Annotated Bibliography

**Commission for Environmental Cooperation
Publications and Work on:**

Environmental Goods and Services

Environment, Economy and Trade Program, July 2005

Trade in Environmentally Preferable Goods and Services

http://www.cec.org/programs_projects/trade_environ_econ/project/index.cfm?projectID=13&varlan=english

This compendium of environmental goods and services complements the Environment, Economy, and Trade program, aiming to further our understanding of the linkages between trade and the environment. One of the hypotheses being tested within that area is whether liberalized rules under NAFTA serve to increase the use of environmentally preferable products. The CEC's work shows that liberalized trading rules under NAFTA do not in and of and themselves lead to the increased use of environmentally preferable products. The CEC's project on *Trade in Environmentally Preferable Goods and Services* (alternatively, *Greening Trade in North America*) seeks to understand what constrain this development. That work is helping to break down barriers to environmentally preferable goods and services, including low consumer awareness of the environmental effects of purchasing habits, confusion about eco-labeling, difficulties in financing small companies in this field, lack of understanding about the best use of market-based approaches to support environmental protection and the conservation and sustainable use of biodiversity; and supporting cooperative efforts to increase these programs (e.g., renewable energy and energy efficiency, shade coffee, sustainable palm). It also aims to connect the growing numbers of suppliers and consumers of greener goods and services throughout North America.

CEC Reports and Publications

16. Identifying Environmentally Preferable Uses for Biomass Resources; Stage 2 Report: Life-Cycle GHG Emission Reduction Benefits of Selected Feedstock-to-Product Threads.
Martin Tampier, Doug Smith, Eric Bibeau, Paul A. Beauchemin, EnviroChem Services Inc. January, 2005.
http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1557
English only

In this study, we examined the greenhouse gas emission reduction effects of several of the biomass feedstock-to-product threads that were identified in the Stage 1 report. Based on lifecycle GHG emission analysis, the emissions from growing, collecting, and processing biomass were assessed and weighed against the displaced emissions from fossil fuels. The overall results are presented on a per (metric, dry) tonne of biomass input basis and also per hectare of land used for energy crops. Additional analysis was carried out with respect to the technology readiness and the cost of various biomass technologies. The amount of fossil fuel that could be displaced by each option was determined. Findings from this additional analysis were considered in the final recommendations.

15. An Examination of Trade in Environmental Goods and Services in the NAFTA Region.
Environmental Business International Inc, CEC. December, 2004.
http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1592
Also available in Spanish and French

The CEC conducts policy and research work on environmental goods and services (EGS) in eleven different activities. One specific activity is to "Identify changes/trends in trade in green goods and services in the NAFTA region." Lacking any definitive quantification of trade in EGS or any established or consistently used industry codes that could result in ongoing government statistics on environmental trade, in 2003 the CEC commissioned this study to provide a classification and quantification of trade in EGS in the NAFTA region. Data highlights and tables depicting trade in EGS are presented first, followed by an analysis of emerging trends and potential for further environmental trade. More details on these industry sectors and examples of clients are presented in the appendix.

14. Discussion Paper on North American and International Initiatives to Quantify Emission Reductions from On-Grid Renewable Electricity Facilities: An overview of Developments Relevant to the CEC Working Group. Martin Tampier, Envirochem Services Inc. November 2004.
http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1722
Also available in Spanish and French

The CEC Working Group on the Quantification of Environmental Benefits from Renewable Energy Operations convened in Washington, DC, at the end of September 2004. Since its last meeting in July 2003, numerous initiatives have emerged, or have become relevant to the working group's task. This document provides an overview of these initiatives, and describes possible implications for the working group, in preparation of the November 2004 workshop. A previous background report had been completed by Synapse Energy Economics, the Hélios Centre and Energy Matters prior to the 2003 workshop. This report identified three main methodologies to quantify emission reductions from on-grid electricity generation:
1. Grid average – the average emissions per MWh for the national grid, or a region, are used as a baseline to quantify emission reductions from renewable sources of energy ("renewables").
2. Operating margin – the marginal generation unit is used to quantify emission reductions from renewables. This unit is the plant that comes on the grid last of all plants. Different plants can be

on the margin, depending on the time of day and the season. This method requires some more complex modeling to anticipate which plant will be the marginal unit at which point in time (generally, the marginal unit is the most expensive plant required to fill current demand). It was noted during the 2003 workshop that this information is not always available, as for example in Alberta, Canada, information about which unit is producing when is not public.

3. Build margin – the emissions from planned generation plants are used to determine emission reductions from renewables. The build margin is often a natural gas plant, but can also be a mix of different plants, including coal, nuclear, or large hydro.

