk for a private company in an unsubsidized context is whether they can collect the rates. Another factor driving international competitiveness is a consistent domestic market of regulations and enforcement that drive consistent demand. This is the single most important component that drives competitiveness and capacity for companies to grow. Mexican capacity has grown and partnership of local companies is more commonplace where local contractors and workers are engaged.

The second question concerned environmental services and private public partnerships. A mix is commonplace in many countries. Should all garbage management be privatized? He suggests that water will continue to be more public and waste management is moving toward privatization in the US and in Europe.

Concerning regulation, Mexican environmental regulatory infrastructure and capacity has improved in relative terms, but still has a way to go. Now it is still an adjunct to economic considerations. The regulatory agencies need to become better positioned. Public pressure has much to contribute to this transition. Personally, he is more in favor of using financial instruments and incentives rather than punitive measures, which lead to mediocrity whereas financial incentives will produce better behavior.

Claudia María Martínez Peralta focused on the second question—the privatization of environmental services. She sees this as a very slow and long-term process, requiring a framework of public acceptance, improved information, financing, regulations and capacity building.

Tomás Balarezo Vásquez noted that everything is linked together. In order to provide proper housing in the border region, for example, it was important to involve the public to identify their related needs and recommend solutions. All these phenomena occur at the same time. Local governments are becoming more aware, the private sector sees business opportunities in the

environmental sector, and the communities demanding better quality in services. This is very important in the border region.

Alberto Ramírez López noted that increasing public and private partnerships in environmental infrastructure services will need some clear rules for how services will be provided to the public. A clear legal framework will be required. Also, public environmental education and capacity development to manage services, private or public, is critical. Finally, the capacity for effective and efficient enforcement is lacking, and sometimes even non-existent. Companies comply with minimum requirements. Much more could be accomplished with professional capacity building of enforcement personnel.

### **Question Period:**

Key points raised in the question period were:

- Terms for elected municipal officials should be sufficiently long to allow individuals to gain an understanding of problems and participate in solutions.
- Public participation and consultation in waste management decision making and policy is critical.
- Ironically, often tap water in Mexico is of higher quality and yet bottled water is increasingly consumed. In the US, 99% of potable water is not consumed but is used for agriculture and other purposes.
- Water scarcity will require new and revolutionary ways to treat and manage water.
- Regulations and enforcement for disposal of e-waste and tires are non-existent in Mexico. In the US, they are banned from landfills. Tires are sent to specialized facilities for burning, shredding, or blending.
- Human development indicators could be useful for a better understanding of what is going on in the border cities as compared to other cities in Mexico.

### **Synthesis**

**Chair: José Carlos Fernández Ugalde**, Program Manager, Environment and Trade, CEC

The chair thanked all the participants and the rapporteurs for their hard work during the sessions. When he was planning the closing session, three questions seemed to have the most significant, general importance:

- What have we learned?
- What are the outstanding elements for further research: what is the outstanding agenda in terms of linkages?
- What are the implications and recommendations arising from the author's conclusions?

## Session 1: Chantal Line Carpentier, rapporteur

Dr. Carpentier reviewed the presentation on the Kuznets Curve and noted that the discussant had added that while there is evidence for elements such as sulfur dioxide, nitrogen oxide, lead, DDT and sewage, there is, however, little evidence that this applies to energy, land, biodiversity, greenhouse gases and resource use. There is a lack of data. Perhaps we have not yet reached the income level at which that curve will shift.

As Mexico's economy has evolved from one based on agriculture to manufacturing and then towards one based on services, there is a decrease in air pollutants. The environmental performance index versus a percentage of GDP was very interesting in that it showed that the percentage of the economy that comes from agriculture varies inversely with environmental performance: as agriculture decreases, environmental performance increases. With the service-based economy, however, there is a direct correlation between services and environmental performance. Is it possible to tweak this curve? Some suggestions were to introduce structural changes for rapid improvement and learning from the experiences in developed countries for a 'leapfrog' effect.

The second paper, which focused on the relation between pollution and trade in services in the US, showed that the services sector contributes little to overall pollution and that services traded across international border contribute even less. The paper concluded there is a negative correlation between trade and pollution intensity of the services industry.

