



Integrated Assessment of Trade Liberalization and Trade-Related Policies

A Country Study on the Banana Sector in Ecuador



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NOTE

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EXECUTIVE SUMMARY

Project Overview

The international trade in bananas is one of the most important economic activities for Ecuador, and is very significant in terms of labour and use of natural resources. Given that bananas have become one of the most controversial commodities within the multilateral trade system in recent years, Ecuadorian policy making and current and future negotiations must focus on achieving better conditions for the Ecuadorian people. To do so, policy measures must promote sustainable development in the banana industry, inform negotiators, increase transparency, achieve joint positions and generate national capacity in other sectors such as government, academia, and the private sector.

To direct policy making and to conduct current and future negotiations with the goal of sustainable development, the relationship between international trade and sustainable development must be established. Without determination of the effects of trade liberalization, the possibility of convincing policy makers to adopt measures that might signify a sacrifice in terms of income and in this case, market share, is remote.

To distinguish the effects of trade liberalization from the effects of economic growth is difficult. However, this assessment attempts to define the effects of trade liberalization as derived from structural adjustment policies in Ecuador from 1980 to 1999, as well as the effects of the application of international trade policies for the same period.

Structural adjustment and trade liberalization policies were implemented in Ecuador in the 1980s to favour economic development, correcting macroeconomic deficiencies and leading the economy to a more open market. Several of these policies are reflected in domestic trade policies that have affected banana industry activities. Both domestic trade policies and multilateral trade agreements have had an impact on Ecuador's banana industry in terms of production, cultivated area and yields, and use of natural resources and labour, *inter alia*, in the 1980s and 1990s.

The main purpose of structural adjustment policy review has been the identification of foreign and domestic trade policies that have had an impact on the banana industry as a whole during specific periods.

Trade liberalization has affected the 'product chain' behaviour. Thus, domestic trade policies, existing legal and regulatory structures, and domestic and multilateral trade agreements have affected the economic, social and environmental facets of the banana industry. In other words, trade policies affected banana production, exports, foreign trade and consumption, all of which are elements of the banana product chain.

The product chain demonstrates banana production, processing and distribution activities; it refers to both direct and indirect participants (workers, technicians, families, etc.) in agricultural production flow, from acquisition of supplies to final consumption of

the product; it describes the industry's representative behaviour, and could also be used to explain impacts of trade liberalization on the chain itself. Connections between the product chain and structural adjustment policies helped to identify the sector's representative behaviour and the impact of trade liberalization. Significant information on transportation and commercialization of bananas has been scarce and this has impeded a complete analysis of the banana product chain.

Present Limitations

One of the most common limitations for such assessments, especially those performed in developing countries, is the lack of the necessary resources and information. In this analysis, the information available from official sources is highly deficient and at times is incomplete, null or contradictory. For instance, the National Banana Programme that was created in late 1970s was eliminated in 1999, along with virtually all of the programme records. Another problem is that several public institutions have differing statistical data concerning the same issues, making credibility of the sources difficult.

Although the corporate banana sector has some useful information, most have been reluctant to disclose that information. This presents a third problem, the lack of transparency of the corporate banana sector. The corporate sector's reticence is a result of the commonly held belief that most environmentally and socially based studies harm them at the international stage.

Finally, timing has been another significant limitation. Banana trade talks have intensified during the last few years, for reasons that are well known. The European Union (EU) constitutes a key international banana market that is employing political responses to the WTO panel decision regarding the discriminatory banana regime that the EU has enforced since 1993. Ecuador, the largest banana exporter worldwide and to the EU in particular, along with other Latin American banana producers and the United States, is involved in disputes with the EU over their proposed 'first-come, first-served system'. This is another reason why the banana industry maintains a high degree of secrecy.

Proposed Methodology

The assessment develops an ex post, sectoral and qualitative analysis of the Ecuadorian banana industry. The proposed methodology comprises six sections. The first section (Section 3) includes an analysis and systemization of those structural adjustment and trade policies with the greatest influence on the productive and commercial structure of the banana industry. The second section analyses the connection between the structural adjustment and foreign trade policies and their economic, environmental and social effects throughout the production cycle, as well as the national and institutional regulatory structure that manages banana production in Ecuador (Section 4). The third section evaluates the sustainability of the banana industry by breaking down environmental, economic and social factors (Section 5). The fourth section determines the positive and negative effects on the banana industry that are created by structural adjustment and foreign trade

policies by examining scale, product or composition, technology, structural and regulatory effects (Section 6).

Having obtained these results, the fifth section includes policy recommendations for the relevant institutions, whose market apparatus will promote sustainable development in the banana industry (Section 7). Finally, the sixth section reveals insights and experiences related to this study. Conclusions are made indicating the banana sector's tendency for sustainable development, increased competitiveness, and economic, social and environmental responsibility, as well as pointing out what the sector lacks and what it still needs (Section 8).

Sustainability Assessment

Effects between indicators are the result of changes in the product chain due to implementation of structural adjustment policies and trade liberalization. Effects likely to be expected can be identified as: scale effect, product effect, technology effect, structural effect and regulatory effect.

Scale Effect

The scale effect occurs when economic growth, based on the increase in a country's production and export, determines change in the use of natural resources and in the general environment. Thus, a positive scale effect occurs when economic growth fosters a demand for an improved environment and the internalization of certain environmental costs. On the other hand, a negative scale effect occurs when economic growth generates or fosters an increase in the use and depletion of natural resources.

The increase in production and exported volume, coupled with the fact that banana production in general is a mono-culture crop occurring in extended areas, has generated a great burden on the natural environment, thus causing a *negative scale effect*. The increase in production and exported volumes since 1994 did not occur with an improved yield per hectare. The increase in production was due primarily to an increase in the planted surface area rather than an increase in production yields (productivity), signalling a *negative scale effect*.

However, in the case of the implementation of the European Banana Regime, the increase in exports did not generate this burden *per se*; trade distortions produced by the EU's trade regime generated it.

Product Effect

This type of effect is associated with goods or inputs that can improve or deteriorate the environment. Trade in energy-efficient equipment and sewage treatment technology

would be an example of a positive product effect. On the other hand, trade in hazardous substances and endangered species would constitute a negative product effect.

Trade liberalization and structural adjustment policies related to the banana industry sought the improvement of producers' competitiveness in the market. Banana producers have implemented environmental standards in their plantations, adopted new technology and cultivated new varieties of plants. As a result, the producers have reduced their production costs and increased their productivity.

By adopting trade liberalization and structural adjustment policies that are mainly concerned with the banana sector, the Government has sought to improve the producers' competitiveness in the market. In many cases this situation has determined an increase in the use of agrochemicals, and many producers have not adopted environmental regulations, which would indicate a preliminary *negative product effect*. A decrease in the use of agrochemicals occurred primarily because of higher costs and the introduction of stricter regulations. Although the statistical data showed a decrease in the fungicides used, this information has not been corroborated or quantified. Nevertheless, this seems to potentially indicate a *positive product effect*.

Technology Effect

The technology effect refers to changes in technological development in an economic activity generated or fostered by trade liberalization policies. A positive technology effect occurs when trade liberalization and an increase in exports promote the use of better technology, which improves the economic yield and internalizes environmental and social impacts.

