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Environmental
Implications of Trade
Liberalization in the
Dominican Republic
under the Free Trade
Agreement for the
Americas (FTAA)

**ENVIRONMENTAL IMPLICATIONS OF TRADE
LIBERALIZATION IN THE DOMINICAN REPUBLIC UNDER
THE FREE TRADE AGREEMENT FOR THE AMERICAS
(FTAA)**

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LIST OF ACRONYMS

ASONAHORES	Association of Hotel and Restaurant Operators of La Romana/Bayahbe
BAS	Highly Sensitive Product
CAFTA	Central America Free Trade Agreement
CDR	Center for Development Research
CEA	Consejo Estatal de Azúcar (State Sugar Council)
CEDOPEX	Centro Dominicano de Promoción de Exportaciones
CEI	Centro de Exportaciones e Inversiones
CEMEX	Cementos Mexicanos
CFD	Camara Forestal Dominicana (Dominican Forestry Chamber)
CIAT	International Tropical Agriculture Center
CIF	cost insurance and freight
CODOCAFE	Dominican Coffee Commission
DGA	Dominican Customs Directorate
DR	Dominican Republic
EIA	environmental impact assessment
EU	European Union
FTA	Free Trade Agreement
FTAA	Free Trade Agreement of the Americas
GATS	General Agreement on Trade in Services
GDP	gross domestic product
GNP	gross national product
GODR	Government of the Dominican Republic
IICA	Instituto Interamericano de Ciencias Agrícolas
INAZUCAR	Instituto Azucarero Dominicano (Dominican Sugar Institute)

Environmental Implications of Trade Liberalization

IPEP	Improved Policies for Environmental Protection
IRG	International Resources Group
MT	metric ton
NAFTA	North American Free Trade Act
ONAPLAN	Dominican National Planning Office
PRTR	Pollutant Release and Transfer Register
SEA	Secretariat of Agriculture
SOE	Secretariat of the Environment
SIC	Secretariat of Industry and Commerce
SOFR	Secretariat of Foreign Relations
UNPHU	National University Pedro Henriquez Urena
U.S.	United States
USAID	United States Agency for International Development
WTO	World Trade Organization

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EXECUTIVE SUMMARY

Among its neighbors in Latin America and the Caribbean, the Dominican Republic (DR) enjoyed a certain preeminence in terms of economic growth and vitality in the preceding decades—especially through the 1990s. During the period, this island nation made prudent economic choices and capitalized on its abundant natural resources and prime location, particularly with respect to developing a vibrant tourism industry. Although late-20th century Dominican governments have generally moved in relatively bold ways to liberalize international economic relations and trade (e.g., use of free trade zones, reductions in traditional import duties, etc.), significant barriers to trade remain. Dominican officials currently find themselves in the negotiating phase for potential new trade-liberalizing agreements on both bilateral (Free Trade Agreement with the United States) and regional (Free Trade Agreement of the Americas or FTAA) levels.

As the Dominicans move to liberalize the country's trade regime further, the Government—particularly the Secretariat of the Environment (SOE)—recognizes the need to ensure that future economic development is carried out in ways that are consistent with sound management of the environment and natural resources. Accordingly, a concerted effort is being made to make environmental considerations a part of the planning and decision-making process, as the country moves forward on trade agreements. The purpose of this research effort is to support that sound initiative.

In conducting this review, an exhaustive evaluation of potential trade-liberalization effects on all industries was beyond our scope and resources. Instead, eight sectors or subsectors of the economy were selected for analysis, based on several criteria articulated in Section I. These sectors were examined in terms of economic and market characteristics. Then, possible impacts of further trade liberalization on these sectors were identified and subsequently evaluated in terms of possible environmental implications. In addition, the analysis examines the possibility that liberalized trade could spawn growth in sectors that are now economically trivial or even nonexistent in the DR.

Because of the strength of established interests in the sector, it is expected that trade negotiations will have little near-term impact on trade in agricultural products such as sugar and rice. However, to the extent that these markets do become more open, Dominican sugar would suffer to a considerable degree and rice less so, because it appears to be in a better position to compete with

imports. Depending on the alternative uses for lands formerly dedicated to these crops, particularly sugar, the environmental impact in the DR would probably be positive. Coffee presents a different situation, because shade coffee production as practiced in the DR is environmentally friendly and any opening up of access to export markets for coffee could have very positive effects, as more upper slopes might be converted from frequently destructive small-scale agriculture or livestock grazing to organically grown coffee.

In the forestry sector, there is also potential for positive environmental impacts if land dedicated to managed forests, forest reserves, or forest plantations increases due to indirect effects of trade agreements. However, a new forestry investment law is currently being debated, and the outcome of that process probably has the potential for more impact on the sector in the near term than indirect effects from trade liberalization.

The mining of aggregates and the production of cement are two activities that generally have had broad negative impacts on the environment. Firms in these industries are aware of environmental issues and the possible liabilities associated with actions seen as destructive to the environment. Either or both could be affected by trade liberalization, although direct effects are more likely for cement. It is also likely that impacts in other sectors, such as tourism, could produce indirect effects on the demand for these products in the construction of infrastructure. Absent measures to mitigate environmental damages, any expansion in these activities would have negative environmental impacts.

Tourism has experienced significant growth in the DR in recent decades, and it is anticipated that further growth is likely, possibly spurred and/or facilitated indirectly by liberalized trade. Although such growth can be accompanied by negative environmental impacts, as indicated in the body of this report, there are potential positive impacts as well associated with the demand for ecological tourism, clean and natural sites, diversity of fauna and flora, high water quality, etc.

These and other findings underline the necessity for Dominican environmental policy makers to work closely with trade negotiators as the outlines of trade agreements take shape. The established but dynamic framework of the General Law for the Environment (Law 64-00) as well as related environmental norms and regulations provide an extraordinary foundation for sound environmental management. The need for new laws and other public sector responses to environmental impacts of trade liberalization should be considered in that context. The environmental components of trade agreements already in place, whether or not involving the DR, also provide excellent precedents for establishing strong and effective environmental protection provisions in any future regional or bilateral trade agreement.

A series of specific recommendations is provided in Section V. Most important is the need for gradualism in implementing free trade agreements. Although significant progress has been made in the past four years in developing a sound program to protect the country's environment and to promote sustainable use of its natural resources, much work remains to be done. The environmental policy framework must be completed and public and private sector institutions charged with designing, and implementing the program must be further strengthened. These processes require time.

1 INTRODUCTION, BACKGROUND, AND APPROACH

1.1 Economic and Environmental Conditions in the Dominican Republic

The Dominican Republic has recently enjoyed one of the highest economic growth rates in all of Latin America, and the country still maintains some of the economic vitality that characterized the 1990s. During most of that decade, the economy grew at an average rate of 7 percent, whereas inflation was held in relative check. Indeed, the gross national product (GNP) increased by almost 100 percent between 1993 and 1999 to US\$17.6 billion. The solid growth in GNP during the 1990s was led by export sectors such as export-processing zones and tourism; the dynamism of the construction sector; service sectors such as telecommunications, commerce, and finance; and also the domestic manufacturing sector. However, beginning in early 2003, a major banking and finance scandal and the bail out of three local banks triggered capital flight, sharp expansion of monetary aggregates, a steep decline in the value of the Dominican peso, and significant inflation. Economic activity for 2003 contracted markedly (GDP declined by 3 percent), generating some signs of popular dissatisfaction with management of the Dominican economy.

The Dominican Republic was endowed with spectacular physical resources—from high mountains to river valleys and magnificent coastal waters—and a fascinating diversity of plant and animal life. As elsewhere, changes in Dominican economic and social conditions have had profound effects on this unique environment, the well-being of people, and the capacity of the environment to support continued economic development. Every change in economic and trade policy puts into play actions and consequences that can, and often do, produce either positive or negative impacts on the environment.

1.2 The Free Trade Agreement of the Americas and Related Initiatives

The Dominican Republic is currently engaged in a series of negotiations relating to trade. These include multilateral initiatives with entities such as the World Trade Organization (WTO). The country has also been involved in bilateral trade discussions with Canada, Panama, Venezuela, and the United States. However, due to the magnitude and characteristics of the potential trade, the relative importance of the trading partners involved (especially the United States and Canada), and the potential impacts on productivity and competitiveness in key sectors, perhaps the most critical process at this time is establishment of the Free Trade Agreement of the Americas (FTAA) scheduled to come online in 2005. Because of the large number of trade issues involved, the depth and extent of the anticipated agreement and the importance of hemispheric trade to the Dominican economy, negotiations relating to the FTAA could set the standards for other trade agreements being developed in this same period.

It is expected that changes in tariffs and other taxes on imports negotiated as part of the FTAA will have immediate fiscal impacts, as well as consequences for production and trade flows. In principle, trade liberalization has at least three types of economic impacts: fiscal, production, and balance of payments. The fiscal impact is associated with the contribution of tariff receipts to total fiscal revenues. Reductions in tariffs could reduce fiscal revenues and possibly result in taxes being raised to replace lost revenues, unless the tariff rate reductions are passed on to Dominican consumers in the form of lower prices and stimulate more than proportionate increases in demand for imported products. The production impacts are associated with increased foreign competition as tariff rates on imports decline, thereby easing access to Dominican markets. In some sectors domestic value added might fall as now-cheaper imports displace local production, affecting investment and employment and inducing resource reallocations, perhaps (but not necessarily) to export-oriented sectors. Tariff reductions could impact the balance of payments both by reducing domestic prices of imported goods and stimulating exports to other countries where tariffs have also been reduced. The net effect cannot be predicted without a careful analysis of the main economic sectors.

The FTAA negotiations encompass a wide gamut of trade-related areas: market access, investment, services, government procurement, dispute resolution, agriculture, intellectual property rights, subsidies, antidumping, and competition policy. Regarding *market access*, the entire spectrum of tariffs is being negotiated, aiming for “significant” initial offers by participants and liberalization of

“substantial” shares of trade within the indicated time periods. Regarding the “timing” of trade liberalization, goods are divided into four categories:

- ◆ *Basket A*: Goods subject to immediate tariff elimination
- ◆ *Basket B*: Goods subject to tariff elimination in no more than 5 years
- ◆ *Basket C*: Goods whose tariffs will be eliminated within 10 years
- ◆ *Basket D*: Goods whose tariffs and other barriers will be reduced or eliminated in more than 10 years

On the issues of *investment* and trade in *services*, the major objectives are to grant enhanced market access and unencumbered capital mobility. Initial offers must be “substantial,” and it is expected that liberalization of services will be extensive. For *government procurement*, countries would be committed to liberalizing government purchases and contracts substantially, especially at central government levels. The objective is to eliminate the most important obstacles to access of foreign firms to the markets for goods and services for the public sector.

Negotiations on *intellectual property rights* may establish a hemispheric system for simultaneous registration of trademarks and/or patents. Although general outlines for other trade areas are not all fully defined, in many cases, these can be expected to be consistent with trade-liberalizing provisions negotiated in recent bilateral or multilateral agreements in the region. (The United States–Chile bilateral agreement is one potential model in this regard.)

Although participation in the FTAA is potentially a far-reaching step in trade policy for the Dominican Republic and its neighbors, it is probable that current negotiations toward more liberal bilateral agreements in the hemisphere will continue to move forward as well. The establishment of a completely new regime for international trade involving the Dominican Republic is on the horizon. These changes could have sweeping and unforeseen impacts on economic activity, development, and the environment. Accordingly, it is important to analyze not only economic, but also environmental consequences of trade liberalization.

1.3 Improved Policies for Environmental Protection (IPEP)

As noted above, changes in the Dominican Republic’s economic and social conditions in the past few decades have had significant effects on the environment. For example, growth in both the tourism industry and in

manufacturing jobs in free-trade zones has generated significant rates of rural-urban migration, allowing many areas formerly in small-scale intensive farming to return to vegetative cover and reducing the pressure on delicate watersheds. Construction of housing and infrastructure associated with manufacturing and tourism has increased mining of aggregates and pressure on utility supplies and waste management systems, with potentially negative environmental impacts. The reduction in import costs for personal vehicles has made the DR a more “mobile” society, but has increased fuel imports, air pollution, and the need for transportation infrastructure.