The background report also analyzed several national initiatives and programs and described their methodologies to quantify emission reductions from on-grid renewables. It was found that there are many different approaches. Most Canadian methodologies use the system average; Mexico prefers the thermal average, i.e., the average of only fossil fuel-based power plants, and the United States prefers the marginal dispatch approach, based on dispatch models. The report recommends using the marginal dispatch as the most appropriate methodology for quantifying emission reductions from renewables.

This present document elaborates on these previous findings, and puts them into an international context, while also updating national developments. It analyzes existing relevant initiatives that overlap with the task of the CEC working group, and makes recommendations for advancing the work on a common quantification methodology for North America. The recommendations flow from both the comparison and evaluation of current trends, as well as telephone interviews with about a dozen prominent international experts on methodology.

13. Market Study on the Meat Product Consumption Habits of North Americans. CROP Inc. May 2004.
http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1701
Also available in Spanish and French
Questionnaire: http://www.cec.org/files/PDF/ECONOMY/Survey-Meat-Product-Consumption-Habits_en.pdf also available in Spanish and French

This survey is part of the CEC's continuing work relating to the emerging North American market for environmental goods and services (EGS) and targeted market analysis of consumer interest in, and willingness to pay for, selected EGS. This work supports the Conservation of Biodiversity program work on grasslands. According to surveys in the three countries, awareness of the existence of buffalo meat appears to be quite high in Canada and the US, and negligible in Mexico (90, 64 and six percent of all respondents, respectively). Consumption levels among those already aware were at 31, 25 and six percent respectively. The willingness to consume grass-fed meat, including beef—knowing that it has ecological benefits—is high in Mexico as well as the other two countries (78, 71 and 85 percent, in the same order). Surveys about consumer interest in "specialty meats" are also encouraging. Therefore, developing the production of grass-fed buffalo meat could be an interesting market-based mechanism to protect these sensitive eco-regions.

12. An Examination of Trade in Environmentally Preferable Goods and Services in the NAFTA Region. Environmental Business International, Inc. CEC. Spring, 2004.
http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1592
Also available in Spanish and French

The CEC conducts policy and research work on environmentally preferable goods and services (EPGS) in eleven different activities. One specific activity is to "Identify changes/trends in trade in green goods and services in the NAFTA region." Lacking any definitive quantification of trade

in EPGS or any established or consistently used industry codes that could result in ongoing government statistics on environmental trade, in 2003 the CEC commissioned this study to provide a classification and quantification of trade in EPGS in the NAFTA region. This paper identifies changes/trends in the trade in green goods and services between NAFTA countries. EGS statistics for the global North American and NAFTA countries, specifically, are presented for the year 2001 by EGS sectors, using OECD definitions.

11. Defining Environmental Goods and Services and their Trade and Sustainable Development Implications: a Case Study of Mexico. Enrique Lendo, CEC and ICTSD. July 2004.
Available upon request

This study assesses the potential impacts of EGS trade liberalisation against Mexico's own sustainable development goals and strategies. The analysis addresses the sustainable development patterns experienced by Mexico over the last three decades, the current debate regarding the liberalisation of the EGS sector and its implications for Mexico, the market structure and trade flows of the Mexican EGS market as well as the potential of some environmentally preferable products of export interest to the country. Finally, the study proposes and implements a methodology to carry out a sustainable impact assessment under two definition/classification approaches. The results provide information to support Mexican decision-making in the area of EGS under the current WTO negotiations and in other forums.

10. Payments for Environmental Services: a Survey and Assessment of Current Schemes. Unifesra International Centre, K. Mayrand and M. Paquin., CEC. September 2004.
http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1697
Also available in French and Spanish

Payments for Environmental Services (PES) is an initiative that seeks to support positive externalities through the transfer of financial resources—from the beneficiaries of certain environmental services to those who provide these services, or who are fiduciaries of environmental services. Largely thanks to PES schemes over the last decade, markets are developing in such areas as watershed, biodiversity, carbon and landscape beauty services. Since most of these initiatives are fairly new, it is too early to judge their relative merits. This paper reviews the various schemes that have emerged and draws up initial conclusions on what might be best practices, and where PES can be the best tool to foster environmental protection.

9. Inventory of Organizations working on PES. K. Mayrand and M. Paquin, CEC. September 2004.
Available upon request

To complement the survey of PES, this is a listing of 24 international organizations—predominantly from, yet not confined to, the Americas—which deal with trade and the environment in some way. The name of each organization is followed by its address, contact names and principal activities. For those starting to work in this area, the information can be useful for finding synergies and partnerships.