The evaluation of the banana industry conveys a *positive technology effect*, which can be explained by the following: (i) a higher level of technology use in the producing farms, which not only improves economic yields by reducing certain production costs, but also improves natural resources use, and (ii) the adoption of environmental certifications and Environmental Management Systems. There has been a significant increase in certified banana plantations and businesses that use environmental management systems and that abide by national environmental laws. These initiatives include waste and toxic products management programmes, disease control programmes, conservation and restoration of natural areas, and training programmes for the employees in the sector.

Structural Effect

The structural effect focuses on microeconomics in order to explain changes in the patterns of economic activity. It refers to changes in a sector's productive structure because of internal and external policy reforms. In the presence of economic opening and trade liberalization reforms, countries tend to reassign their resources as a function of their comparative advantages to the kind of exports that make use of that advantage. A positive

or negative structural effect would result from a smaller or larger impact on the environment arising because of the comparative advantage.

Banana plantations have undergone a re-engineering process, and most of them have become specialized in banana farming, producing a relative specialization in the industry's taskforce, giving the country a comparative advantage in this input.

Ecuador's economic opening has fostered the specialization of the banana producers in order to maintain access to the world markets. The sector's farming techniques have improved with the use of top technology in their plantations that require the intensive but more efficient use of water and land resources. Thus, specialization at all levels in the banana production cycle produced by the economic opening has generated a *positive structural effect*. But from another perspective this specialization in products that use comparative advantages, has also led to an increased use of natural resources (by the use of more intensive technology), which can on the other hand have configured a *negative structural effect*.

Regulatory Effect

The regulatory effect arises when trade policy measures or the adoption of agreements produce changes in the legal and political structures within a country. A *positive regulatory effect* occurs when these agreements or policies are strengthened or maintain the state's ability to develop and implement effective environmental policies. A negative effect occurs when a trade agreement or policy makes it difficult for the state to implement adequate environmental policies.

Economic and trade liberalization reform policies have structured a positive regulatory effect, which can be observed by a series of regulations enforced during the 1990s. The most important regulations are: (i) the Environmental Management Bylaws for Banana Sector; (ii) the Plant Quarantine handbook; (iii) the Export Facilitation Law; (iv) disease control provisions; (v) packaging standards; and (vi) the banana policy for plantation re-conversion.

The positive effect can also be corroborated by the harmonization in the sanitary, phytosanitary, technical and environmental regulations enacted before 1995, when Ecuador entered the WTO.

Policy Recommendations

Environmental

- Problems
 - Expansion of the agricultural frontier.
 - Loss of biodiversity.

—Waste emissions.

- Policy proposals

—Training of government authorities and private businesses in environmental assessments and environmental protection regulations; encourage cultivation with clean and efficient technologies.

—Environmental award policies.

—Open channels of dialogue and training with certification organizations in order to adopt clean production processes.

Economic

- Problems

—Low productivity of small and medium sized producers.

—Low prices for the small and medium sized producers.

—Extreme vulnerability to prices and trade restrictions.

—Oligopolistic banana industry and transportation structure, reducing opportunities for diverse allocation in international markets.

- Policy proposals

—Encourage diversification into new niche markets for ‘clean’ banana production.

—Credit incentives: preferential credits for the adoption of clean technology and organic production.

—Training for production alternatives and environmental certification.

—Strengthening trade connections for organic bananas.

Social

- Problems

—Low wage levels.

—Seasonal labour.

—Low internal reinvestment in high-technology banana producing provinces.

- Policy proposals

—Worker training programmes.

—Awards for local reinvestment of surpluses in social programmes.

Project Conclusions

Aspects highlighting the banana industry

- Extreme importance to the economy.
- No current policies to promote sustainable production in the banana industry.
- Lack of coherency between certain national and international policies and those of the banana industry, such as open market policies and the simultaneous maintenance of an oligopolistic structure.
- Extreme vulnerability to trade policies and environmental regulations.
- Sustainable development analysis is a politically sensitive issue to the banana industry.
- Lack of consensus between actors involved in the industry due to multiple, diverse interests.
- Lack of information in state institutions and private organizations.
- The appearance of initiatives for the adoption of cleaner production models, including organic cultivation, which generates less environmental impact and creates comparative advantage for small and medium sized producers.
- The Ecuadorian banana industry has an opportunity to convert to organic banana production due to the lower level of technology and chemical use in comparison to its main competitors.
- A need for broader discussion and assessment of multilateral and bilateral trade policies in terms of sustainable development.
- A need to analyse the role played by policies adopted by international organizations, such as the World Trade Organization, the World Bank and the International Monetary Fund, on sustainable development in developing countries.
- A need to promote sustainable competitive advantages by the adoption of environmentally and socially sustainable production systems, such as organic production, environmental certification and environmental services.

Steps to follow

- Discussion and analysis of the recommended policies with the private sector banana companies and government authorities.
- Internalization of the suggested policies by the private and public sectors.
- Development of a plan of action among the key players for the implementation of policies.

- Promotion of sustainable development assessments, development of methodologies, on a case-by-case basis, that is relevant and applicable to developing countries such as Ecuador.
- Training of other productive sectors in sustainable development assessment through workshops and discussions directed at representatives of the private sector, NGOs and the government.

ABBREVIATIONS AND ACRONYMS

ACE	Acuerdo de Complementación Económica (Complimentary Economic Agreement)
ACP	Asia, Caribbean and Pacific Countries
ALADI	Latin American Association of Integration
BCE	Central Bank of Ecuador
BNF	Banco Nacional de Fomento (National Development Bank)
CAF	Andean Corporation of Development
CFN	Corporación Financiera Nacional (National Financing Corporation)
CLIRSEN	Centro de Levantamientos Integrados de Recursos Naturales por Sensores Remotos
CONABAN	National Banana Corporation
CORPEI	The Export and Investment Promotion Corporation of Ecuador
DAP	Policy Analysis Office of the PRSA
DSB	Dispute Settlement Body
ECLAC	Economic Commission for Latin America
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FOB	free on board
GATS	General Agreement on Trade and Services
GDP	gross domestic product
GNP	gross national product
GRAN	Andean Group
IADB	Inter-American Development Bank
IICA	Inter-American Institute for Agricultural Cooperation
INEC	National Statistics and Census Institute
ISO	International Standardization Organization
LPCCA	Law of Prevention and Control of Environmental Contamination
MAG	Ministry of Agriculture and Livestock
OECD	Organization for Economic Cooperation and Development
PAE	Ecuadorian Environmental Plan
PNB	Programma Nacional del Banano (National Banana Programme)
PROMSA	Programme of Modernization of Agricultural Services
PRSA	Programme of Reorientation of the Agriculture and Livestock Sector
PSA	Agricultural Sector Programme
SESA	Ecuadorian Agricultural and Livestock Sanitary Service
SICA	System of Information and Agricultural Census

SIISE	Integrated System of Social Indicators of Ecuador
TRIMs	Agreement on Trade-Related Investment Measures
UNEP	United Nations Environment Programme
USA	United States of America
WHO	World Health Organization
WTO	World Trade Organization
WWF	World Wildlife Fund for Nature

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United Nations Environment Programme

The United Nations Environment Programme (UNEP) is the overall coordinating environmental organization of the United Nations system. Its mission is to provide leadership and encourage partnerships in caring for the environment by inspiring, informing and enabling nations and people to improve their quality of life without compromising that of future generations. In accordance with its mandate, UNEP works to observe, monitor and assess the state of the global environment, and improve our scientific understanding of how environmental change occurs, and in turn, how such changes can be managed by action-oriented national policies and international agreements. UNEP's capacity building work thus centers on helping countries strengthen environmental management in diverse areas including freshwater and land resource management, the conservation and sustainable use of biodiversity, marine and coastal ecosystem management, and cleaner industrial production and eco-efficiency, among many others.