Passage of the General Environmental Law (Law 64-00) in 2000 was an extraordinary step in establishing a broadly based effort to deal with threats to the nation’s environment and natural resources. Law 64-00 created the Secretariat for the Environment (SOE) as the single public institution responsible for environmental oversight. Although the SOE has already taken significant steps to rationalize natural resources and environmental management, much remains to be done. The Government of the Dominican Republic (GODR), working through the SOE, has enlisted the cooperation of international donors, the private sector, and voluntary organizations in furthering the development and positive impact of public sector environmental initiatives. In this context, the United States, through the U.S. Agency for International in the Dominican Republic (USAID/DR), in partnership with the SOE, has developed the Improved Policies for Environmental Protection (IPEP) activity, which runs through 2007. The overall objective of this program is “to assist the Dominican Republic in improving the country’s institutional and policy regime for sustainable environmental protection.” The activity is being carried out in partnership with the SOE by the International Resources Group (IRG). This analysis of potential environmental impacts of trade liberalization is part of that activity.

1.4 Approach and Methodology

The IPEP activity work plan describes two major categories of effort: (1) building increased institutional capacity for environmental protection and (2) increased civil society involvement in environmental protection. Under institutional capacity building (category 1), a major component is assistance to the GODR in preparing for the FTAA (and/or other trade agreements), with specific emphasis on potential environmental impacts. The Secretariat of Foreign Relations (SOFR) has the lead role in negotiating trade agreements, while the SOE plays a supporting role. IRG is working with the SOE to build capacity to carry out that responsibility effectively.

For this analysis, our procedure has been to focus on several key sectors, because a study of all sectors would be unnecessarily lengthy and costly. Work began in Santo Domingo in September 2003 and involved discussions and interviews, leading to a selection of major sectors of the economy for analysis. Criteria included a desire to provide coverage for all major areas of the economy, perceived potential for trade liberalization impacts on economic performance, economic importance of the sector or subsector, availability of information, environmental importance of the sector, and extent to which trade-liberalizing impacts on the sector's economy might generate primary or secondary environmental effects: positive or negative. Next, each selected sector was examined in terms of existing economic conditions. Then, the possible effects of trade liberalization on the sector—in economic and financial terms—were considered, followed by a concise survey of possible environmental effects. In addition, potential mitigating or regulatory considerations were articulated and examined, leading to conclusions and recommendations for the SOE in its role of supporting the SOFR and the Secretariat of Industry and Commerce (SIC). The analysis also includes a brief discussion of possible dynamic impacts of trade liberalization, in particular the possibility that currently insignificant economic sectors could grow exponentially and the implications of such growth for environmental management.

2 EXPECTED IMPACTS OF DOMINICAN TRADE LIBERALIZATION

2.1 Overview: Trade Liberalization in the Dominican Context

Like many other developing countries, the Dominican Republic has engaged in a process of trade liberalization during the past decade or so. The pillars of this move toward a more liberal trade regime have been: (1) the tariff reform implemented since 1990 and (2) the new tariff reform of 2001. These reforms included the elimination of most nontariff restrictions on imports, simplification of import procedures, adoption of more transparent rules for commercial transactions, and a reduction in tariffs. Indeed, where tariffs remain, they are (with a few notable exceptions) now the most significant barrier to imports. Average import tariff rates are now around 9 percent. In general, there is no tariff on the import of equipment for agriculture, whereas rates of 3 percent, 8 percent, and 14 percent are applied to other items, raw materials, machinery, and some final goods. Most manufactured goods for final consumption have a 20 percent tariff rate. Relatively high rates of 25 percent and 40 percent are applied to some agricultural products. Some goods are also subject to nontariff restrictions. Revenues from tariffs account for some 12.5 percent (2001) of total fiscal revenues.

In addition to the customs tariff, the DR applies a surcharge rate on all imports equivalent to 4.75 percent of the cost, insurance, and freight (CIF) value of the import. Until mid-2002, this surcharge, called the “Exchange Commission,” was a tax on any type of currency exchange transaction and was managed by the Central Bank. Through a resolution of August 20, 2002, the Monetary Board transferred administration of this tax to the Dirección General de Aduanas (DGA) and excluded its application to operations such as capital and profit repatriation, payments and transfers related to financial commitments, and international financial transfers. This action transformed the surcharge into a quasi-tariff. The Exchange Commission has two major effects on trade and

revenues. First, it reduces concentration of tariff revenues collected by the import sector, because it is applied uniformly to all imports. Second, it increases the contribution of tariffs to government revenue and raises the effective average tariff rate from 9 percent to 13 percent.

Although the majority of imports are subject to a general tariff only, some agricultural goods also are subject to “contingent tariffs”—by-products of an agreement with the WTO that allows the DR to introduce import restrictions on a limited number of agricultural products. These include garlic, rice, sugar, poultry, onions, beans, liquid or powdered milk, and corn. A regime of import quotas is used, above which contingent tariffs of 40–117 percent are applied. These are clearly very effective barriers to imports at levels above the authorized quota levels. With the exception of the agricultural products subject to contingent tariffs, the DR does not require import licenses or permits. However, import and handling of some products require specific administrative procedures that constitute nontariff barriers. These products include:

- ◆ Those for protection of plants and for veterinary purposes
- ◆ Seeds and bulbs, fruits, live plants, manures and pesticides, meat products, fish and crustaceans, live animals, and milk products
- ◆ Arms and ammunition
- ◆ Some medicines and chemical products
- ◆ Sugar

In summary, although the DR has made significant progress in liberalizing trade, particularly with respect to lowering the barriers on imports, a regime of tariff and nontariff barriers remains and considerable protection exists in the agriculture sector, in particular; hence, an examination of the potential effects of further trade liberalization on selected sectors of the Dominican economy is a necessary exercise.

2.2 Projected Economic and Environmental Impacts in Key Sectors

2.2.1 AGRICULTURE: RICE

Production, Consumption, Productivity, and Markets

Rice is one of the most important crops in the Dominican Republic. In 1994 rice production made up 0.7 percent of GDP and 6.49 percent of the value added in

the agricultural sector (Banco Central de la República Dominicana 1997). According to The Inter-American Institute for Agriculture Sciences (IICA 2003) and the Secretaría de Estado de Agricultura (SEA), rice production has grown steadily in the past decade, reaching a record level in 2002, when the total output of shelled rice amounted to 1.6 billion pounds (730,705 metric tons) and white rice (processed) registered 1.0 billion pounds. That same year, about 150,000 hectares of land were dedicated to rice. Approximately 94,000 hectares were under irrigation, accounting for 35 percent of the total area under irrigation in the country (IICA 2003).

Rice is a basic commodity in the food basket of average Dominican households. According to the Centro Internacional de Agricultura Tropical (CIAT), in the DR rice is the single most important source of daily calories, providing 25 percent more than any other crop. Per capita consumption in 2002 averaged 158 pounds, which is slightly higher than the world average, but more than two times the average in Latin America and the Caribbean and more than six times the average in the United States. In 2002 domestic consumption of rice amounted to 1.43 billion pounds.

Data indicate that Dominican rice production costs are high, outstripping those of most competitors in the hemisphere. The elevated costs are driven by agrochemical prices. As the following table demonstrates, the average per-hectare cost of agrochemicals in the DR is much higher than that of competitors. This is the result of an oligopolistic marketing structure that causes prices to be artificially high. Only three firms operate in the market, two of which control almost 80 percent of the sales.

As the table below indicates, although Dominican rice production is relatively competitive in terms of labor costs, it ranks far behind most competitors with regard to the cost of agrochemical inputs. Per-hectare costs for agrochemicals in the DR are 50 percent more than Costa Rica and about 150 percent more than the United States.

Table 1: Rice Production Cost and Productivity in Selected Hemispheric Countries (2001)

	Average Labor Cost (U.S.\$/ha)	Average Agrochemicals Cost (U.S.\$/ha)	Average Productivity (MT/ha)
Dominican Republic	35.52	504.15	4.90
Costa Rica	43.02	376.66	4.01
El Salvador	N.A.	N.A.	6.03
Nicaragua	N.A.	N.A.	2.93
USA	153.78	204.02	7.27

Sources: 1) FAO 2004; 2) Ministry of Economic, Commerce, and Industry of Costa Rica.

However, a cultivation regime that combines the liberal application of costly agrochemicals with extensive irrigation and application of advanced seed varieties is generating impressive yields. As the table above points out, although trailing the United States and El Salvador, average yields per hectare in the DR significantly exceed those of Costa Rica and Nicaragua. The high productivity offsets, at least in part, the elevated production costs, thereby affording the Dominican rice sector a measure of competitiveness regarding some of its trading partners.

Rice imports reached a peak in 1997, accounting for 23 percent of total consumption. Since then, they have declined sharply as a result of trade barriers and increased domestic production. In 2002 no imports were recorded; rather, there was a modest volume of exports. As a result of an agreement sanctioned by the WTO, 2000 rice imports have been subject to contingent tariffs (tariff quotas). The following table provides the data on the tariff regime for 2002–04.

Table 2: Rice Tariff Regime

Year	Quota (MT)	Tariff inside quota (percent)	Tariff outside quota (percent)
2002	16,577	20	106
2003	16,988	20	104
2004	17,399	20	99

Source: SEA-JAD (2002).

In 2002 the quota was set at 16,577 metric tons. The tariff rate within the quota was 20 percent (as stated in the Tariff Code), whereas the tariff outside the quota was 106 percent. The size of the quota, combined with a very high tariff outside the quota, has made the contingent tariff regime almost a prohibition for imports above the quota. In effect, although imports were declining, with implementation of the contingent tariff regime, imports fell dramatically. The “outside of the quota” rice import volume is currently negligible. The contingent tariff system for rice is intended to counteract the effect of U.S. (and other countries) agricultural subsidies. The effect of such subsidies is to lower the cost of rice imported into the DR, which could result in a displacement of domestic production.

IICA (2003) and USAID/IICA/ONAPLAN (2000) report that if rice were imported without quota restrictions, domestic production would still be

competitive, although some decline (10 to 20 percent) in output is likely.¹ Except for a few months when domestic prices reached record levels, between January 1997 and August 2002, the domestic price of rice if imported from the United States (Louisiana U.S.#2 type, a beneficiary of U.S. government subsidies) would have been slightly higher than the wholesale price of domestic standard quality rice and slightly lower than the wholesale price of high quality rice.

Potential Impacts of the FTAA on the Sector

In both the FTAA and the bilateral free trade agreement with the United States, through adhesion to the United States–Central America Free Trade Agreement (CAFTA), at least three disciplines of negotiation could affect rice production in the DR: market access (i.e., tariff and nontariff barriers); technical barriers to trade, that is, sanitary and phytosanitary measures; and subsidies, antidumping, and countervailing measures. As noted previously, dismantling tariff and quota restrictions could imply some reduction in total Dominican production as other producers in the region gain a share in the local market. Sanitary and phytosanitary measures could also either serve as barriers to imports or barriers to exports in foreign markets. In addition, an agreement on intellectual property rights could eventually have an impact by either limiting access to technology for higher-yielding varieties or protecting varieties developed domestically, potentially giving the DR an advantage over competitors.

As mentioned above, U.S. agriculture subsidies and the competitive price advantage they give to American growers affect trade for many farm commodities. Rice is no exception. Sources close to the negotiation process indicate that Dominican negotiators are leaving agricultural subsidy issues for resolution by the WTO. The outcome of WTO negotiations on the agricultural policy issues affecting the United States and the European Union (EU) will serve as a guide for sector negotiations under the FTAA.

To date, the DR has not made an offer to liberalize imports of rice in FTAA negotiations. In fact, its initial offer to hemispheric partners did not allocate rice to any of the four baskets for tariff reduction and, instead, designated rice as a “highly sensitive product” (BAS is the Spanish acronym). Although keeping rice off the negotiating table could be a bargaining gambit rather than a hard commitment, the initial stance likely reflects GODR intention to insulate local production from competition of imports.