8. Survey on Environmental Labeling, Certification and Selected Mutual Recognition Initiatives in Mexico. Enrique Lendo, CEC. March 2004.
Available upon request

Mexico's experiences with the certification and labeling of green goods and services (GGS) are documented and discussed in this survey. The motivation for initiating these measures originated in the 1990s—a turning point for the Mexican economy. In 1991, the *tuna-dolphin case* set a precedent for trade and environmental analysis in the multilateral agenda. Since then, Mexico has increased trade, but become a greater environmental strength at the same time. As a result, clear and across-the-board standards have been moving into place for the registration, regulation and promotion of environmentally preferable products and services, with the goal of fostering sustainable development. The five most popular environmental/social responsibility certification schemes promoted by the Mexican private sector are ISO 14000, the GEMI initiative, Responsible Care, the Social Responsible Company Seal promoted by the Mexican Center of Philanthropy, and the Gold Medal Award granted by the World Environment Center. Energy efficiency is promoted through FIDE (the Mexican Trusteeship for Electric Energy Saving). Third party certification by international organizations (e.g., Codex Alimentarius, International Standardization Organization, and Organic Crop Improvement Association International) also help monitor the standards and quality of GGS.

7. North American Renewable Energy Database: NARED. Partick Henn, Helios Centre. November, 2003.
http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=1482
Also available in French and Spanish

The North American Renewable Energy Database presents summary data on a state, province or territory level, disaggregated by type of renewable energy source and technology, and by development status.

6. Greening Trade in North America: the NAFTA Side Agreement Work. Chantal Line Carpentier. 2003. Paper presented at Greening of Industry Network, 11th International Conference: Innovating for Sustainability. San Francisco. 12–15 October 2003.
Available upon request

This report updates accumulated evidence either supporting or refuting various hypotheses underlying the CEC framework for assessing NAFTA's environmental impacts. The CEC has gathered considerable data on the environmental impact of trade, especially that between developed and developing nations. After nine years of developing a framework for evaluating the effects of trade liberalization and measuring NAFTA's impacts in North America, the analysis—for the most part—remains in its infancy. However, it is clear that neither the warnings of dire environmental consequences nor the hopes for a direct improvement in environmental performance, thanks to higher income, have come to pass. In general it is increasingly clear that trade is at once necessary and insufficient for environmental and social improvement following trade liberalization. From the evidence assembled from the CEC's first two symposia, the main conclusion is that good policy makes the difference.

5. The Environmental Goods and Services Sector in Mexico: Framework, selected examples and elements for their future development through trade policy, **and Annex report**. Carlos Muñoz Villarreal, CEC and OECD. March 2003.
Available upon request

Mexico has many environmental challenges which provide ample incentive for the development of EGS. These challenges include water shortages, air and water pollution, waste management, loss of biodiversity, and rising energy needs and greenhouse gas emissions. Any market that

arises from the development of these products should be consistent with targets and priorities outlined by Mexican environmental policy. A vast regulatory framework already exists in Mexico, despite some problems associated with their implementation. Environmental management and law enforcement are key to making improvements.

The market is driven by four main factors: the environmental impacts themselves, the environmental regulatory and institutional framework and, to a lesser extent, social pressure and the ability to compete, especially by the export sector.

In this paper, the supply side of the EGS industry is pictured in general terms using wastewater treatment as the main example. From an environmental perspective, the openness of the EGS market may offer several benefits. These include the enhancement of infrastructure to complement local capacities; the strengthening of environmental monitoring and management capacities; a possible reduction in relative prices of environmental goods and services, due to a higher competition among suppliers; an enhanced supply of goods and services which fall in the group of clean technologies and products; as well as additional incentives for conservation and the sustainable use of natural resources (for instance, eco-tourism activities).

Synergies between ecological services and economic opportunities linked to international trade are of particular importance in Mexico, as far as EGS are concerned. Cooperation of this kind would be advantageous to both interests.

4. The North American Market for Organic Agricultural Products. Suzanne Wisniewski. CEC. 2000.
Available upon request.

This report surveys the market for organic products in North America. The emphasis is on coffee—organic as well as Fair Trade and shade-grown—collectively known as "sustainable."

Interest in organic, Fair Trade and shade-grown coffee has evolved from the increasing value the public is placing on environmentally and socially sustainable produce in North America. Before a proper market can be set up for coffee, in particular, a reliable certification scheme must be set up. And before that happens, a few questions must be addressed. What are the major organic product trends? What is the current and potential consumer demand for organic agricultural products in the US and Canada? What links are there between the organic market and the consumer's concern for the environment? How does understanding the organic food market help make sense of the organic coffee market in particular? Does organic coffee mirror general organic trends, or do these markets differ? How is the organic coffee market tied to Fair Trade and shade-grown coffee initiatives?