UNEP, which is headquartered in Nairobi, marked its first 25 years of service in 1997. During this time, in partnership with a global array of collaborating organizations, UNEP has achieved major advances in the development of international environmental policy and law, environmental monitoring and assessment, and our understanding of the science of global change. This work has, and continues to support, successful development and implementation of the world's major environmental conventions. In parallel, UNEP administers several multilateral environmental agreements including the Vienna Convention's Montreal Protocol on Substances that Deplete the Ozone Layer, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (SBC), the Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention, PIC) and most recently, the Cartagena Protocol on Biosafety to the Convention on Biological Diversity as well as the Stockholm Convention on Persistent Organic Pollutants (POPs).

Division of Technology, Industry and Economics

The mission of the Division of Technology, Industry and Economics (DTIE) is to encourage decision-makers in government, industry, and business to develop and adopt policies, strategies and practices that are cleaner and safer, use natural resources more efficiently and reduce pollution risks to both human beings and the environment. The approach of DTIE is to raise awareness by fostering international consensus on policies, codes of practice, and economic instruments through capacity-building and information exchange and by means of pilot projects.

Economics and Trade Branch

The Economics and Trade Branch (ETB) is one of the Branches of the Division of Technology, Industry and Economics (DTIE). The work programme of the Branch consists of three main components, economics, trade and financial services. Its mission is to enhance the capacities of countries, particularly developing countries and countries with economies in transition, to integrate environmental considerations in development planning and macroeconomic policies, including trade policies. UNEP's mission in this field is also to address the linkages between environment and financial performance and the potential role of the financial services sector in promoting sustainable development. The trade component of the Programme focuses on improving countries' understanding of the linkages between trade and environment and enhancing their capacities in developing mutually supportive trade and environment policies, and providing technical input to the trade and environment debate through a transparent and a broad-based consultative process.

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FOREWORD

Since the Brundtland Report (1989) and Agenda 21 (1992) were published, the world has been faced with the challenge of sustainable development. At the same time, the move away from national economies towards a global economy has triggered a debate on the need for the harmonization of the objectives of an open market exchange and protection of the environment. In this context, both developed and developing countries have given special priority to evaluating the repercussions of their market-oriented economies on their natural resources and environment, before joining major liberalization processes.

This debate has provoked the appearance of a series of instruments and methodologies that seek to internalize the environmental costs caused by economic and commercial activities. Their development and application is an ongoing process.

The concept of sustainability in Ecuador's production processes is only just being discussed by the public and private sectors, as well as non-governmental organizations. Due to its international market orientation, the Ecuadorian banana sector has accelerated the adoption of instruments to internalize certain environmental costs. The application of these instruments and the promotion of greater transparency and sustainable policies for production and commercialization, first requires a knowledge of the impacts that commercial and economic policies have on the sustainability of the banana industry.

This study intends to bring together all the key players involved and to elaborate consensual policies that can lead Ecuador's banana sector towards sustainable development.

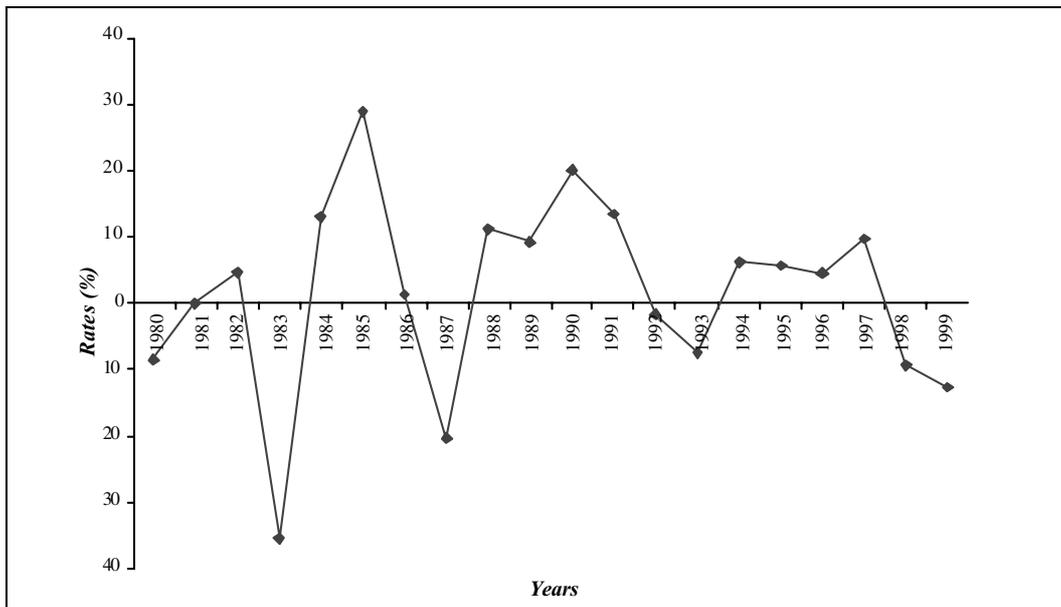
1. INTRODUCTION

Important changes in economic policy took place in Ecuador during the 1980s and 1990s that aimed to integrate the country into the international trade regime. Because the productive export structure of the country remains concentrated in agricultural products, the resulting expansion has perhaps had both positive and negative sustainability impacts. This report attempts to examine these effects in detail.

In terms of its importance to total gross domestic product (GDP), the banana sector contributed 2.28 per cent in the 1980s and 2.52 per cent in the 1990s. With regard to its importance in Ecuador's commercial balance, the banana sector has consolidated its position as the second largest exporter after petroleum, representing 9.4 per cent of total exports in the 1980s and 21.1 per cent during the 1990s.

FIGURE 1

Evolution of the banana sector's GDP, 1980-1999 (rates of growth)



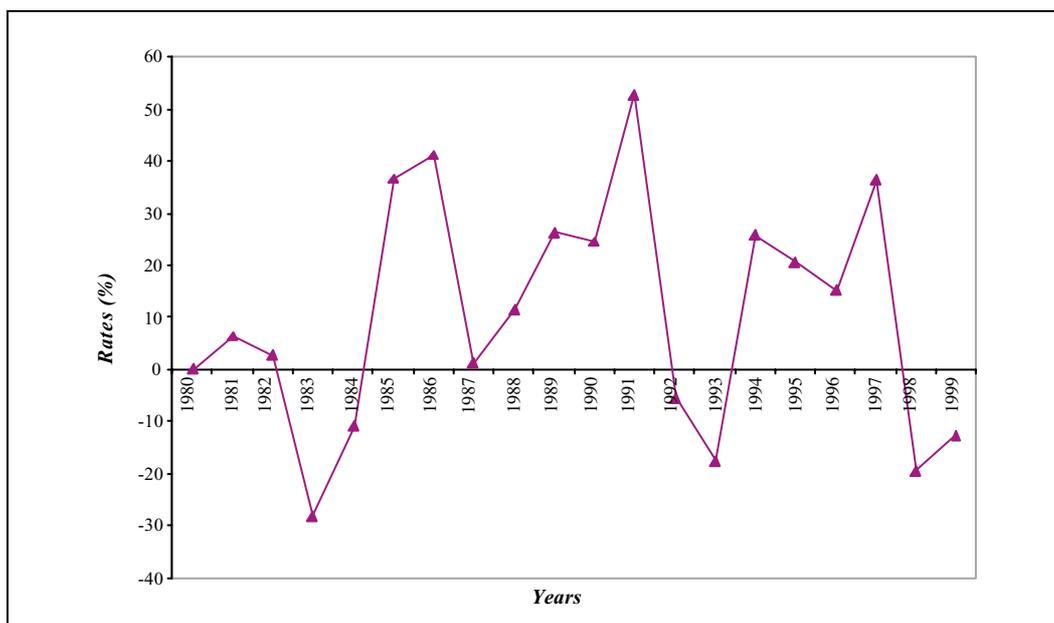
Sources: Statistics from the Central Bank of Ecuador, SICA Project, FAO
Prepared by: CEDA