¹ The relative competitiveness of Dominican rice with U.S. rice is a function of overall production costs. The labor cost in the United States (five times that of the DR) essentially offsets the higher agrochemicals cost in the DR.

The United States already has requested improvements to the DR's initial offer (no other trading partner has). Specifically, the United States has requested that the DR reallocate all tariff lines included in the subheading 10.06 (rice, which includes four lines) to specific baskets. Given the importance the GODR is giving to the bilateral negotiations with the United States in the FTAA regarding other trading partners and especially in the context of parallel negotiations for a bilateral free trade agreement with the United States, a softening of the Dominican position on rice and other BAS products (i.e., allocating those tariff lines to basket D) is a scenario to be considered.

As noted above, according to IICA (2003) and USAID/IICA/ONAPLAN (2000) studies, acceding to the U.S. request of tariff reduction would result in a 10 to 20 percent decline in rice production, and most of this would be absorbed in taking marginal lands out of production. If the GODR would request an improvement in Central American countries offers for rice, the marginal production decline could be offset by increased access to those markets.

Environmental Concerns

Even a moderate reduction in rice production would clearly have social and economic consequences. People most affected by this eventuality would be the poor: small subsistence farmers who operate at the margins of the marketplace. Alternative sources of employment and income would have to be developed to ease the burden placed on this segment of society.

The environmental impact of a marginal production decline would depend on the alternative uses to which those lands taken out of production would be dedicated. Rice cultivation entails heavy use of agrochemicals, which can have detrimental environmental effects, particularly if carried downstream by irrigation tail waters. Many agricultural uses of converted marginal rice lands (for example, conversion to fallow, extensive livestock production, dryland row cropping, and fruit tree plantations) would be less intensive and more environmentally friendly than continued rice production.

Irrigated paddy cultivation (flooding of relatively extensive flat parcels of land) is the predominant production regime used in the DR. This technology places a heavy demand on water, mostly supplied by surface sources. A decline in cultivation would reduce the current demand on this resource.

If the trade negotiations produce the "polar opposite" scenario, that is, an increase in demand for Dominican rice through greater access to trading partner markets, environmental impacts would be significant. For example, more widespread surface and ground water contamination would most likely result from increased use of agrochemicals. The agrochemicals (e.g., ammonium sulfate) used in rice production also contribute to soil salinization. Irrigated

paddy rice production, the predominant method used in the DR, is also a major contributor to global warming. The standing water produced by flooding the rice fields produces high levels of anaerobic bacteria, which generate methane gas.

2.2.2 AGRICULTURE: SUGAR

Production, Consumption, Productivity, and Markets

Through the 1970s, the sugar industry was a mainstay of the Dominican economy. Between 1970 and 1980 its GDP share ranged from 2.8 percent to 5.1 percent. However, starting in the 1980s and accelerating during the 1990s, persistently low international prices, serious managerial problems, corruption, and negligence contributed to a sharp decline in the industry. By 2000 the sugar industry's share of GDP dropped to 0.5 percent. Harvested area of sugar cane declined from 143,000 hectares in 1970 to less than 109,000 hectares in 2002. Total production also dropped: from 8.7 million metric tons in 1970 to 2.4 million metric tons in 1996 (FAO 2004).

According to data from the Instituto Azucarero Dominicano (INAZUCAR), in 1970 average yields were 60.52 metric tons/hectare and only 23.72 metric tons/hectare in 1995. As noted in the table below, because 1998 average yields began increasing at a moderate rate. This increase is attributable to (1) reduction of cultivated area and retirement of low productivity fields, (2) application of modern irrigation techniques, and (3) privatization of some of the mills, all of which lead to more efficient operation. Experts opine that, in coming years, yields may continue to increase with application of improved cultivation technology. Nonetheless, the DR registered the fifth lowest yields in the region, less than half those of any Central American country, between 30 percent and 40 percent of the yields in Brazil, Trinidad, Saint Kitts, and Jamaica.

Table 3: Sugar Production Average Yields (MT/ha)

Country	1998	1999	2000	2001	2002
Dominican Republic	25.58	35.89	37.88	36.42	36.49
Brazil	69.24	68.14	67.62	69.60	71.37
Jamaica	62.77	61.43	51.40	60.00	60.00
St. Kitts	65.17	52.84	55.63	55.63	55.63
Costa Rica	84.80	77.40	76.27	76.45	77.08
El Salvador	74.24	68.29	74.93	82.84	76.91
Honduras	83.99	81.69	84.66	85.90	86.00
Nicaragua	64.95	66.24	69.08	77.43	74.35

Source: FAO 2004.

The domestic price of sugar is regulated by INAZUCAR, whose responsibilities also include regulation of margins for traders. The currently authorized consumer price for refined sugar is RD\$5.00 per pound (US\$0.15). Retailers are authorized to buy refined sugar for RD\$4.50 per pound (US\$0.135), and the price for wholesalers is RD\$4.00 (US\$0.12). It is worth noting that the domestic price is 12 percent higher than the export price. The DR sugar market is highly protected by tariff and nontariff barriers. Nevertheless, in 2002 imports registered 63,991 metric tons, representing more than 10 percent of domestic demand. Imports are subject to contingent tariffs and permits. Quotas and tariffs inside and outside the quota are as follows:

Table 4: Tariffs and Quotas

Year	Quota (MT)	Tariff inside quota	Tariff outside quota
2002	28,000	20%	88%
2003	29,000	20%	86%
2004	30,000	20%	85%

Source: SEA-JAD (2002)

Import permits are issued by SEA's Commission on Agricultural Imports and are allocated on a "first come–first served" basis. In 2002 imports were more than double the quota under the regular tariff; in other words, more than half of imports of sugar involved payment of the outside-the-quota tariff, which implies that the difference between the domestic and world market prices is large enough to make it profitable to import sugar despite the very high tariffs applied outside the quota. In 2002 total exports were only US\$74.2 million or 2.3 percent of total exports of all goods and services. Almost 70 percent of output (348,508 metric tons) was sold domestically and approximately 29 percent (178,986 metric tons) was exported, all to the United States, where the DR benefits from import quotas.

Potential Impacts of FTAA on the Sector

As with other agricultural products, market access rules and subsidy regimes are the negotiating disciplines with implications for the Dominican sugar industry under a hemispheric free trade agreement. It is very likely that liberalization of the U.S. sugar market (elimination of quotas and subsidies) would seriously impact Dominican exports to the United States—currently its only export market—as more competitive producers displace Dominican exporters. In a related way, liberalization of the domestic sugar market, that is, elimination of the contingent tariff system, could generate a substantial increase in sugar imports and a reduction in local production. Recall that imports outside the quota, although paying a very high tariff, still supply approximately 10 percent of

total current consumption. The existence of a 10 percent market share, in spite of the high tariff, clearly indicates the lack of competitiveness of locally produced sugar.

Current circumstances suggest that there will not be any change on sugar trade under the FTAA. The DR did not make an offer to its FTAA partners with respect to sugar. Negotiators labeled all four tariff lines in heading 17.01 (sugar from beets or sugar cane) as highly sensitive products. Dominican officials do not expect any change in the government's position, even though three countries (Panama, Venezuela, and the United States) have requested improvements.² Regarding the United States, government officials point out that access to the American sugar market is related to resolution of the U.S. subsidies issue, currently pending before the WTO. Moreover, the Dominican sugar industry, the Dominican government, and U.S. sugar producers currently hold a common position on defending the status quo. Given the Dominican sugar industry's low productivity, any improvement by the DR regarding competitors in its initial offer will likely result in serious displacement of local production.

Environmental Concerns

Several categories of environmental impacts are associated with sugar production. The first is air contamination caused by CO₂ emissions that result from burning sugar cane pulp, commonly referred to as *cachipa*. The burning of pulp (*bagaço*) has traditionally been the source of energy for running the mills; at the same time it disposes of unneeded pulp. However, much more was and is burned than is needed to satisfy internal energy needs, and no alternative markets exist (e.g., private households) for the excess energy the mills generate. In short, the mills simply burn large quantities of waste sugar cane pulp producing thick smoke plumes. These emissions have been linked to human respiratory problems and, accordingly, present a public health danger to surrounding population centers.

The second category of problem is surface and ground water contamination resulting from application of chemical fertilizers and generation of solid waste *cachaça*—a potassium-rich residue of molasses production. Chemical fertilizers have traditionally been applied with essentially no concern for their impact on the environment. The most common manufactured fertilizers employed are rich in nitrogen. Given the porous soils in most sugar-growing areas, the nitrogen percolates readily and contaminates soil substrata. The *cachaça*, as noted above, is

² Panama asked for reallocation of the tariff line 17.01.11.00 (sugar from sugar cane) to basket A; Venezuela requested reallocation of this tariff line to basket D; and the United States requested improvement in all four tariff lines of heading 17.01.

high in potassium and used as a natural fertilizer. However, dosage applications are not uniform. When excess amounts are applied, the overabundance of potassium released drains into nearby streams, fouling these surface water sources, thereby threatening aquatic fauna. Excess levels of potassium, via seepage, also contaminate underground aquifers. In Boca Chica, a tourist area east of Santo Domingo, *cachaça* waste apparently contributed to damage to a nearby coral reef structure. Although the SOE is working with industry to put remedial measures in place, virtually no programs for environmentally safe removal and disposal of this by-product are active in preventing such environmental damage from reoccurring.

The most serious potential impact would be on ground water resources. A 2003 study, *Analysis of Ground Water Resources and Ground Water Data Base Formulation*, by the International Resources Group, clearly shows increasing salt water intrusion in underground aquifers. The problem is a consequence of “overpumping”; the demand for subterranean water exceeds the natural recharge rate. The situation is most acute in the Eastern Plains area of the country, the low-lying region extending from Santo Domingo to Punta Cana including the La Romana sugar plantation. As noted above, the recent increase in sugar yields has in part resulted from improving irrigation technology. The water for irrigated sugar production is drawn from subsurface aquifers. Accordingly, any increase in irrigated sugar production would place more stress on this critical resource.

A decline in the demand for Dominican sugar triggered by a liberalized trade regime could have a positive effect on the environment. This, of course, would depend on the alternative uses to which the land taken out of sugar production is put. However, many sector observers do not expect major near-term changes in the trade regime for sugar, given the strength of political interests both on the U.S. and Dominican sides. But, if there is liberalization in this sector, it would most probably put the Dominican sugar industry out of business (except for some minor specialty products). Environmental impacts of that result would intuitively appear to be very positive in terms of shutting down mills, reducing water needs, reducing air and water pollution, and probably reducing the intensity of land use on thousands of hectares of sugar land. Of course, as indicated, the magnitude and character of these impacts would depend on the alternative uses to which ex-sugar lands and capital that goes into sugar production are put. Secondary impacts from reduced employment, possible conversion of mills, and alternative land uses would produce a mix of environmental impacts, many of which could be expected to be positive.

The Dominican sugar industry is seriously considering conversion of sugar cane into ethanol as an alternative to traditional uses. This could open a new market

for local production to offset the losses suffered by the long worldwide decline in the sugar market. And, in the recently concluded Free Trade Agreements with the United States, the Central American Trading Partners as well as the DR won an increase in the sugar quota for the U.S. market. These developments could increase demand and production. Any production increase will exacerbate those impacts (namely, air pollution, contamination of surface water, increased demand for ground water, and threats to marine life) on the environment described above.

2.2.3 AGRICULTURE: COFFEE

Production, Consumption, Productivity, and Markets

Until the mid-1980s, coffee was the second most important export crop in the DR, surpassed only by sugar. During the 1976–86, it represented 7 percent of GDP and 22 percent of traditional exports. In 1981 the Dominican government reported that more than 150,000 hectares and 71,235 farms were dedicated to coffee. In 1980 gross production exceeded 60,000 metric tons. However, as with sugar, the importance of coffee to the Dominican economy has declined markedly. To be sure, even before the 1980s the industry was beset with processing and marketing difficulties. By the mid-1980s, production and productivity were stagnating. The 1980s witnessed dramatic growth in tourism and industry-free zones. By 1990 these two sectors represented 4 percent and 3 percent of GDP respectively (by 2000 tourism accounted for 6.8 percent of the GDP and Free Zones 3.1 percent). With coffee (and sugar) stagnating, the expansion of tourism and Industrial Free Zones made these two sectors important “drivers” of the Dominican economy.