The range of organic products now available has grown so dramatically that it has been difficult for the industry to identify strong trends in any one product, and most agree that additional market research is needed on a product-specific basis.

Consumers are motivated to buy organic produce by a variety of factors, the three most important of which seem to be taste, perceived health benefits and concern for the environment. In general, organic consumers in Canada tend to be inspired by health reasons, while environmental concerns seem to motivate consumers in the US. In both the US and Canada, new parents constitute one of the demographic groups with the strongest interest in converting to organic food, as they are especially concerned about what their children eat.

3. Lessons Learned from the Work of the CEC on Environmental Goods and Services. CEC. 2001. http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=965
Also available in French and Spanish

This short discussion looks at some practical considerations in the implementation of green goods and services (GGS) guidelines, and what the CEC has learned so far in this area.

An over-arching lesson of the work of the CEC is that the values of citizens and the market patterns of consumers are often distinct, and for many reasons.

The CEC concentrates on specific products—such as shade-dependent crops—when attempting to draw certain conclusions. From this starting point, some early lessons can be extrapolated and applied across the board.

Some key lessons from this on-going CEC work in GGS tend to focus on the differences between and within markets. These discrepancies, it has been found, may complicate or even prevent the rapid assessment of a particular green good or service.

The following challenges and areas of further study have been identified so far:
1. Environmental assessment and green markets—where the difference in performance between green & mainstream market behaviors must be determined;
2. Measuring consumer interest in green markets—because consumer demand ultimately controls market viability;
3. Understanding producer challenges—since smaller producers encounter a special set of obstacles in a big market;
4. Community partnerships—because grassroots-level success is crucial to the cultural acceptance of most if not all GGS;
5. Intermediaries—the people and companies lying between producers and consumers, who play an important economic and educational role in developing GGS markets;
6. Transparency and market information tools—because environmental labeling and certification schemes are plentiful, therefore likely to cause confusion;
7. Financing of green goods and services—the initiative to identify the financial opportunities of Mexico's shade agriculture in particular;
8. The role of public policy—the place of government in setting agenda for GGS, and in doing some of the actual purchasing.

2. Supporting Green Markets, Environmental Labeling, Certification and Procurement Schemes in Canada, Mexico and the United States. CEC. 1999.
http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=255
Also available in French and Spanish

This report provides an overview of several key programs in Canada, Mexico and the US, which have been established to recognize and promote environmental characteristics or attributes of products and services. This report provides a synthesis of three separate reports prepared by three consulting firms in Canada, Mexico and the US around issues of labeling, certification and procurement. Given the broad range of public and private sector schemes in place in the three NAFTA countries, this report is not intended to be comprehensive, but to illustrate key programs. It is underlined that it is not feasible to review all programs in place in the three countries, in large part because both environmental policy and markets are highly dynamic. Among the highlights of this report: there are at least 25 important environmental labeling schemes in place in the US.

These schemes cover 156 product categories and approximately 310 actual products. While diversity of choice—especially in public policy instruments—is welcome, the current state of environmental labels may contribute to a bewildering array of choices for consumers and the inability of one or two labels to carve a dominant market niche. Given the trend in US markets toward the predominance of labels within different product categories, this fragmentation may contribute to somewhat disappointing labeling results in the US. This diversity of schemes also makes it difficult to determine an overall or aggregated estimate of total expenditures on green labels in that country.

1. Assessing Latin American Markets for North American Environmental Goods and Services, ESSA Technologies Ltd., The GLOBE Foundation of Canada, SAIC de México S.A. de C.V., CG/LA Infrastructure. July 1996.
http://www.cec.org/pubs_docs/documents/index.cfm?varlan=english&ID=291
Also available in French and Spanish

This report analyzes target markets within Latin America, reviews environmental regulatory reform in the target countries and market conditions in the target sub-sectors, identifies specific project opportunities, and analyzes North American export strengths and the comparative advantage of the three NAFTA partners *vis-à-vis* exports to Latin America. It also appraises market access strategies, provides information on sources of financing and lists ongoing and contemplated projects throughout the region. The report features such critical information as what makes multinational or North American partnerships successful, the location of expanding markets and the way Mexico has been successful in developing clean technologies and adapting proven technologies from the US and Canada for use in its domestic market. The report also highlights how these and other technologies might expand into new markets with similar needs.

A complete list of CEC publications is available online at:
http://www.cec.org/pubs_info_resources/index.cfm?varlan=english

Should you require any other information on the work of the CEC on Trade in EGS / Green Procurement / Shade Coffee/ Sustainable Palm / Renewable Energy, please contact:
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