As for its capacity to generate foreign currency, the banana sector is a profitable, liquid industry that has allowed the transformation of product into commodity. This product has access to the most demanding consumers in the world due to very attractive prices, but production costs continue to increase because these consumers value the good appearance and high quality of the banana. The main export markets are the United States, the European Union, the former Soviet Union and Japan.

The evolution of banana exports from Ecuador shows a cyclic pattern due to external forces such as the volatility of international prices and the fluctuations of supply and demand, as well as other factors that may affect normal behaviour.

Banana exports accounted for 38.6 per cent of all agricultural exports in the 1980s and increased to 64.7 per cent of all agricultural exports in the 1990s, a notable growth in banana producing activity during the last decade. Banana exports thus comprise a large portion of all exports from the country and generate a significant amount of foreign currency.

FIGURE 2

Evolution of banana exports, 1980-1999 (rates of growth)

Sources: Statistics from the Central Bank of Ecuador, SICA Project, FAO

Prepared by: CEDA

In terms of international trade policy, the export of bananas has been a major source of trade disputes within the WTO. Specifically, since the application of the “Regime of Imports of Bananas” by the European Union in 1993, banana producing countries have been confronted with a series of restrictions to accessing the EU market. In the case of Ecuador, the commercial dispute has caused the country to incur losses of nearly US\$ 49 million, according to estimates of the Ecuadorian Government. This estimate does not take into account the collateral environmental and social effects also generated.

In social terms, the banana sector has become one of the most important production activities in Ecuador. Banana production is labour intensive, thus generating a wide range of employment. By 1998, the number of proprietors of banana plantations registered at the National Banana Programme (PNB) was 4,941. Within every plantation there are a number of employees, both permanent and seasonal. According to labour productivity and cultivated land statistics, there are around 98,000 workers directly involved with banana plantations.

Other figures from the PNB estimate that in all banana plantations there are 131,801 permanent employees and a similar number of seasonal employees, making a total of approximately 268,543 persons involved with this activity. However, this figure is refuted by more conservative estimations. For the year 2000 it has been estimated that the sector employed approximately 0.4 men per hectare, indicating that the number of banana plantation workers has dropped to 64,000. Nevertheless, the labour devoted to banana production still represents 9 per cent of the total agricultural workforce for 2000 and 5 per cent of the Ecuadorian working population.

The general objective of this study is to evaluate the social, economic and environmental impacts (both positive and negative) of the adoption of specific policies of structural adjustment and international commerce during the 1980s and 1990s, on the banana producing activity of Ecuador. Structural adjustment programmes and trade liberalization policies were implemented to encourage economic development, and were directed in particular to the export industry. Both domestic trade policies and multilateral trade agreements have had an impact on Ecuador's banana sector in terms of production, cultivated land area and yields, as well as in terms of use of natural resources and labour, *inter alia*.

The study also plans to determine what effect the European Union's regime on the commercialization of bananas has had on Ecuador's banana sector. Finally, having obtained these results, the study will generate policy proposals that could lead towards the sustainable management of banana producing activity in Ecuador.

The methodology used in the study consists of measuring selected economic, environmental and social indicators and relating them to policy reform indicators. The selected indicators have been used to examine the effects of scale, technology, structure, product and regulation. Indicators used in the study include:

Economic indicators:

- Production: increase in banana production; total banana production per hectare.
- Technology use: technological investment by the banana companies. The level of total investment of the industry can be used as an indicator of the investment in 'clean technology' (assuming that such investment is used for such technology).

Environmental indicators:

- Volume of imports of agrochemical products applied in banana production, particularly fungicides.
- Use of agrochemical inputs.
- Increases in the surface area planted as an indicator of the expansion of the agricultural frontier.

Social indicators:

- Minimum salaries/income established for banana plantation workers.
- indicators: demography, housing, health and education of the principal banana districts of Ecuador.

2. PROJECT BACKGROUND AND DEVELOPMENT OF METHODOLOGY

2.1 Project Background

2.1.1 Project approach and process

In the 1990s, a concern for environmental protection became a constant factor in many governmental policies, as well as in the production philosophy of the private sector. In the case of Latin America, and specifically in Ecuador, although the concern is recent, the interest of the public and private sectors in promoting economic growth that will lead to a fairer distribution of income in the population, and that is in harmony with the preservation of present and future natural resources—i.e. sustainable development—is more evident every day.

As a function of the need for sustainable development, diverse groups of non-governmental and international organizations, academics and businesspeople have promoted projects, studies and strategies to evaluate the sustainability of structural adjustment and free trade policies adopted by Latin American countries during the 1980s and 1990s.

In March 2000, the World Wildlife Fund for Nature (WWF) and the *Futuro Latinoamericano Foundation* organized a meeting of International Experts on the Evaluation of the Sustainability of Trade Liberalization in Quito. At this meeting, the participants analysed and discussed the distinct methodologies developed by the Organization for Economic Cooperation and Development (OECD), the Economic Commission for Latin America (ECLAC), the WWF, the Commission for Environmental Cooperation (CCA) and the United Nations Environment Programme (UNEP), among others.

In the context of this meeting, UNEP called for the support of research projects to evaluate the sustainability of the free trade policies implemented by developing countries.

In April 2000, the Ecuadorian Centre for Environmental Law (CEDA) presented its proposal for the project 'Environmental Impacts of Trade Liberalization and Policies for the Management of Natural Resources: the Case of the Ecuadorian Banana Sector'. The objective of the proposed study was to evaluate the negative and positive impacts generated by the adoption of structural adjustments and free trade policies by the Ecuadorian banana industry during the 1980s and 1990s. The study intended to facilitate the proposal of policy recommendations that work towards a better utilization of natural resources, a better distribution of income and a greater economic efficiency in Ecuador's banana sector.

The study also picks up on the conclusions of the meeting of International Experts on the Evaluation of the Sustainability of Trade Liberalization, which were: (i) there is a need to have methodologies for the evaluation of sustainability that will serve as instruments to improve policy decisions and to better understand the complex relations between commerce and sustainable development; (ii) the evaluation of sustainability should not be

limited to commerce liberalization but should include the evaluation of commercial policies; (iii) the evaluations should define the objectives, scope and focus; and (vi) there is a need to generate particular methodologies responsive to the economic, environmental and social realities of each country. This proposal was approved by UNEP and the project initiated in May 2000.