International forces have contributed to the coffee sector’s decline. World prices have been falling steadily since the mid-1990s, pushing the sector into one of its most severe crises ever (CDR 2002). The DR has not escaped. In 1999 the average price received by Dominican exporters was US\$129/hundredweight. By 2002 the price per hundredweight had dropped to US\$85. In 1980 the DR exported more than 20,000 metric tons of coffee and in 2002 only 6,800 metric tons (less than 14 percent of total production).

At the end of the 20th century, the Dominican coffee industry reached its low point. In 1999 gross production was less than 35,000 metric tons (exports were about 10,000 metric tons compared with almost 27,000 metric tons in 1995). Area planted had fallen to 133,342 hectares and the number of farms declined to 50,179 (CODOCAFE 2002). The sector represented only about 2 percent of total exports and less than 1.5 percent of goods and services.

Performance of the sector in the past few years suggests the possibility of a recovery. To illustrate, between 1999 and 2000, production increased by about 11,000 metric tons (34,609 to 45,575). To be sure, production fell by a similar amount from 2000 to 2001, but it rose again significantly in 2002 to 40,022 metric tons. Because of depressed international prices, less than 17 percent of the 2001 harvest and only about 14 percent of the 2002 crop was exported (in contrast in 1995 more than 60 percent of production was exported). These data suggest that the incipient revival is being driven by a growing domestic market fueled by continually expanding tourism.³

Table 5: Dominican Coffee Production and Exports (MT)

	1980	1995	1997	1998	1999	2000	2001	2002
Coffee Production	60,091	44,877	41,682	56,943	34,609	45,546	35,475	49,022
Raw Coffee Exports	19,947	27,655	18,199	21,095	6,530	8,869	4,085	2,693
Processed Coffee Exports	---	---	---	---	3,414	3,757	1,809	4,117

Source: FAO, February 2004; Central Bank of the Dominican Republic (several years).

Potential Impact of the FTAA on the Sector

The tariff rate applicable to all varieties of roasted coffee, decaffeinated or not, ground or whole beans, is 20 percent of the CIF value. The tariff applied to nonroasted coffee is 14 percent. Tariff barriers appear to be effective in restricting imports and providing protection to domestic growers and processors. To wit, in 2002 the value of imported coffee was less than US\$500,000 (0.8 percent of total domestic demand).

The DR’s initial offer in the negotiations on the FTAA was the following: basket D for all varieties of roasted coffee (tariff lines 0901.21.10, 0901.21.20, 0901.22.00, and 0901.90.10) and basket C for nonroasted coffee (tariff lines 0901.11.00 and 0901.12.00). The offer suggests that Dominican authorities believe that local production could be affected adversely by trade liberalization. The DR has the lowest productivity in the region—a quarter of that observed in Costa Rica, less than 40 percent of that in Brazil, and between 40 percent and 70 percent of the productivity registered in such countries as Colombia, Jamaica, El Salvador, Honduras, Guatemala, and Panama. Accordingly, Dominican negotiators apparently are seeking to protect the country’s coffee industry.

³ A second possible reason for relatively low exports is hoarding production in the hopes of improved international prices. However, this is unlikely in the DR. Most producers are small-scale operators who cannot afford to keep produce off the market.

At least five countries have requested an improvement in the initial Dominican offer. Ecuador and Costa Rica have requested unspecified improvement in all tariff lines of the 0901 heading; Colombia asked that the DR reallocate all tariff lines in the 0901 heading in Basket A; Panama asked for reallocation of nonroasted, nondecaffeinated coffee (tariff line 0901.11.00) to Basket A; and Venezuela requested the move of roasted, nondecaffeinated coffee from Basket D to Basket C.

Experts consulted agree that most growers would not be able to compete in a free trade environment against relatively low-quality and low-priced coffee exported by countries in the Greater Caribbean Basin and Brazil; domestic production would be largely displaced by imports. Such an eventuality would have significant social consequences. The wide majority of coffee growers are poor small farmers who use coffee as a cash crop in a multicrop production regime heavily weighted toward subsistence. The loss of coffee revenue would be a serious blow to this group, whose economic situation is already tenuous at best.

Environmental Concerns

If productivity problems could be overcome, coffee could represent a “win/win” opportunity, that is, sustainable use of natural resources and positive contribution to economic growth. As noted above, most Dominican coffee is grown under environmentally sound “shade tree” production regimes. Use of chemical inputs is minimal and organic growing techniques predominate. In addition, the great majority of coffee farms are located between 300 meters and 1,300 meters above sea level, where average rainfall is between 750 and 1,900 millimeters a year. These plantations are key parts of humid and very humid subtropical forest. Combining these subtropical conditions with organic growing techniques creates synergies that contribute to ecosystem preservation and biodiversity maintenance. “Shade tree” coffee includes other benefits such as carbon sequestration, evaporation reduction, and soil erosion protection, contributing to the hydrological balance of the island. In short, “shade tree” coffee farms act as natural reservoirs, filtering and conserving soil moisture and reducing runoff.

Accordingly, any trade decisions that would reduce the area of domestic coffee production and convert it to alternative uses could and probably would have direct negative environmental impacts. Almost any other option for a production system on fragile upland hillsides (other than leaving land to fallow) would increase soil loss, reduce biological diversity, and further damage upper watersheds.

Trade liberalization negotiation outcomes (greater market access) that increase demand for coffee exports and encourage Dominican producers to convert more land to shade coffee production would have positive environmental impacts, regarding alternative upper watershed land uses. The international niche markets for organic coffee are expanding, in what may be called “The Starbucks Phenomenon.” The DR could capitalize on its traditional organic growing techniques to participate in this market. To be sure, a host of problems need to be solved to increase productivity and upgrade quality of the final product. In addition, local and affordable certification mechanisms would have to be developed. But the basic structure and characteristics of the local coffee industry offer advantages for expansion into the niche “eco-café” markets. As noted above, coffee holds promise for an economic-environmental “win-win” situation. Negotiators might consider seeking increased external market access to capitalize on this potential.

2.2.4 FORESTRY

Production, Consumption, Productivity, and Markets

A century of uncontrolled logging, coupled with encroachment through expansion of cattle grazing and slash and burn agriculture, has taken a serious toll on the country’s overall forest cover as well as on the variety of tree species. At the turn of the 20th century, forests covered approximately 70 percent of the country’s land mass. Current estimates place forest cover at 27 percent (Camara Forestal Dominicana or CFD). That said, the DR still has an impressive array of forest species (ranging from native broadleaf hardwoods to pine to dryland varieties). There are also indications of forest regeneration. Data suggest that between 1980 and 1998 forest cover increased countrywide by 550 square kilometers, a result of strict conservation policies, active reforestation efforts, creation of a network of national parks and protected areas, and a decline in hillside agriculture. Many of the best remaining stands are located in protected areas.

Production of lumber by Dominican sawmills lags far behind domestic demand, and the excess is provided by major importations. Local production for 2002 is estimated at 90,000 cubic meters or about 13 percent of national demand for that year. Demand for sawn lumber increased dramatically from an average of 250,000 cubic meters in the mid-1980s to 560,000 meters in the late 1990s. Accordingly, the value of lumber imports (mostly from the United States and Chile) increased from an average of US\$62.5 million to US\$172.7 million in the same period. Current demand for sawn wood is estimated at 650,000 cubic meters. To some extent, quality of lumber is an issue for the domestic sawmill

industry. For many domestic uses, high-quality lumber products—currently available only from abroad—are required.

Knowledgeable individuals in the forestry sector believe that, with an expansion of forest management plans and an improved policy regime, the local industry could eventually meet up to 75 percent of demand on a sustained yield basis, dramatically reducing the need for lumber imports. Although such fundamental change seems to be out of reach in the near term, it does appear that the domestic industry has the potential of providing a larger share of local requirements, if timber supply and quality control issues can be managed. For example, local sawmills are reportedly operating at about 25 percent of capacity, at least partially due to difficulty in accessing a dependable supply of trees. Increased access, coupled with expanding forest area and an apparently increasing volume of standing timber, implies that substantial growth may be possible.

There are several key issues for the sector. The forest industry stagnated in the 1980s as a result of a plethora of policies that restricted wood harvesting. Furthermore, there have been negative incentives for private land forestry and no clear picture of the potential for expanding forest production on public lands, such as former state sugar lands. Information is also lacking regarding the resource itself, and no initiatives in research exist on forest management models. All these factors affect the ability of the sector to increase the conversion of standing timber to sawn lumber. In one welcome effort to alleviate these problems, a proposed forestry investment law was presented to Congress in 2003 and may soon be passed. The new law is consistent with the important General Environmental Law of 2000 and should help rationalize policy for the sector, leading to continued improvements in forest management and performance in forest products industries.

Construction is the largest user of forest products. Furniture manufacturing is a significant subsector of the Dominican lumber industry. More than an estimated 1,000 artisan shops and some 100 commercial firms are involved in this industry, employing as many as 10,000 workers (CFD). Demand for these products has been closely tied to growth in tourism and urbanization in recent decades. Quality of domestically produced wood products does not satisfy the standards of certain segments of the Dominican market. High-end household furniture customers prefer more costly, but higher quality imports to domestic product.

Dominican forests also provide a number of nonlumber contributions to the economy, including:

- ◆ Services, such as ecotourism
- ◆ Palm leaves for roofing

- ◆ Livestock forage
- ◆ Apiculture
- ◆ Medicinal plants
- ◆ Minor products (fruits, rubber, tannin, palm oil, etc.)
- ◆ Environmental services (protection and regeneration of soils, protection of plant and animal biodiversity, hydrological services, carbon dioxide fixing, and watershed protection)

Potential Impacts of the FTAA on the Sector

The DR does not apply quantitative restrictions on imports of forestry products. The tariff rate for wood and similar products is 3 percent of the CIF value. The rate for finished wood products, such as wafer board or parquet flooring, is 8 percent or higher. In the FTAA negotiations, Dominican officials offered to place wood products with the 3 percent rate into Basket A for immediate tariff reduction or elimination. Finished products with higher tariffs would be placed in other baskets, principally Basket B. As is the case with all imported goods, wood and wood products are also subject to the “exchange commission” discussed in a previous section.

Environmental Concerns

In view of the large role imports already play in the Dominican lumber industry and relatively low tariffs, it is not likely that liberalization in trade regimes will have profound direct effects on forest product imports, local output, or domestic demand. However, it is possible that liberalization of trade in other sectors could produce impacts on the Dominican economy that might have significant indirect effects on the forests and forest industries of the DR. For example, trade policies that result in changes in demand for land dedicated to certain crops could either reduce forested area or make more land available for it. Policies leading to further expansion in the tourism industry could increase local demand for wood products, increase development pressure on forest lands for constructing new infrastructure, or, conversely, increase the effective demand for maintaining biologically diverse forest reserves and parks for ecotourism. Changes in the policy that subsidizes imports of cooking gas could have major impacts on demand for fuelwood and charcoal, with significant negative environmental consequences.

The possibility that a liberalization of trade regimes will increase pressures on forest resources serves to reinforce the need for placing the forestry industry in the DR under a comprehensive management plan that would include

sustainable-yield forest harvesting, adequate watershed protection, and maintenance of biodiversity.

2.2.5 LIVESTOCK INDUSTRIES

There are several Dominican livestock subsectors of importance. In the context of assessing the impact of liberalized trade on the environment, we believe that the beef, swine, poultry, and dairy industries are the most relevant. However, with the exception of milk, hard data on livestock in the DR is very limited. Nonetheless, it is clear that the impact on the environment of the livestock industry is considerable. Accordingly, we have carried out an analysis, albeit relying on qualitative, anecdotal information.