Dr. Carpentier continued by noting that the discussant had expressed some skepticism about the environmental Kuznets curve, asking if the U-shape might be a result of progression in the development of individual countries or the historical differences between countries, and arguing that controlling for middle income countries mainly in Latin America with high levels of inequality would tend to smooth the curve. She also asked if controlling for enforcement and monitoring would negate the inverted U-shape and then asked how irreversibility could be dealt with, e.g., how to account for species which have already become extinct.

The discussant had then posed a series of questions: Has increased trade in services across time led to greater emissions; are the correlations between services, trade, and pollution statistically significant; what is the environmental impact, especially on biodiversity, of increased tourism; and how does one account for irreversibility? Finally, the discussant had challenged the conclusion from the second paper concerning tourism, arguing that tourism is an internationally traded service and does have direct environmental impacts.

## Session 2A: Grant Ferrier, rapporteur

Mr. Ferrier reviewed each of the papers briefly and summarized their conclusions. Claudia de Windt's paper explored the effects of liberalization in financial services in Mexico, focusing on the effects on farm credits and the environmental impacts. The basic conclusion was that there was a noticeable consolidation of the financial services broadly, and especially in Mexico. The paper also provided some empirical analysis and discussion of the situation in Canada and the US.

Specifically in Mexico, the liberalization of financial services has led to a consolidation in banking services, particularly toward the creation of larger banks, and they are making larger and larger loans. Small banks lend about 10% of their portfolios to farms compared to 0.5% for the larger banks. This is significant and it makes clear that there is less and less credit available to farmers, declining by 80% from 2001 to 2005.

There is also an indication that the concentration of loans in the farm sector and the tendency to larger-scale farming was tipping the balance to maize and beans in northern Mexico. The specialty farmers in the south are not getting the loans.

Larger banks focus on efficiency and profit and have no sustainability guidelines. The drive for efficiency and profitability is resulting in an increased use in pesticides and chemical-based fertilizers. More data are needed to support this.

In general, the conclusion is that NAFTA has been a contributor to the decline in the amount of credit available for agriculture and has created more incentive for large-scale exports—potentially leading to an over-production of maize and beans in the northern areas. In the absence of available private credit, there is a need for mechanisms for small farmers to get credit to pursue more sustainable practices. Broadly, the policy implications would be to have more support for the farm policies from the development banks. Finally, we need to look at the green revolution that stimulated agricultural productivity in the 1960s and 70s and imagine a 'green-green' revolution, where productivity is balanced with sustainability. This is a role that the CEC and the international community can play by pursuing the integration of farm policy with fiscal policy; and Mexico would be a good place to start.

## Session 2B: Gustavo Alanís Ortega, rapporteur

The session addressed a variety of topics and many questions were raised. The primary focus was to address whether there is any direct link between tourism, effects on the environment, and NAFTA. Did NAFTA have the effect of increasing tourism and if so, what were the environmental effects?

The difficulty in obtaining reliable data regarding tourist flows before and after NAFTA commenced has been noted. It appears that there was an increase in foreign investment in services (hotels and restaurants); however, it is not obvious that this was a direct result of NAFTA. There are other important factors, including severe weather events, not the least of which were the 2001 and 2005 hurricanes, which necessitated much reconstruction.

There is an increasing demand for improved enforcement of environmental laws. A recommendation was made to encourage hotels to participate in voluntary certification programs. Older facilities should also be encouraged to participate. Other incentives, such as new tax structures could be introduced. Further, new facilities should be subjected to more rigorous environmental impact assessment processes with follow-up inspections and monitoring.

There is a need to compare winners and losers. Mexico was an important tourist destination prior to NAFTA and the research concluded that many of the environmental issues are not a result of NAFTA but result from other institutional decisions. In the case of the Mayan Riviera, many of the interviewees believe the region has reached a saturation point. The situation is exacerbated by poor enforcement of environmental laws.

Session 3A: Heather Bystryk, rapporteur

She began by noting that this session complemented the other sessions in many important ways, including overarching issues such as the effects of pollution and air quality on public health.

She then reviewed the main points from each of the papers presented during the session. In the first paper, three questions were posed. Has NAFTA resulted in more air pollution at the border; how does transportation flow influence air pollution; and what policies have impacted transportation and air pollution?

A statistical analysis, using econometrics, versus simulation models was used. Air quality was looked at as a function of trade flow volume, transportation and technologies, border city characteristics, and policy. This included aspects such as NAFTA, dollar value decline, port policy and road infrastructure, specifically at the Port of Laredo. As a general conclusion, it was found that NAFTA and the dollar decline have resulted in an increase in scale effects that have worsened emissions levels for specific air pollutants. On the other hand, policies related to infrastructure change can reduce particular air pollutant levels. Improvement of roads at the Port of Laredo was used as a specific example.