National institution, team members and UNEP

National Institution

Ecuadorian Centre for Environmental Law (CEDA)

Team members

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2.2 Development of in-country methodology

2.2.1 Trade liberalization effects

Effects on the linkages between indicators are the result of changes in the production cycle due to the implementation of structural adjustment policies and trade liberalization. The effects can be identified as: product effects, scale effects, structural effects, technological effects and regulatory effects. These effects will be appraised and compared.

Product or composition effect occurs when the implementation of a trade policy or the increase in trade encourages clean products or technology (positive effect), or conversely, an increase occurs in the trade of dangerous substances or products with negative impacts on the environment (negative effect). In the case of bananas, the trade regulations for clean production processes can result in the importation of technology for water treatment, waste management and new, non-toxic chemical products that reduces negative environmental impacts.

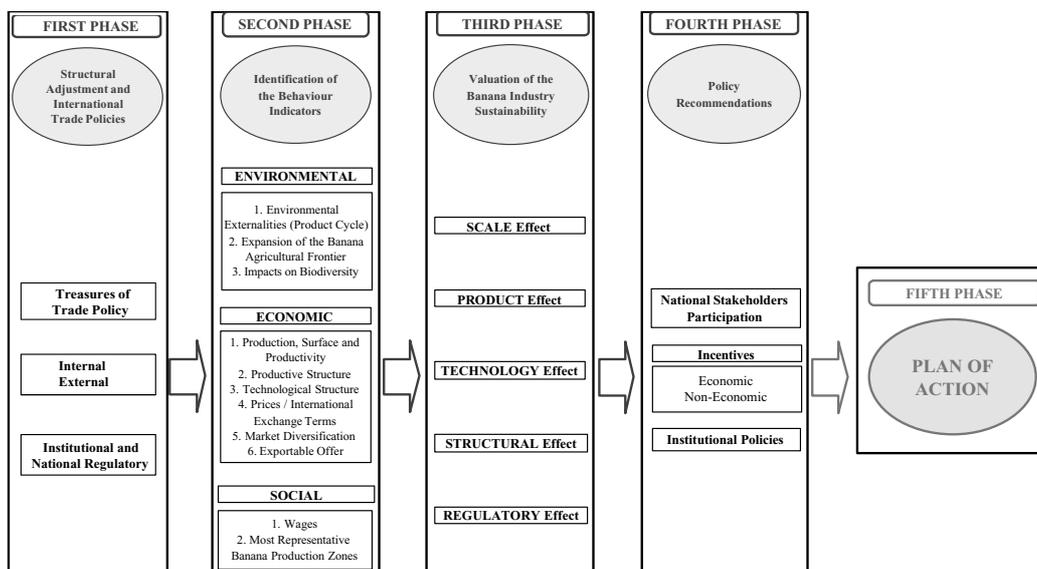
Scale effect. Trade liberalization promotes economic development that may have positive or negative effects on sustainability. A positive scale effect occurs when the economic resources generated by economic growth are invested in better technologies or to resolve certain problems. A negative scale effect occurs when economic growth takes place in the absence of environmental and social policies and regulations and provokes the increased use and depletion of natural resources.

Structural effect. Trade liberalization establishes new conditions in international markets and promotes product specialization. As a result, industries respond in different ways depending on the extent of their property and technology levels, among other factors. Many producers are able to respond to international demand, increasing their competitiveness or, on the contrary, opt to engage in activities in which they can better utilize their resources.

Technology effect refers to changes caused by trade liberalization in the technological development of an economic activity. A positive technology effect occurs when market opening and an increase in exports promotes greater adoption of technology that can achieve a greater economic yield while simultaneously internalising social and environmental impacts.

Regulatory effect occurs when trade policy or agreement measures produce changes in the legal and institutional structures of the country. A positive regulatory effect occurs when such policies or agreements increase or maintain the ability of the state to develop and implement effective environmental policies. A negative regulatory effect occurs when a trade policy or agreement impedes the state in the implementation of appropriate environmental regulations.

Methodological Structure



3. EFFECTS OF STRUCTURAL ADJUSTMENTS AND TRADE POLICIES IN ECUADOR

Structural adjustment policies have arisen in Latin America in response to the grave economic crisis that many countries faced in the 1980s. In response to the explosion of external debt, the first measures for structural adjustment and policies for economic stabilization were enacted. These measures were directed to control inflation, to set a basis from which to attract private investment, and in particular to promote the reactivation of the economy through open market reforms and the support of exports.

The crisis of the 1980s tested the ‘import substitution scheme’ adopted by Ecuador that was intended to reduce the country’s economic dependency on industrialized countries and base its economic development on the activities of domestic industries (Whitaker, 1996). To achieve these objectives, the model of import substitution included protection of the local industries through the adoption of tariffs and other barriers to trade. It also included the application of restrictions to foreign investment, the adoption of an over-valued rate of exchange, the application of interest rates related to direct credit, and the creation of taxes and other restrictions to agricultural exports (Whitaker, 1996). However, these measures did not reduce the economic imbalance that emerged from the external debt crisis of the 1980s and the subsequent repercussions throughout the entire economy.¹

The external debt crisis and the increase of international interest rates were the first symptoms that indicated the imbalance between the internal and external markets of Ecuador. This imbalance became evident when the fiscal deficit and the current account deficit became unsustainable. At this point, the Government adopted measures to ‘adjust’ the economy for the first time. Each of the following governments in the 1980s and the 1990s implemented economic programmes directed to correct the adjustments. In that sense, the programmes of structural adjustment included fiscal and monetary policies, exchange rate and commercial policies, and other structural reforms.

The structural adjustment policies implied a substantial change in the circumstances and conditions of the environment in which the economic agents operated. In the case of the banana sector, the ‘transition model towards structural reform’ and the applied policies have had different economic, social, and environmental impacts. To analyse those impacts we have defined three periods² in which important structural adjustment measures have had specific repercussions in the banana sector.

¹ One of the sectors most affected by the application of the industrialization model was the agricultural sector. The Government tried to compensate through the application of subsidies in credits provided by the National Development Bank, by the creation of public enterprises to provide inputs (seeds, fertilizers, and artificial insemination) for this sector, and by technical and financial support for agricultural activities.

² This ‘periodization’ was discussed in the analysis by Mariana Naranjo in her study “Aproximación a Impactos de las Políticas de Estabilización y Ajuste Estructural aplicadas en el Ecuador: 1982-1998.”

3.1 Period of “corrective adjustment with partial liberalization” (1980-1989)

This period saw the adoption of a system of ‘mini-devaluations’ with periodic adjustments to the exchange rate, and the intervention of the Central Bank in the free market to acquire 30 per cent of hard currency to strengthen the export sector. The policy of exchange rate management had repercussions in the real value of the imported inputs needed by the banana sector and in the commercial competitiveness of the Ecuadorian banana with its principal competitors. However, in 1983 Ecuador’s agricultural producers were hit by the *El Niño* climate phenomenon and as a result, the possible advantages generated by the periodic ‘mini-devaluations’ and policies of support to the export sector were not visible. Therefore, between 1980 and 1984 there was a stagnation in the production of bananas and in the yields per hectare, a situation that resulted in the radical decline in exports of bananas from Ecuador.

Important reforms also occurred in the monetary area. The 1980s saw a gradual liberalization of interest rates; a rationalization of credit to the productive sector and a policy of subsidies on credit for the agricultural sector were adopted. This situation had a visible effect in the technological development of the banana sector, evidenced by an improvement in the levels of technology and in the introduction of new and more productive varieties of banana. During this period, important measures of fiscal policy are taken, such as a revision of the internal prices of fuel and public services, with staged rises at an average of 50 and 400 per cent respectively (Naranjo, 1999). This had repercussions in the production costs of the banana industry.