2.2.5.1 MILK

Production, Consumption, and Trade

According to the CONALECHE's census of 1993, about 20,000 very small milk producers operated in the DR. Although no formal studies of the sector have been carried out since, CONALECHE believes that many small producers were bought out by more efficient commercial operations.

Table 6: Dominican Milk Production (MT)

1970	1998	1999	2000	2001	2002
283,000	358,352	411,077	397,750	420,303	517,690
Source: FAO 2004					

In 2002 total consumption of milk was approximately 600 million gallons. About 45 percent of total consumption was satisfied by imports, whereas 55 percent was provided by domestic processing plants (CONALECHE). Three large plants dominate the market. They process (rehydrate) imported powdered milk and locally produced liquid milk. As revealed in the table above, domestic production has grown steadily in the past few years. In spite of a dip in 2000, Dominican milk production increased by about 30 percent between 1998 and 2002. Key factors in this growth included strengthened barriers to imports, growing productivity, and improved institutional support. In addition, a government-sponsored school breakfast program, which provides a daily ration of milk to every student in the public schools, has become an important support for the dairy industry.

Milk ranks with rice, sugar, beef cattle, and poultry as the most highly protected products in the Dominican economy. Imports are subject to contingent tariffs to counteract the large subsidies and dumping practices employed by many milk-

producing countries, most notably those in the EU, which would otherwise displace domestic production. These subsidies are currently among the most controversial topics under discussion in the WTO agricultural committee, in which several developing countries are requesting their suspension/elimination. In the opinion of experts, if protection were removed, most of the domestic production of milk would disappear as a result of unfair trade practices.

Table 7: Quota Regime Milk

Year	Quota/MT	Tariff inside quota	Tariff outside quota
2002	32,000	20%	69%
2003	32,000	20%	65%
2004	32,000	20%	56%

Potential Impact of the FTAA on the Subsector

The DR placed milk in the list of “highly sensitive products” in its initial offer to FTAA partners. This suggests a GODR disposition to continue the tariff and quota regime that currently protects local production. Nonetheless, Canada, Bolivia, Panama, Colombia, and the United States have requested an improvement to the DR’s initial offer for milk. Peru, Costa Rica, and Venezuela have requested improvements, but just for related products, such as cream, butter, and dairy concentrates.

Knowledgeable sources in the sector believe that any relaxation of the Dominican position would require satisfactory agreements with partners on a range of issues (e.g., dumping and subsidies) that are seen as injurious to Dominican competitiveness. Experts believe that if such accords were reached, Dominican milk producers could compete for the local market.

The outcome of negotiations on a parallel issue, namely, government procurements, could also affect the dairy sector. As noted above, the GODR sponsors a significant school breakfast program in which milk is one of the main components. Government policy restricts competition for supplying the program to Dominican companies. In the absence of agreement on countervailing measures regarding imported milk, a liberalization of competition and eligibility requirements in government procurements could result in an increase in foreign milk, thereby adversely affecting Dominican producers.

2.2.5.2 CATTLE

The cattle industry in the DR is an important, yet sluggish economic sector. In the past five years, production grew at an average annual rate of only 1.3 percent. In 1998 the DR produced 303,252 metric tons; in 2001 the country

produced 338,351 metric tons. Annual per capita consumption is estimated at 26 pounds, which is low when compared with other countries in the hemisphere.

Table 8: Dominican Cattle Industry Figures

	1998	1999	2000	2001	2002
Cattle Head (<i>no.</i>)	2,528,300	1,954,220	2,018,340	2,106,800	2,159,623
Beef production (<i>MT</i>)	303,252	306,791	342,195	338,351	
Beef Imports (<i>MT</i>)	37,473	10,968	4,365	4,365	N.A.

Imported beef represents a very minor portion of the market. As the table 8 indicates, in both 2000 and 2001, only about 1 percent of the beef consumed came from abroad. The sector has been and continues to be protected by high tariffs. In 1993 it was 35 percent; the current level is 40 percent. In addition to tariffs, experts point out that the application of nontariff barriers (e.g., discretionary granting of sanitary permits for imports) poses additional restrictions to external competition.

In the initial offer to its FTAA partners, the DR labeled headings 02.01 and 02.02 (fresh or frozen beef) as “highly sensitive products,” thereby attempting to keep them out of the negotiations. Some of the most competitive beef producers (the United States, Brazil, Mexico, and Argentina) in the world are hemisphere trading partners.

Table 9: Cattle Figures (2001)

	World Ranking in Production	Production (<i>MT</i>)	Exports (<i>MT</i>)
United States	1	12,427,000	129,297
Brazil	2	7,136,000	440
Argentina	4	2,700,000	992
Mexico	7	1,450,881	629
Canada	11	1,271,950	101,862

Source: 1) FAO, Saskatchewan Agrivision, 99; 2) FAO 2004.

The conservative initial offer implicitly acknowledges that Dominican cattle industry cannot compete with major FTAA colleagues. Several hemispheric countries (Canada, Bolivia, Panama, Colombia, the United States, and Venezuela) requested the DR improve its initial offer. A liberalization of tariffs on beef would certainly imply an increase of imports and a reduction of domestic production.

2.2.5.3 POULTRY

Poultry production has traditionally been a mainstay of the Dominican livestock production. Average annual production during the 1980s was 81,350 metric tons. During the 1990s average yearly production rose to 138,501 metric tons. Between 1992 and 2002 production grew at an average annual rate of 3.75 percent. This growth rate was almost three times as high as that of beef for the same period.

Table 10: Poultry Production and Imports in the Dominican Republic

	1998	1999	2000	2001	2002
Production (Mt)	157,662	182,709	211,013	203,438	185,294
Imports (Mt)	33,500	6,100	2,200	2,200	N.A.
Note: Production + Imports = Apparent Consumption. Source: FAO 2004.					

Production is heavily concentrated in relatively large firms. The value added of the poultry industry is small, because the production process is limited to the last stages of the productive chain. Fertilized eggs are imported and incubated, and chickens are raised for a few weeks until they reach an optimum weight and size and then placed in the market. Accordingly, profit margins are small and return of investment is made through volume.

Poultry is the most popular meat in the Dominican diet. The growth in production cited above is directly results from the country's overall population growth (approximately 7 million people in 1990 to about 8 million people in 2000), especially the relative increase in the urban population. The continued growth of tourism and the increase in the number in destination resort visitations also has contributed to the increased demand for poultry. According to FAO and SEA, in 2001 domestic poultry consumption was approximately 205,638 metric tons, compared with 111,716 metric tons in 1990.

Poultry is among the most highly protected products in the Dominican marketplace. Imports are subject to a stiff contingent tariff. In 2002 the quota was 10,000 metric tons, equivalent to 5.7 percent of total production. The tariff inside the quota was 25 percent, whereas outside the quota, it was a prohibitive 117 percent. With the institution of the contingent tariff scheme, imports have been negligible.

As with other food products, the DR placed poultry in the "highly sensitive product" list, looking to keep it off the bargaining table. Canada and the United States have requested improvement in the offer for poultry (heading 02.07.14). It would not be an exaggeration to say that production of poultry in the DR is

possible only because of tariff and nontariff protection. The market is relatively large and attractive, and trade liberalization would substantially reduce domestic production.

2.2.5.4 SWINE

Hard data on pork production in the DR are not readily available. However, anecdotal information suggests that production is a “small farmer industry,” with much of the output processed into ham, sausage, bacon, and other “second-tier” products. Virtually all of the production is directed to the domestic market.

Table 11: Dominican Pigmeat Figures (MT)

	1970	1980	1990	2000	2001
Production	11,000	11,500	20,700	61,190	63,049
Imports	563	6,372	398	1,452	1,452
Exports	0	0	0	0	0
Domestic Supply	11,563	17,872	21,074	62,642	64,501
Source: FAO 2004.					

Imports of pork meat are subject to a 25 percent tariff. The tariff for processed products (i.e., sausages and ham) is 40 percent. This clearly indicates that the processing industry receives a positive and high effective rate of protection. In addition, it is protected by nontariff barriers (sanitary and phytosanitary certifications).

In the initial round of FTAA negotiations, Dominican representatives placed nonprocessed pork meat in the “highly sensitive product” list, whereas processed pork products were placed in Basket D. Canada, Panama, Colombia, the United States, and Venezuela have requested an improvement in the initial offer. Although no statistics are available to compare levels of productivity across the continent, the high tariff protection that domestic pork producers enjoy suggests that trade liberalization would cause a serious displacement of local production by imports.

Environmental Concerns Regarding Livestock Industries

The livestock sectors present a wide range of environmental concerns. Cattle-raising practices in the DR (for beef and dairy products) emphasize extensive, rather than intensive production regimes. Accordingly, the cattle industry is at the forefront of the forest cover–pasture land use competition. Principal environmental problems include soil compaction and hence a decline in water filtration, reduction in biomass, and loss of ground cover that contributes to increased erosion. In addition, soil contamination results from the chemicals

(disinfectants largely) and organic waste matter that accompany meat processing. In addition, cattle waste produces methane gas, which contributes to the global warming “greenhouse effect.”

Although a decline in the cattle-raising industry could have some negative economic consequences, at least in the short term, it could result in a favorable impact on the environment by contributing to an increase in ground cover, greater carbon sequestration biomass and a reduction in erosion. Growth in the cattle industry (an unlikely scenario) would have the opposite effect and would place increased stress on the natural resource base. Any significant increase in the demand for Dominican beef would have to be accompanied by technology changes (e.g., adoption of land-intensive “stockyard” raising regimes) to mitigate environmental impacts.

The principal environmental effects of poultry and swine production are the destruction of riverine habitat resulting from discharges of animal fecal matter. Nutrient-rich fecal material produces excessive growth of oxygen-absorbing aquatic plant life that, in turn, “crowds out” other species natural to that environment. Ancillary environmental concerns include use of ground water for meat processing and, as in the case of cattle, the production of methane, which contributes to global warming.

The use of nonbiodegradable chemicals in meat processing negatively impacts both surface and ground water. A decrease in activity in these sectors would, in theory, result in a positive impact on the environment. A reduction in animal waste discharge would correct excessive growth in aquatic plant life, thereby restoring the natural balance in “habitat sharing” among species. A decrease in activity in these sectors would also reduce the fouling of waterways by the indiscriminate disposal of other animal waste under current production practices.

As with the beef industry, significant production increases in these sectors, either for external or domestic markets, could place greater stress on the environment. However, technologies exist to produce swine and poultry in more environmentally friendly ways. Policy instruments and access to technical assistance to acquire and apply these technologies would help mitigate the negative impact of increased production.

2.2.6 NONMETALLIC MINING (AGGREGATES)

Production, Consumption, Productivity, and Markets

Extraction of aggregates (riverbed mining) is a key component of the construction sector, providing basic materials for construction (including cement production). The construction industry has been one of the most dynamic

sectors of the economy in the past 30 years; as a consequence, between 1996 and 2000 extraction of sand and gravel grew at an average annual rate of 14 percent. According to regulators and representatives of the sector, sand and gravel represent 93–95 percent of the volume extracted, and limestone makes up the remainder.

In 2002 the volume of production amounted to 15,977,477 cubic meters of sand and gravel and 428,666 metric tons of limestone (Banco Central de la República Dominicana 2003). Assuming an average price of RD\$150 (US\$4.55) per cubic meter of aggregate, gross sales value could be around RD\$2,400 million (US\$72 million).

According to government officials and private operators, more than 50 percent of the aggregates are extracted from nonactive alluvial soils (deposits), more than 40 percent from active alluvial areas (mostly terraces of rivers and, to a lesser extent, rivers), and 5–7 percent from limestone quarries. Extraction from deposits takes place mostly in the North Central region of the country near the City of Santiago, whereas extraction from active terraces occurs mostly in the province of San Cristobal (Nizao River and Nigua River areas) near the city of Santo Domingo (approximately 15,000 cubic meters a day), and in reservoir areas of dams like Jigüey, Aguacate, Valdesia, and Reservoir Las Barías (5,000–6,000 cubic meters a day).