The second paper looked specifically at the trucking sector to assess whether policies work to address truck delays at the border and related air pollution using econometric analysis and data from the US-Canada and US-Mexico borders. These policies included customs and trade partnerships against

terrorism; free and secure trade (FAST) pre-clearance to reduce congestion; and changes in fuel policy and diesel technology. In a nutshell, these policies do have the ability to lower air pollution, particularly the FAST policy and diesel technology change.

She then noted that the discussant had framed the discussion by looking at three channels through which trade liberalization can effect environment. There were scale and composition effects (e.g., changes in the patterns of production); trade diversion within and between countries; and technique effects (e.g., changes in mode of transport).

She concluded by asking how can we use trade liberalization to address environmental concerns? Suggestions from the session included a need for policy coordination, sharing of experiences and exploring the future potential impacts of congestion at the borders.

Session 3B: David Hartridge, rapporteur

Mr. Hartridge began by stating that the papers were highly complementary in their examination of supply and demand for environmental services in the northern border region of Mexico. The first paper focused on the disposal of urban waste in the context of an enormous increase in urbanization that has generated an increase in both total and per capita production of waste. The paper then clearly demonstrated that the system for dealing with this is breaking down at all levels. There are important specific problems, such as the disposal of tires. There is also some good news, including growth in employment and the economy in the north.

The second paper looked at cooperation between the Border Environment Cooperation Commission (BECC) and the North American Development Bank (NADBank) to address environmental problems. There are positive experiences across the spectrum. Real improvements were demonstrated in drinking water, sanitation, sewage treatment and to some extent air quality. The BECC and the NADBank are contributing to this progress. However, it was clear that massive problems remain. The problem of water supply, or water stress, is growing, as are problems related to air quality.

The third paper looked at the development of commercial market for environmental services in Mexico and the environmental industry to meet this demand.

Mr. Hartridge offered some observations from the papers. It is clear that the rate of urbanization has been more than the administrative infrastructure can cope with. Waste collection services were characterized as amateurish and unprofessional. One of the main conclusions was that the involvement of the private sector should be increased within a more structured legal framework. This is particularly important given that 90% of the northern population lives

in nine cities and the population there is growing at a rate of 4.4% per year. This is leading to massive problems in areas of waste water, air pollution and solid waste management. Increased professionalism in service delivery was a key recommendation.

In the case of the BECC projects, Mr. Hartridge felt that increased professionalism was also needed there. Problems, however, are also related to infrastructure. The lack of pavement and its effects on human health is a very important point. Paving of roads could be a massive contribution to improving human health.

The development of the business and manufacturing sector has generated a demand for environmental services in support of business, such as remediation and consultancy services. It was demonstrated that the old fear that NAFTA would lead to a downward movement of standards has been absolutely unfounded. Foreign firms have imported their domestic standards with them and have had the effect of raising environmental standards. In fact, the main drivers of the environmental market are things such as global environmental standards observed by multinational corporations and regulation and enforcement of federal laws.

The importance of enforcement as an issue emerged in all three papers, be it in waste management or air pollution. The regulations exist in Mexico, but the enforcement capacity at the state and local levels is weak. The growth in demand for environmental services since 1995 has clearly outstripped the capacity of Mexican companies to meet the demand. Currently foreign firms have a larger share of this market. There is, however, a very clear increase in technical capacity and an increase in competition in the market.

What has all this to do with NAFTA? The presence of foreign multinationals is a direct consequence of NAFTA. They are importing higher standards and they are the biggest customers for environmental services. Their demand is driving the market.

He summarized the messages as, first, the crucial importance of effective enforcement and, second, the related theme of education and public participation, capacity building and increased professionalism in administration.

## **Closing Remarks**

José Carlos Fernández Ugalde returned to the podium to explain that the proceedings of the symposium would be published by the CEC in due course, summarizing the principal findings of the presentations, the responses of the discussants, and short digests of the main points raised in the question and answer sessions.

He warmly thanked all the presenters and participants for a most productive and interesting symposium, and the staffs of the CEC and NACTS, the team at Unisfera and the interpreters for their dedication and hard work in making the symposium such a fine success. Then, wishing everyone a safe return, he adjourned the meeting.