The policy of fixing a minimum referential price for bananas in 1980 was among the measures specifically directed to regulate banana production activity. This policy established an export price for bananas that worked as base for estimating ‘minimum support price’, which is the price that each Ecuadorian producer should receive. Although price fixing and referential pricing are policies contrary to the free action of market forces, this measure is indispensable due to the monopolistic nature and social importance of the banana industry in Ecuador. On the other hand, in terms of its effects, the policy of price fixing generates a greater capacity to anticipate the perspectives of investment, working capital and technology for the banana producers.

In terms of trade policy, this period was characterized by the maintenance of a protectionist tariff structure, which principally aimed to promote agricultural exports and achieve a diversification of the exportable offer. This structure was achieved through the modification and strengthening of the *Ley de Fomento Industrial* (Law for the Development of Industry), 1983 and the inclusion of new preferential lines of export through Agreement 770 of the 1983 Law (Naranjo, 1999). At the end of the 1980s, Ecuadorian trade policy took a new turn with the clear adoption of a policy of openness. Its most important manifestations were; the reduction of all customs duties by 60 per cent; the application of tax exemptions and reduction of export taxes; and the fixation of minimal prices for the purchase of agricultural exports.

Although these measures aimed to promote all exports, they had an important effect on the banana sector through increasing production and technological development. The decrease of customs duties generated a decrease in the price of machinery and other imported products needed for production. Consequently, the costs of production in the banana industry were reduced. No trade policies specific to the banana sector are registered during this period.

3.2 Period of “economic liberalization in transition to structural reform” (1990-1994)

During this stage, the process of economic liberalization that started in the previous decade was strengthened. The intensity of changes in tariffs, labour, finances and taxes, and the start of a programme of reform and restructuring in the public sector marked an important step in the process of structural reforms. Mid-term adjustment programmes were formulated that aimed to consolidate the reforms that had slowly evolved from the beginning of the last decade. The general objectives of this period were to achieve a macroeconomic stability (reduction of inflation, correction of fiscal imbalances, recuperation of the external reserves fund), stimulate internal savings (as in the previous stage) and increase the growth rates of production.

Among the structural adjustment reforms that had the greatest repercussions in banana production, monetary and fiscal policies are the most important. An important element of monetary policy had been the restrictive measure of credit available to the public and private sectors. Credit for some sectors was only possible through the *Banco Nacional de Fomento* (National Development Bank, BNF) and the *Corporación Financiera Nacional* (National Financing Corporation, CFN) (Naranjo, 1999).

As for fiscal policy, two important measures taken were the exemption of value added tax (IVA) for agricultural production, and the reduction of subsidies that resulted in a dramatic rise in the price of fuel; between 1991 and 1994 prices increased by 320 per cent. Electricity tariffs also increased at a 3 per cent monthly rate (Naranjo, 1999). The exemption of IVA caused important advantages in terms of reducing the costs of production, and of investment in capital and new technology. This period shows a sustained increase of plantations that incorporate better technology and the decrease of plantations that do not have adequate technology. It should be mentioned however that even though technological advances occurred in the sector, trade did not experience a positive trend. On the contrary, starting in 1993, a sharp decline in trade is registered in banana exports, and a decrease in the price of Ecuadorian bananas in the international markets took place. It is clear that this situation, although caused by internal adjustment policies, was motivated principally by the application of regulations and international trade policies, situations that will be reviewed later.

In terms of exchange rate policy, it is important to mention the unification of the exchange market in 1994 for all current and capital transactions of the private sector. This situation facilitated commercial transactions and generated a better understanding of the perspectives of production and the adoption of new technology.

Although the policies mentioned above had an effect on the banana industry, between 1990 to 1994 some specific instruments were created to regulate the production and trade of the Ecuadorian banana. Among these initiatives were (i) the policy of minimum price support for the producers of bananas in 1992, (ii) the creation of agreements to exempt banana exporters from certain financial compromises acquired with the *Programa Nacional del Banano* (National Banana Programme), (iii) the issuing of *Reglamento de Saneamiento Ambiental Bananero* (Environmental Management Bylaws for the Banana Sector), and (iv) the issuing of Decree 2294 of 1994 that prohibits the cultivation of new areas of banana.³ The environmental management by laws for the banana sector were

³ These regulatory instruments were created with the objective to control environmental impacts caused by the use of agrochemicals and the expansion of the agricultural frontier.

designed not only to regulate the process of banana production, but also to introduce environmental preservation as a factor. The law was intended to restrict the expansion of the agricultural frontier by preventing an increase in new banana plantations, to protect zones of high biodiversity and to promote the reconversion to other more profitable crops with less environmental impact.

With regard to trade policies during this stage, several important initiatives aimed to strengthen the model of trade liberalization. Among the initiatives that had greatest repercussion in the banana sector are the policies of customs duty reform and the deregulation of commerce. The former included the elimination of the prohibition to import 6,000 customs items and the exclusion of specific products from the lists of exceptions. It also included the suspension of the payment of an 80 per cent customs duty for imports, and the adoption of a common customs duty structure in the Andean Community of Nations, with four duty levels—5 per cent, 10 per cent, 15 per cent and 20 per cent for products not originating in the region.

Regarding commerce deregulation, the adopted measures include the reduction or elimination of customs duties, surcharges, deposits, previous authorizations, quotas and prohibitions. On the one hand, the adopted instruments reduced the costs of imported inputs and increased the level of technology in the production of bananas as a result. Additionally, they reduced certain administrative restrictions for the exports of bananas.

Parallel to the adoption of these instruments, several other initiatives were generated to increase the export of Ecuadorian bananas and to improve access to international markets. Among them, the signing of the *Acuerdo de Complementación Económica* (Complimentary Economic Agreement, ACE) with Chile in 1994, through which a 100 per cent customs preference was achieved for Ecuadorian bananas, and signing the Complimentary Economic Agreement with Argentina in 1994 that assigned a 90 per cent customs preference for the Plantain and Cavendish Ecuadorian banana.

3.3 Period of “economic inconsistencies in economic policy and commercial opening” (1995-1999)

In this period, political factors determined the inconsistencies of economic policy; many political crises emerged that subordinated the implementation of an economic programme to stabilize and advance structural reform. The political instability that characterized this period makes it impossible to define clear and effective policy objectives. Fiscal imbalance was the principal problem that the economic policy of these years tried to resolve. On the other hand, in the last year of this period, several institutional distortions occurred that magnified the effects of the economic policies.

More specifically, fiscal policy reforms evolved around five aspects; budgetary processes, public administration, taxation, subsidies and internal debt. As for monetary policy, important measures were implemented that related to interest rates, the legal deposit requirements of banks and other regulations of the financial sector. In terms of the exchange rate policy, implementation of a free floating system in 1999 was unsustainable and caused the adoption of the US dollar as legal currency for all transactions in the year 2000. However, it could be argued that the accelerated devaluation of the Ecuadorian currency (the sucre) during the entire of 1999 was a favourable factor in terms of incrementing the competitiveness of the Ecuadorian export sector, including the banana sector. In real terms,

it generated a greater distrust in the monetary and financial systems of the country that led to the restriction of credits to this productive sector. On the other hand, if we take into account that the production of bananas depends on imported products, the devaluation caused an increase in those prices. This situation led to the bankruptcy of many small and medium sized producers, which was aggravated by the 'freezing' of bank accounts (ordered by the Government).