The riverbed mining industry is made up of about 300 private firms, some of which simultaneously operate several extraction sites. The market is highly concentrated: eight firms capture around 50 percent of the market and the balance of the sales is distributed among the remaining companies.

Potential Impact of the FTAA on the Sector

Exports of aggregates, mainly sand and gravel, have been very limited and sporadic. The external markets have been neighboring Caribbean islands that lack aggregate material. Knowledgeable sources see some potential for increasing exports of aggregates, including crushed limestone and solid waste from metal mining (e.g., extraction and processing of ferronickel); however, a major constraint to growth in exports that must be addressed is the transportation cost of high density, high weight, and low value material.

The GODR does not record data on imports of aggregates other than gypsum, clinker (a basic input in the making of cement) in significant amounts for the cement industry, and some other processed materials. The tariff rate on imported aggregates is 3 percent, except for gypsum and quicklime, which are subject to an 8 percent tariff.

In its initial offer to its FTAA partners, the DR proposed to eliminate tariffs immediately (Basket A) on all aggregates, except gypsum and quicklime. For

those two products, the DR's initial offer was elimination of tariffs within 5 years (Basket B). Colombia is the only country that requested an improvement in the initial offer, namely moving lime tariff line 25.22.20.00 from Basket B to Basket A.

As noted above, except for some specific products and situations, transportation costs make aggregates almost nontradable commodities. Domestic demand and the dynamism of the construction sector are the driving forces of production, whereas tariffs and other barriers to trade play a limited role. However, trade agreements could have significant indirect impacts on the sector by affecting the overall level of economic activity and the construction sector.

Technological changes in the construction sector, that is, use of alternative materials to concrete, such as metal and glass, could contribute to a reduction in the demand for aggregates. And, trade agreements could increase the availability and use of such alternative materials. That said, Dominican experts in both the aggregates subsector and cement industry point out that such technological changes could only come about in the long term. They also argue that the construction industry is sufficiently large and has good growth prospects, so that new technologies can be accommodated without a decline in the demand for aggregates.

Environmental Concerns:

It is unlikely that trade liberalization will directly cause an increase in nonmetallic mining activity. However, as noted above, it could stimulate growth in other sectors (construction of roads, hotels, and housing) that would in turn trigger an increase in demand for aggregates.

Riverbed destruction and associated erosion, destruction of riverine habitat and fouling of waterways are the principal environmental concerns of nonmetallic mining. Any significant growth in aggregates production will obviously place increased stress on riverine ecology. The SOE has taken measures, including promulgation of environmental norms for the nonmetallic mining sector that are geared to mitigate adverse environmental impacts. However, developing the capability to enforce and monitor compliance with the norms is still a work in progress.

2.2.7 CEMENT

Production, Consumption, Productivity, and Markets

During 1996–2002 production of cement tripled, reaching more than 3 million tons in 2002 (Banco Central de la República Dominicana 2003). This was the result of dramatic growth in the construction sector observed until 2000, when

that sector grew at a faster pace than the overall economy. By 2002 demand for cement had reached RD\$5.3 billion, and it was largely met by domestic production.

Three cement plants currently operate in the country: (1) CEMEX, located in San Pedro de Macoris (35 miles east of Santo Domingo), (2) Cementos Cibao, located in Palo Amarillo, Santiago (North Central region), and (3) Cementos Colón in San Cristobal (20 miles west of Santo Domingo). All these plants are close to the country's major population centers where demand is concentrated. CEMEX is the "giant" of the industry, accounting for more than 50 percent of installed production capacity and has plans to expand production in the near and medium term. CEMEX is also expanding its clinker capacity from 600,000 to 2.4 million tons. The company is also building three new production facilities with a combined capacity of 2.0 million tons. Representatives of the industry claim that growing demand and good prospects of profitability are the driving forces behind the expansion.

Cement production consists basically of grinding and heating aggregates. A recent study observed that, in the cement industry, energy costs represent 65 percent of total costs (Cementos Cibao 1998). Accordingly, competitiveness in the industry is determined in large measure by electricity and fuel costs. Countries with low-cost energy sources have a competitive advantage over those, including the DR, that do not.

The DR does not have nontariff barriers to imports of cement and related materials like clinker. Cement is subject to a 14 percent tariff, whereas the tariff for clinker is 8 percent. In addition, as already noted, in the DR all imports pay a 4.75 percent surcharge. The tariff progression (higher tariffs for final products than for inputs) provides an effective rate of protection for the cement industry that is higher than indicated by looking only at the nominal rates. When high transportation costs are also factored in, it is clear that the industry enjoys relatively heavy effective protection against imports.

Imports of cement have been declining since 1999 as domestic production has expanded. Although in 1998 imports supplied 23.1 percent of total demand, in 2002 they were negligible, representing only 1 percent. Nonetheless, imports of clinker are significant, and they have grown with increased cement production since 1998. In 2002 the DR registered a modest amount of exports of cement to Haiti (44,441 metric tons), whereas exports to other destinations were negligible (CEI-RD 2003). However, nonregistered exports of cement that might be recorded as domestic sales could be sizeable.

Potential Impacts of the FTAA on the Sector

Subsidies and market access are the two most important negotiating disciplines affecting the cement industry in the DR. In the opinion of sector representatives, high energy costs place domestically produced cement at a competitive disadvantage. For instance, Cementos Cibao (1998) claims that in Trinidad and Tobago (a country with low energy costs), the fuel cost for one ton of clinker is US\$9.8 per ton and for cement US\$3.22 per ton. In contrast, in the DR, the fuel cost for producing one ton of clinker is US\$17.41 and for cement US\$11.53. The energy cost disadvantage DR producers face, is only compensated for by tariffs and transport costs.

Low energy costs in Trinidad and Tobago are the result of a differentiated price scheme: domestic consumers pay lower prices for oil and gas than nonresident buyers. This arrangement could be considered a subsidy and, therefore, not admissible under WTO or FTAA rules; therefore, the subsidies regime agreed on could be crucial in determining the impact of liberalization on imports of cement into the DR. The high energy cost seriously impedes Dominican cement industry competitiveness and, accordingly, trade liberalization. If tariffs are reduced without imposition of adequate countervailing measures, the Dominican cement industry would be severely impacted. But subsidies aside, the high cost of energy in general puts oil-importing countries, such as the DR, at a competitive disadvantage in production of a wide range of commodities, among them, cement. Liberalization of trade with partners that produce energy efficiently could result in the displacement of Dominican products. Alternatives would need to be found.

The DR's initial offer in the FTAA included all but one line of the heading 25.33 in basket D (tariff elimination in more than 10 years). The heading includes cement (Portland type) and clinker. In the offer, negotiators acknowledged the disadvantage of the industry with respect to energy costs. Ecuador, Peru, and Colombia have requested reallocation of cement to Basket A, whereas the United States has requested a nonspecified improvement. Panama, Peru and Colombia have requested reallocation of clinker to Basket A. the United States again requested an improvement without further details. It is reasonable to expect that the most Dominican negotiators will concede is to allocating cement to Basket C.

Environmental Concerns:

The preceding section on nonmetallic mining briefly describes the environmental impact concerns of cement production (e.g., riverbed destruction with associated erosion and destruction of riverine habitat). In addition, cement production, through grinding of limestone, produces significant quantities of

dust, whereas clinker production generates NO_x, CO (carbon monoxide), and sulfides. Both processes contribute significantly to pollution, especially air pollution.

Other things being equal, any increase in cement production will place more stress on the environment. Spurred on by continued growth in construction activity, it is also likely that demand for cement will increase. That said, compliance with existing environmental norms and the application of “cleaner production” technologies would mitigate the environmental impact of higher volumes of cement production.

2.2.8 TOURISM

Economic Importance and Characteristics of Tourism Industry and Market

Excellent weather, sandy coasts, warm seas, relatively low prices, and convenient location make the DR a very attractive destination for tourists. Between 2.3 and 2.5 million of them visit the country every year. Tourism is the number one source of foreign currency earnings. In 2002 total revenues amounted to US\$2.7 billion, US\$600 million more than remittances, and three times the revenue from the export of goods (excepting those exported by duty free zones). In that same year, revenues from foreign tourists represented more than 33 percent of total exports of goods and services. On average, each tourist spends US\$104 per day, 55 percent of which pays for lodging, food, and beverages; 20 percent for entertainment activities; and the rest for transportation, gifts, and other things (Banco Central de la República Dominicana 2002).

Tourism is one of the most dynamic sectors in the economy. During 1971–2002, the average annual rate of growth of the hotel, bar, and restaurant sector (as classified in the national accounts) was 15.2 percent, three times the average GDP growth rate. As a result, tourism’s share of GDP increased from 0.8 percent in 1971–81 to 5.7 percent in the 1991–2002. By 2002 the share had risen to 6.2 percent. Total value added of the sector was RD\$24.7 billion (US\$1.3 billion)⁴.

The trade group representing Dominican hotels and restaurants (ASONAHORES) estimates that in 2002 the sector directly employed 44,968 persons. ASONAHORES also estimates that an additional 112,420 jobs were indirectly created by tourism. During the past decade, the number of hotel

⁴ The exchange rate is calculated at RD\$19 = U.S.\$1 during the period 1990 to 2002 period, the peso/dollar exchange ratio was relatively stable.

rooms available in the DR doubled to approximately 55,000. Although in 2001 and 2002 the average occupancy rate was 66.3 percent and 62.8 percent ,respectively, between January and September of 2003, it was 74 percent.

In addition to the DR's spectacular natural resource endowment, low prices have been a key component in the relative competitiveness of the country for the tourism dollar. In this regard, low prices for land, labor, and infrastructure have made it possible for hotels to offer low-cost, all-inclusive packages (meals, beverages, entertainment programs, etc.), some as low as US\$30 per day. ASONAHORES reports that in 2002, 75 percent of hotel revenues were from such packages.

Potential Impacts of the FTAA on the Sector

The FTAA is not expected to impact tourism in the DR directly for at least two reasons. First, no specific negotiations on tourism entail sectoral commitments. Second, the DR's investment regime already guarantees full market access, national treatment and freedom for international payments and transfers, in full accord with the General Agreement on Trade in Services (GATS); hence, it is very unlikely that the FTAA will require changes in policy framework for the sector. However, tariff reductions resulting from the FTAA negotiations could affect tourism insofar as tariffs affect the prices for supplies and equipment (dishes, furniture, kitchen equipment, appliances, bedding, towels, etc.) and inputs for hotels such as food and beverages.

The impact of tariff reductions on Dominican tourism competitiveness should not be underestimated. No specific figures are available for the weight of food beverages and local transportation in the cost structure of tourism and specifically of hotels. However, it could be significant, given that food and beverage represent 55 percent of total lodging expenditures and local transportation represents more than 8 percent of the average tourists expenditure. Food, beverages, and vehicles are items with the highest tariffs in the DR. Even if, as is expected, those items end up in Basket C or D, trade liberalization could cause important reductions in the prices of those imports. In turn, these reductions could increase the variety and quality of these items locally, thereby enhancing the sector's competitiveness.

Other potential indirect positive effects of trade liberalization on tourism should be considered. First, because the FTAA (or, for that matter, the bilateral FTA between the DR and the United States) will be legally binding, the enforcement aspects of the dispute settlement mechanism could provide foreign investors with an added measure of assurance. That could prompt new investments and larger flows of tourists. Second, trade liberalization could also increase visits as foreign investors and traders engage in business in the DR. Nevertheless, neither

investment nor business travel will respond positively to trade liberalization in the absence of overall economic growth and good business prospects.

Environmental Concerns

The environmental concerns related to continued expansion in the tourism industry span a wide range. A critical issue is the increased demand for ground water. The section on rice production noted the growing problem of salinization. This problem is most acute in DR's Eastern Plains region. Many of the wells in the Eastern Plains already exhibit salt water intrusion, some to alarming levels. The Eastern Plains is also the region of greatest urbanization (it includes the capital city of Santo Domingo, which has almost tripled in size in the past 30 years) and most rapid tourism growth, hosting the burgeoning resort centers of Boca Chica, Juan Dolio, La Romana/Bayahibe, and Punta Cana. A 7,000-bed destination resort is currently under construction in Punta Cana, and smaller projects are being considered. These initiatives, plus any that might result from trade liberalization, will place increased stress on Eastern Lowland aquifers. The application of technology (e.g., well perforation—with transition networks—in more sparsely populated highland areas) and the development of policy instruments (e.g., the recently issued requirement for environmental impact assessments and the ground water norm currently under formulation by the SOE) could help mitigate potential negative impacts. Thus, all further tourism development should be carried out in lockstep with appropriate policies and policy instruments.

Solid waste and waste water are also serious concerns in the context of further tourism development. The unregulated development that took place before creation of the SOE in 2000 had adverse effects on multiple environmental niches, including the coastal marine environment. Indiscriminate disposal of solid waste and waste water has been a leading cause of damage to coral reefs and decline in coastal marine flora and fauna. Future growth in the tourism industry could make these problems more acute. Again, a combination of appropriate technologies and policy instruments can mitigate negative impacts. Further consideration of the policy framework must therefore be an integral part of any and all future tourism development.

3 POTENTIAL MITIGATIVE AND REGULATORY CONSIDERATIONS

Specific environmental issues associated with potential economic impacts of trade liberalization in the DR have been identified for each selected sector in the preceding sections. It is difficult to suggest specific remedies in the absence of any identified “package” of trade adjustments. However, this chapter will consider the potential effects articulated above and generalize, based on established environmental guidelines and the precedents of similar experiences in previous regional and bilateral trade agreements.

In this regard, the United States Trade Representative and the Council on Environmental Quality have prepared a set of guidelines for “Environmental Review of Trade Agreements.” Although an in-depth environmental review intended to mitigate negative impacts of any proposed new agreement would have to be carried out on the basis of the specifics at play, the guidelines are useful in that they articulate the environmental media and resources that may be affected, namely:

- ◆ Air quality and atmosphere (including climate and ozone);
- ◆ Freshwater quality and resources (including both surface and ground);
- ◆ Soil retention and quality;
- ◆ Protected or environmentally sensitive terrestrial and marine areas (e.g., national parks, national wildlife refuges, wetlands, marine sanctuaries, etc.);
- ◆ Endangered species and other species identified as significant under law (e.g., certain marine mammals and migratory birds);
- ◆ Marine, aquatic, and terrestrial biodiversity, including species, genetic variety, and ecosystems, and the potential for invasive species to compromise such biodiversity;

- ◆ Ecosystem productivity, integrity, and services;
- ◆ Environmental quality related to human health, including changes in environmental exposure to toxic substances (e.g., increases or decreases in exposure to pesticide residues on food).

This is a useful set of considerations for the GODR to review in considering any proposed changes in the existing trade regime, whether through regional or bilateral agreements. Major changes in the sugar and rice sectors intuitively do not appear to be likely in the near term under expected FTAA negotiations. However, it is suggested here that thought be given to possible alternative uses of marginal croplands, should real impacts occur, including a review of the policies that will influence which among the alternative uses are chosen. The case of coffee is particularly interesting because of the role shade coffee production has in protecting biodiversity and watersheds in the DR. If trade liberalization in the hemisphere results in an opening for Dominican coffee growers to expand exports of “organic” or environmentally certified specialty coffees, the effect will be positive, both from economic and environmental perspectives. Opportunities to enhance positive impacts by means of complementary policy and/or programmatic initiatives should be seized.

Expanded production of cement could have negative environmental effects and vice versa. Although it is expected that the *direct* trade liberalization effect will be reduced domestic production, some output expansion could occur in both the cement and aggregates sectors due to *indirect* trade effects (economic growth in which the construction industry participates, for example). If so, the SOE should (1) be prepared for increased oversight of these sectors to assure compliance with norms, (2) pursue actions to mitigate adverse environmental effects of the extraction and processing of these products, and/or (3) promulgate and implement policies to assure internalization of the full costs, including environmental damages, associated with production.

It is useful, by way of precedent, to examine the environmental section of the recent United States–Chile bilateral agreement on trade to see what kind of environmental safeguards were agreed on. According to the Office of the United States Trade Representative, agreement occurred on three key points:

- ◆ That each country’s environmental laws were sound, would be continually improved, and would not be weakened in the interest of encouraging trade;
- ◆ That both parties would effectively enforce their domestic environmental laws, an obligation enforceable through the bilateral agreement’s dispute settlement procedures;

- ◆ That both countries would pursue cooperative projects to promote environmental protection, including (1) building capacity for wildlife protection and resource management in Latin America, (2) implementing effective alternatives to decrease use of methyl bromide, and (3) developing a Pollutant Release and Transfer Register (PRTR) in Chile, similar to the successful Toxic Release Inventory in the United States.

These three safeguards offer useful suggestions. Because both the United States and the DR now have dynamic and responsive regimes of environmental law, it would be prudent to consider some version of a condition similar to the first safeguard in a bilateral agreement with the United States. An implication of the second point above is that GODR negotiators should pursue a dispute settlement paragraph in any new trade agreement. The SOE should similarly probably work with its domestic partners to identify potential projects with a view toward their inclusion in a bilateral agreement. These projects could be aimed at both general environmental concerns (e.g., development and strengthening of a pollutant registry, environmental enforcement upgrading, etc.) and specific areas relating to mitigation or public awareness in response to expected trade liberalization impacts on the Dominican—and therefore Caribbean—environment.

4 COMPLIMENTARY CONSIDERATIONS/INCREASED TRADE OPPORTUNITIES

4.1 Dynamic Considerations

Section II presented information on selected economic sectors, and the likely economic and (by extension) environmental consequences of the FTAA for those sectors. In doing so, it attempted to project both the direct sectoral level implications of a more liberal international trade regime and the predictable consequences for the sectors selected of expanded trade in other sectors, for example, the impacts of an increase in construction activity as a consequence of FTAA implementation on demand for aggregates.

It was not possible for this study to be exhaustive; nor is this necessary. Instead, it selects sectors that are currently economically significant in the DR and could well be affected, for better or for worse, by a change in the rules governing international trade. Although this makes a useful contribution, it necessarily misses a potentially important dynamic element of trade liberalization, namely that one or more currently insignificant economic sectors could grow exponentially in response to new opportunities related to the opening of markets abroad.

An example of this is the expansion of Dominican agricultural exports in the past two decades. Exports of nontraditional agricultural commodities—fruits (melons, bananas, avocados) and vegetables (tomatoes, onions, garlic, among others)—have experienced significant growth. In 1980 overseas sales of nontraditional agricultural products accounted for only 2.2 percent of the country's total exports. Although the tariff structure of the DR's principal trading partners (namely, the United States and Canada) did not change significantly, by 2002 nontraditional agricultural commodities totaled more than 13 percent of all exports.

The performance of “nontraditionals” is even more impressive within the agricultural sector proper. As seen in the following graphic, in 1999 fruit and vegetable exports as a share of total agricultural exports increased by a dramatic

15 percent. By 2001 fruits and vegetables represented 60 percent of all agricultural export sales. Moreover, between 2000 and 2002, a period of significant economic recession, the agricultural export share of nontraditionals remained fairly constant.

Table 12: Nontraditional Agricultural Exports as Share of Total Agricultural Exports

1998	1999	2000	2001	2002
42%	57%	55%	60%	57%
Source: Dominican Republic Central Bank.				

The above data clearly show the dynamic growth in “nontraditionals.” Moreover, it is important to note that the growth occurred without an appreciable change in the tariff regimes of trading partner countries (e.g., the United States and Canada). A liberalization in trading partner tariff structures, such as may occur under the FTAA and other free trade agreements, could stimulate even further expansion in this subsector.

Bananas are another good illustration. Grown using traditional production practices (application of manufactured fertilizers and chemical pesticides), bananas have long been an important Dominican export. Through the decades of the 1960s and 1970s, the DR was a major supplier of fresh bananas to the United States and Canada. During this same period the DR also serviced some European markets. However, beginning in the 1980s, the country’s share of the fresh banana market began to decline as competitors, principally Honduras, El Salvador, and Panama, upgraded technology and reduced production costs. In the face of this declining market position, the Dominican banana-growing industry began to shift gears. Increased attention was placed on organic production techniques to service growing niche markets in traditional trading partner countries. Organic production regimes gave the DR a comparative advantage in specialized banana markets—they are the “differentiator” between the DR and its competitors. In a period of less than 20 years, the DR has become the principal regional exporter of organically grown bananas. Between 1998 and 2002, “green” banana exports increased by 215 percent, reaching 140,000 tons.

Avocados, another nontraditional commodity, have exhibited even more dynamic growth. Between 1998 and 2002, production increased by 29 percent. During the same four-year period the value of avocado exports rose by 143 percent. Cultivation of avocados in the DR favors “environmentally friendly” technologies and, as is the case with bananas, the country’s comparative advantage lies in its “organic production” reputation.

Other fruit commodities that have potential for export growth under liberalized trade regimes are dried coconuts, whose exports increased from virtually zero in 2000 to about US\$7 million in 2002, and fresh melons which registered exports of almost US\$10 million in 2002. These fruits, along with coffee, could represent interesting market access opportunities for the DR.

Principal Dominican vegetable export commodities include squash, peppers, gourds, eggplants, string beans, peas, tomatoes, *yautía* (a local tuber), and yucca. Although the marketed volumes of these commodities are still relatively small, as a group they have exhibited an average 18 percent yearly increase in the past four years in dollars generated through export sales. The rapid growth in exports of these vegetables (that are important in the Dominican diet) is directly related to the increase in the number of Dominican expatriates (currently more than one million) living in the United States.

Table 13: Export Value of Fresh Vegetables

(US\$ millions)

2000	2001	2002	2003*
\$18.6	\$23.1	\$30.3	\$16.7
Source: Dominican Republic Central Bank.			
*Data Available Only for January–June 2003.			

As is the case with other agricultural commodities, a liberalization of the trade regime could increase the demand for fruits and vegetables through greater access to export markets and/or an increase in foreign investment in the DR. In either case, expansion in demand for fruits and vegetables would have positive and negative environmental consequences. On the positive side, these commodities, especially perennial fruit crops, contribute to the mass of vegetative ground cover. Accordingly, they do contribute to the process of erosion control.

The resource that could be most adversely affected by an expansion of fruit and vegetable production is water. Irrigation is used widely in fruit and vegetable production, and underground aquifers are the source of the water. The fragile nature of ground water in the DR has been detailed in earlier parts of this report. Any increase in its use should be judged against the prudence of putting this resource under more stress. Contamination of surface and ground water sources, through an increased use of chemicals to enhance production levels is another potential negative impact. This threat could be mitigated through policies that promote environmentally friendly production practices geared to service niche markets.

We do not lay claim to any unique capacity to predict where dynamic developments of the types illustrated above might occur, and parenthetically are skeptical about the wisdom of consciously trying to “pick winners,” and even

more so of adjusting the policy environment to help assure the success of selected sectors. That said, the economic significance of such dynamic developments accompanying freer trade should not be underestimated. Examples from abroad of unanticipated, but dramatic expansion in previously insignificant sectors associated with the opening of new markets are not hard to come by. For instance, Mexico was transformed into an “export powerhouse” during the 1990s, a period in which it entered into several free trade agreements. By the end of the decade, Mexico was the eighth largest exporter in the world, whereas a decade before it had ranked twenty-sixth. The most rapid growth occurred in trade with those countries with which Mexico had entered into free trade agreements. Thus, between 1993 and 1999, Mexico’s exports to the United States rose 160 percent. Exports to Chile and Costa Rica, which had been quite low, grew at even more dramatic rates. And perhaps most important for this discussion, the composition of exports changed dramatically. Although at the beginning of the 1990s the share of primary goods in total exports was about 80 percent, by the end of the 1990s it had fallen to 15 percent.