Even though the banana producing activity in Ecuador has been influenced by the policies of structural adjustment, because bananas are mainly an export product, behaviour of the sector also responded on many occasions to the application of national and multi-national trade policies. The 1980s and 1990s are characterized by the adoption of a new economic model based on the liberalization of the economy and the opening up of markets. In the banana sector, a conjugation of two policies occurs—one that promotes commercial openness and the other that is clearly interventionist (such as reference price fixing to sustain local producers).

Although this period is characterized by marked inconsistencies in economic policy, in terms of trade policy it shows more coherence and dynamism. A particular event that strengthens the policies of liberalization in Ecuador and that influences the commercial prospects for the Ecuadorian banana, is Ecuador's accession to the World Trade Organization (WTO) in 1995. Specifically, joining the WTO has created the opportunity to use judicial instruments to confront the trade restrictions imposed by the European Union and to adopt more exigent internal standards and regulations in accordance with the agreements of the WTO.

During this period, important trade agreements are signed with Japan and China. Through these agreements, Ecuador obtains an average preferential rate of 30 to 40 per cent for fresh bananas. This is a significant achievement given the potential that both markets show for Ecuador's banana exports.

4. EFFECTS OF INTERNATIONAL TRADE POLICIES AND THE NATIONAL REGULATORY FRAMEWORK

4.1 Effects of multilateral trade rules on production and trade

At the end of the 1980s and the start of the 1990s, government authorities adopted a series of policies directed to strengthen the export sector. Included among them was the gradual reduction and elimination of customs duties and other trade barriers, the opening up of its markets to imports, the reduction of government subsidies to production, the adoption of reforms intended to promote an opening to direct foreign investment, and the simplification of bureaucratic requirements for the transfer of financial capital and technology, among others.

Although these trade measures were important steps in the liberalization of commerce, they only became an integral policy when Ecuador joined the WTO. The negotiations of adhesion started in 1992 and lasted three years. During this period, the country adapted its trade policies to the multilateral system within the framework of the Uruguay Round.

The commercial development of the banana sector, as with other agricultural products, has been directly influenced by the multilateral trade rules set by the WTO, and by commercial policies adopted by the main export markets of Ecuador. These markets are the European Union, the US, and other countries such as Chile, Argentina, Japan and China. Each of these markets has great potential for Ecuador's bananas, and Ecuador has signed agreements of Economic Complementation with each.

As for rules of multilateral commerce, it should be mentioned that until the end of the 1980s and the beginning of the 1990s, the international trade regulations to which Ecuador was to respond were mainly related to regional integration agreements, specifically the Andean Pact (GRAN) and the Latin American Association of Integration (ALADI). Even though these instruments did provide commercial openings at regional level, they did not have a great influence on the international commerce of the Ecuadorian banana. It was the entrance of Ecuador into the WTO that gave the country access to judicial mechanisms that could confront the restrictive measures of the European Union to the import of bananas from Latin America. A few days after accession to the WTO, Ecuador presented its first commercial complaint to the Dispute Settlement Body (DSB), which addressed the issue of the incompatibility of the European Union's regime for the import of bananas with the principles of openness and commercial transparency of the WTO.

Specifically, in the case of the commercial dispute over bananas, the judicial principles and instruments of commerce include (i) the principle of non-discrimination of the WTO established in Articles I and II concerning National Treatment and Most-Favoured Nation, (ii) rules for the equitable treatment of Ecuadorian banana enterprises that operate in the European market, contained in the General Agreement on Trade and Services (GATS) and the Agreement on Trade-Related Investment Measures (TRIMs), and (iii) the

respect of signed compromises in the Agreement on Agriculture (URAA), specifically with reference to the consolidation of agricultural customs duties. These principles, rules and agreements were clearly violated by the EU import regime for bananas. Annex II describes the evolution of the commercial dispute and illustrates the use of WTO instruments of multilateral commerce by Ecuador, to argue its complaint.

The multilateral trade rules established by the WTO have had important effects on the production and trade of bananas in Ecuador. This is not only because they provide the country with judicial instruments that assure better access to international markets, but also because they standardize certain technical regulations that must be complied with in order to enter these markets. Such is the case in the Agreement on Sanitary and Phytosanitary Measures (SAP), and the Agreement on Technical Barriers to Trade (TBT). These instruments, through scientific argument, define certain mechanisms for regulating the import of products that affect human, animal and vegetable health. In the case of the banana industry, such agreements have generated changes in the normative structure of the government institutions. For example, the Environmental Security Law for Bananas was passed in 1994 with the goal of establishing certain parameters for banana production and the use of agrochemical products.

4.1.1 Bilateral trade agreements and their effects on the banana sector

Ecuador's banana sector has also been influenced by certain bilateral trade agreements. Because of their importance as trade partners with Ecuador, a brief review of the instruments utilized by Argentina, Chile, Japan and China follows.

As discussed in section 3.2, Ecuador signed a trade agreement (*Acuerdo de Complementación Económica*) with Argentina (1994), through which Plantain, Cavendish, dried and fresh bananas from Ecuador could access this market with a customs exemption of 90 per cent. A similar agreement was signed with Chile in 1994 that granted customs preference of 100 per cent for Ecuadorian bananas. Ecuador maintains commercial agreements with Japan and China that provide for an average customs preference of between 30 and 40 per cent for fresh bananas.

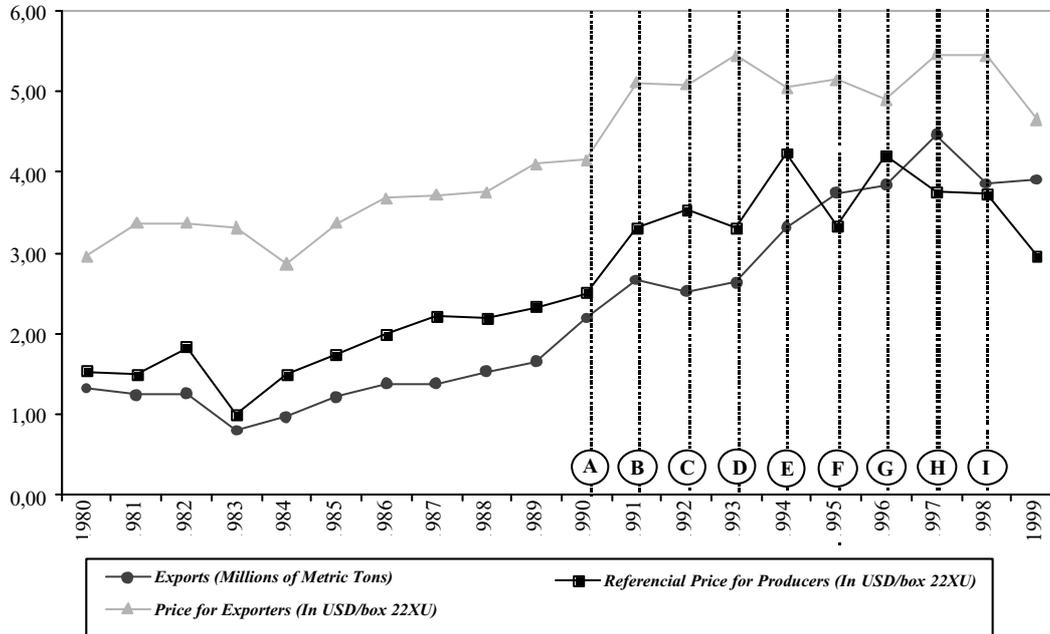
The following graph (Figure 3) describes the effects that the implementation of multilateral and bilateral trade policies has had on export volumes, prices paid to producers and prices paid to exporters of Ecuadorian bananas. It should be mentioned that although international trade policies are a key factor in the behaviour of the mentioned variables, such behaviour is also complemented by certain measures of macroeconomic policy, as well as of national regulations and policies.