Given very limited ability to predict dynamic developments of this kind, it is fair to ask what significance they may have for authorities charged with environmental management responsibilities. It seems important to recognize that environmental implications derive from economic developments; therefore, it is important to strengthen capacity to track such developments and understand how policy and management tools can be applied to help assure that dynamic developments are consistent with *both* economic and environmental objectives (without running afoul of the constraints on domestic policy imposed by the DR’s adherence to various international trade agreements, including the FTAA). In terms of capacity to use policy and management instruments, perhaps the most important—or at least the most obvious—is environmental impact assessments (EIAs). For entrepreneurs to respond to expanded opportunities presented by free trade, investments in plant and equipment are generally necessary. At this point, cognizant Dominican authorities, with significant input from involved and interested stakeholders, can play a critical role in assuring that environmental considerations are not overlooked as the private sector attempts to respond to new opportunities. The trick is to play that role well without imposing restrictions that unnecessarily diminish economic incentives without which the private sector will not respond to those opportunities.

Public sector capacity to promulgate and effectively implement economic and regulatory instruments to discourage coproduction of environmental problems in the course of producing more economic goods is also critical. This is the case from at least two perspectives. First, one needs to keep in mind that economic growth and efficiency, including that which is trade induced, are not the sole objectives. When economic growth and narrowly construed efficiency comes with adverse environmental implications, there are trade-offs to be considered.

Second, the potential dynamic gains from trade policy reform referred to above are unlikely to be realized unless all concerned parties, especially entrepreneurs, financiers, importers in other countries, and marketing intermediaries, are confident about the stability of a liberal trade regime and are active participants in developing supportive institutional and policy frameworks. Where this is not the case, little if any incentive exists to take the risks inherent in new ventures. Yet, in recent years, opposition to free trade has been growing, emanating from vocal constituencies in many countries who contend, among others, that it fouls the environment. Such legitimate concerns must be addressed.

4.2 Complementary Policy and Institutional Considerations

The paragraphs above argue that environmental policy must support an open trade regime to realize the economic objectives of the latter. For the same reason, it is critical that other policies and the appropriateness of various institutions be reviewed as well. This is an enormous subject that goes well beyond this analysis. But because of its importance, a few critical areas can be cited where analysis of Dominican policies and institutional arrangements indicate a possible need for making adjustments.

Overcoming Barriers to Entry

There could be several, including, but not limited to the following:

- ◆ Reluctance of financiers to provide credit (at all, or on attractive terms) for new, novel undertakings;
- ◆ Doubts about enforcement of property rights;
- ◆ Doubts on the part of potential importers about the ability and/or willingness of judicial authorities to enforce contracts related to on-time delivery of goods of the requisite quality;
- ◆ Insufficient information about foreign markets.

Need to Compensate Losers

Although societal gains of expanded trade and a more open trading regime may outweigh the losses, losses will occur. Those who stand to lose cannot be expected to stand by idly and often are in a position to be heard. Experience elsewhere suggests that policy debates about the wisdom of an open trading regime seldom diminish in intensity with agreement to and start of implementation of a new, more open arrangement. Yet, as suggested above, the private sector needs assurance that

the opportunities afforded by the new arrangement will not be undercut. Compensating losers can be important in this context.

5 CONCLUSIONS AND RECOMMENDATIONS: POLICY IMPLICATIONS

A bit of asymmetry clearly exists in the findings of this analysis, in that it places relatively more emphasis on assessing potential impacts of trade liberalization on Dominican imports (as opposed to exports). Although there has been some discussion of possible impacts on exports, through expected liberalization of markets for Dominican products in other countries, this is primarily a study of traditional domestic sectors of the Dominican economy. Beyond making some assumptions and generalizations about what other countries might do (for instance, the comments on U.S. protection of domestic sugar producers and the discussion of potential new trade opportunities in the preceding section on “complementary considerations”), it is beyond the scope of this report to analyze the broad range of other countries’ policy options to discern all possible impacts on market access for Dominican goods. Nevertheless, it does seem likely that, as proposed Dominican concessions on trade barriers are reciprocated by the DR’s trading partners, new opportunities for access to heretofore limited markets for Dominican products will materialize with time. Whether such opportunities arise (and/or expand) for coffee, rice, tobacco, services, handicrafts, tropical fruit, or as yet unforeseen products of local industry remains to be seen.

To summarize briefly the findings of the analysis with respect to the selected sectors or industries examined, table 14 provides a matrix of key effects.

Environmental Implications of Trade Liberalization

Table 14: Matrix of Key Effects of Trade Liberalization: Environment of the Dominican Republic

Sector/ Industry	Competition/ Protection	Free Trade Impacts	Environmental Issues	Environmental Inputs for Negotiations	Proposed SOE Action(s)
Agriculture: Sugar	Not competitive. Highly protected. Limited export market (USA).	Few if any. However, free market would take sugar land out of production.	Sugar industry requires environmental oversight. Transfer of sugar land to other uses may have environmental implications.	Facilitate foreign investment to replace capital stock and technology transfer related to water use and waste disposal, and agrochemical use.	Maintain vigilance and be proactive in policy discussion on uses of ex-sugar land.
Agriculture: Rice	Competitive. High protection.	If trade liberalized, marginal loss of domestic market expected.	Normal (chemical, water, etc.) concerns associated with crop agriculture.	None.	Vigilance. Monitoring of alternative land use.
Agriculture: Coffee	Low yields. Poor market. Many small producers. One major processor. Trade declining.	May be "off limits." If not, domestic production would decline due to low productivity.	DR coffee is "shade" type, with environmental positives in production. Processing requires environmental monitoring.	Gradual phase out of trade barriers and maximize market access for "eco-coffee."	Oversight of processing. Support expansion of environmentally certified, specialty coffees for high-value exports.
Livestock Industries	Generally not competitive in international sense, and very highly protected.	Continued protection expected, but free trade would push most DR producers out of business.	Intensive livestock production (pork and poultry, especially), very risky to environment. Extensive (cattle) production can cause overgrazing, erosion, etc.	Not an environmental priority to protect poultry.	Encourage freer trade in livestock products. Monitor producers and processors on norms. Be engaged in land use policies.
Forestry	Relatively small domestic industry. Low levels of protection. High imports. Inadequate timber supply. Excess mill capacity.	Minimal impacts expected. However, apparent room for growth in the industry.	DR actually shows an increase in forest cover, but use of land in plantation forestry could still grow. Forest/watershed management planning needed.		Monitor new forestry law and regulations. Stay proactive in related land-use decisions and trade law for forest products. Pursue forest management plans.
Nonmetallic Mining: Aggregates	Very limited trade. Locally competitive. Low protection.	Minimal direct impacts expected. Indirect impacts from expanded construction.	Purely extractive. Practices used in the DR are destructive to environment.	From the environmental standpoint it is not a priority to protect aggregates or cement.	Oversight. Enforcement of norms. Discourage expansion, e.g., by requiring that all costs be internalized.
Cement	DR not very competitive. High transport costs are trade barrier. Also moderately high protection.	Free trade could directly reduce local industry share of DR market. Demand affected by construction industry.	Tied to aggregate mining. Cement production contributes to air pollution.	From the environmental standpoint it is not a priority to protect aggregates or cement.	Oversight and enforcement.
Tourism	Competitive.	Minimal direct impacts expected. Expansion perspective related to other factors. However, free trade in related, supply sectors could improve position.	Related demand for land and construction of tourism facilities affects land use. Tourism can affect resources in positive or negative ways. Services needed by tourism facilities can pose environmental problems.	Negotiations should foster technology transfer.	Oversight and monitoring. Be proactive in environmental education and interpretation for tourists and Dominican support personnel.

To generalize, from a purely environmental standpoint, Dominican trade negotiators should not be discouraged from seeking conditions that would encourage the maintenance of *coffee* production levels or even enhance the market position of domestic coffee producers and possibly maintain or reduce mining (aggregates) and cement production levels. The case is less clear for *sugar* and *rice*, as alternative land and resource uses would determine environmental impacts of significant changes in production activity brought about by liberalization of trade in these products (although given relative low productivity of sugar in the DR, it is extremely unlikely that land devoted to sugar cane would do anything other than decline).

All segments of the *livestock* industry are apparently kept active in the DR at considerable cost in terms of protection. Environmental costs are also high, particularly in the poultry and pork sectors, whose intensive production regimes pose potentially serious pollution issues.

The *forestry* sector is presently the subject of domestic policy review and reformulation. The effects of potential trade liberalization on the forest product sector depend also on the outcome of these domestic policy determinations and the responses to them of resource owners and the forest product industry. As noted above, it is expected that if trade liberalization affects the sugar industry, for example, it will be to make it even less competitive than it now is, which could result in sugar land being converted to other uses, including possibly forest plantations. Expansion of tourism could drive new construction, with an associated increase in demand for wood; hence, perhaps the most likely impacts of new trade policy on Dominican forests would be indirect (related to conversion of existing agricultural lands, demand for protected areas or reserves, demand for lumber for construction, etc).

The *cement* industry in the DR could be faced with increased competition from imports if the tariff regime is liberalized, and this could have positive environmental effects. On the other hand, it is unlikely that the extraction and processing of *aggregates* will be directly affected by trade liberalization. But economic growth induced by trade liberalization could spur the construction industry, resulting in increased demand both for aggregates and cement.

The Dominican *tourism* sector could benefit indirectly in a number of ways from trade liberalization, and growth in the sector could have both negative and positive environmental ramifications, as discussed in preceding sections.

In consideration of the high priority that the GODR gives to environmentally sound economic development, the findings articulated in the preceding sectoral analyses, and the conclusions discussed above, it is useful to enumerate some

appropriate responses to emerging trade issues, including specifically the following:

- ◆ It is strongly suggested that the SOE establish and maintain an individual or team of specialists charged with constant oversight of emerging trade (and economic development) issues and their potential for affecting the environment of the nation. Those charged with this responsibility should have ready access to the Secretary's office, so that trade (and economic development) issues with important environmental implications can be brought to national attention in a timely and effective manner.
- ◆ Whatever the trajectory and eventual outcome of current negotiations for regional and/or bilateral trade agreements, the SOE should maintain constant communication with GODR trade negotiators and economic policy makers in the interest of identifying potential environmental impacts, possibly enhancing those on the positive side and avoiding or mitigating the negative ones.
- ◆ It is useful to consider the environmental indicators and agreements that have been identified in previous trade agreements, such as NAFTA and the U.S.-Chile bilateral agreement. In fact, GODR negotiators should look to past agreements for conditions and language that, with adaptations, could be appropriate for current and prospective trade agreements, either regional or bilateral. For example, the specific suggestions arising from the U.S.-Chile Bilateral Agreement, as articulated in section III, should be considered.
- ◆ Several general environmental themes, such as ozone depletion, climate change, and conservation of coral reefs and pelagic fisheries resources, have regional or global ramifications. Well-informed national policy in such areas is important, but is probably insufficient. To the extent that regional or bilateral trade-liberalizing agreements could have direct or significant indirect impacts on such matters, the DR would be wise to explore with potential trading partners the possibilities for cooperation in mitigating potential negative impacts.
- ◆ Although indications are that crop agriculture (principally rice and sugar) may be little affected in the early years of a new trade agreement, it is possible that liberalized trade could result in declining capital and land being dedicated to these crops in the medium term. It would behoove Dominican officials in SOE and SEA principally to begin a review of alternative uses of land and capital in the event that resources devoted to

sugar or other crops decline. Policy instruments that encourage uses that serve both economic and environmental objectives are indicated.

- ◆ In terms of protecting the environment from adverse, but currently unforeseeable trade impacts, the most important things the SOE can do are to continue ongoing work on building awareness and a constituency for sound environmental management and pursuing the development of environmental norms and regulations—and the means for their enforcement—that began in earnest with establishment of the SOE in 2000. So many potential environmental impacts of trade liberalization have been shown to be either indirect or still speculative that the best overall approach is preparation in terms of policy and enforcement frameworks to meet any eventuality.

6 APPENDIX

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6.2 Individuals Consulted or Interviewed

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Victor Montero	Director of Corteza Terrestre (earth crust) of the Secretaría de Estado de Medioambiente y Recursos Naturales (SEMARN)
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