4.2 National and institutional regulatory framework of the banana sector

The intervention of the state in banana production began in 1938 with Decree 162. This document stipulates that one of the duties of the state is to protect the agricultural wealth of the country. Banana production activity has always had a strong social component—the first norms were dictated by the Ministry of Social Welfare. Moreover, the Government dictated a policy through which it obligated trading companies to purchase bananas from local producers in the same quantity as those they exported from their own production. This action marked a policy of state intervention and promoted the development of small to medium sized banana plantations.

FIGURE 3

**Relationship between international trade policies,
volume exports and prices in the banana sector, 1980-1999**



- A:** The process of Custom Reforms is strengthened by the elimination of custom preferences through the removal of quantitative and non-quantitative restrictions.
- B:** In February of 1991, the prohibitions to import more than 6000 custom items are lifted, the requirements of previous licenses for 550 items are eliminated. The custom duties for imports are reformed, and tariffs are set between 0 and 20% (with the exception of vehicles). The anticipated charge of 80 per cent of import duties is also eliminated.
- C:** Consolidation of the process of integration of the Andean Pact, through the establishment of a common external custom duty in four levels: 5%, 10%, 15% y 20%. Gradual elimination of lists of exemptions and incentives to exports.
- D:** The Bananas Regime applied by the European Union. This regime establishes that, through the application of regulations 404/93 and 441/93, the application of custom contingents of 2,000,000 metric tons with a tariff of 100 ECU' for the importation of cananas originating in the producing countries of the "Dollar zone". As for policies of trade de-regularization, in that year, the registry requirements for the importation of agricultural products, inputs and machinery. In 1993, through the Law of Tax Reform, taxes for the export of traditional products are eliminated.
- E:** The Agreement of Economic Complementation is signed with Chile, with a 100 per cent custom duty preference for the exports of bananas from Ecuador.
The Agreement of Economic Complementation is signed with Argentina, with a 90 per cent, custom duty preference for the exports of bananas from Ecuador, of the type Plantain and Cavendish.
- F:** Ecuador enters officially to the World Trade Organization, (WTO).
Ecuador starts its first complaint before the Dispute Settlement Body of the WTO, for the application of the Banana Regime of the EU, this complaint is joined by United States, Guatemala, Honduras, Ecuador forming the Group of Five.
- G:** Trade agreements are signed with Japan and China obtaining a custom duty preference of 30 per cent and 40 per cent for fresh bananas from Ecuador.
- H:** In October of 1997, a panel of the WTO decides in favour of the Group of Five and requires the EU to change its trade policy for bananas.
- I:** Ecuador maintains its banana trade dispute with the European Union. The EU issues Regulation 1637/98 through which new rules are established for the importation of bananas from "Dollar Zone". The changes were an extension of the custom contingent of 2,200,000 metric tons with a tariff of 75 ECU's.

Sources: Various statistics.

Prepared by: CEDA

In 1955 the National Association of Banana Producers was created to deal with issues relating to the cultivation and production of bananas, for both local consumption and for export. The Association also addressed the need to start a phytosanitary campaign in support of banana production, due to a lack of resources from the state. Finally, the Association was to guide and resolve conflicts among producers, exporters and foreign companies involved in the banana sector.

To fulfil these activities, regulations for campaigning in defence of the banana (*Reglamento para la Campaña de Defensa del Banano*) were implemented. By 1960, norms were set through which the Association organized a campaign to reintegrate the producers, the fumigation companies (air and land), and the banana export companies. Other measures included recommendations for the proper use of resources. In 1963, the National Directorate of Bananas (*Dirección Nacional del Banano*) was created as an organism subordinate to the National Development Bank and was in charge of planning and directing the future of the banana sector in all its stages. This organization aimed to unify the administrative and financial activities of the various dependencies, to plan policies for the banana sector and regulate its activity.

The most significant change in government policy towards the banana sector occurred in 1970 with the creation of the National Banana Programme (PNB). Its main objective was to regulate all matters related to the production and commercialization of bananas. In addition, the PNB was to create a database as a tool to support the elaboration of policies for the banana production of the country (Riofrío, 2000). In 1977, new powers were assigned to the PNB that enabled it to make recommendations to the executive level of the Ministry of Agriculture and Livestock (MAG) on strategic policies to increase production, productivity, and improve the systems of commercialization in the banana industry.

The policies dictated by the PNB leveraged the growth of the banana sector by guiding its activities in technical matters such as phytosanitary management, establishment of areas for cultivation, airport management, productive land control, exports control, production of statistical information and establishment of technical norms for cultivated areas.

4.2.1 Analysis of institutional policies directed towards production and the determination of internal prices between 1980-1999

In the 1980s, the banana sector continued to be ruled by the National Banana Programme, which operated under the authority of the Ministry of Agriculture. This programme dictated important policies for the banana sector such as the reference price fixation for the producer, and the minimum reference price for the withholding of hard currency by the Central Bank to the exporters. This was done in order to maintain a fair price because in Ecuador, unlike in Central America and Costa Rica, the greater proportion of banana production belongs to small and medium sized farmers of the coastal region. In addition, the National Banana Programme continued to provide technical assistance to banana producers, and to provide services of automation to all producers registered in the programme. The regulation of the production of bananas also brings along a responsibility to look after the application of fair income distribution policies.

The 1980s was characterized by a generally slow economic growth due to a fall in the terms of trade and an absence of foreign credit, causing a contraction in total exports. In the case of the banana sector, however, there was a growth trend throughout the decade that

was interrupted in 1983 and 1984 due to the *El Niño* weather phenomenon which devastated large extensions of banana plantations on the Ecuadorian coast. In 1983, in response to *El Niño*, the Government implemented a policy of subsidized credits for the recuperation of those areas destroyed by this natural disaster. The number of hectares planted with bananas grew from 63,235 in 1980 to 85,187 at the beginning of 1990. Furthermore, policies of incentives and of encouraging new technology improved the productivity index such that it grew from 19.71 metric tons per hectare in 1980 to 25.69 metric tons per hectare in 1990. However, in the 1980s, it is difficult to find major policy variations that regulated banana producing activity.

A very important regulation for the promotion of exports was the Free Trade Zones Law (*Ley de Zonas Francas*) which was promulgated in 1991 to promote employment, generate hard currency and foreign investment, aid in the transfer of technologies and increase exports. The Law for the Facilitation of Exports and Maritime Transport (*Ley de Facilitación de las Exportaciones y de Transporte Acuático*) which unified and simplified the proceedings for international trade and eliminated some dispositions that restricted exports, was passed in 1992.

Together with measures to promote exports, the Government has also supported the export sector through a number of cooperation initiatives that has allowed the sector to increase its levels of efficiency, productivity and negotiation capacity with external competition (BCE, 1995). The Covenant of Cooperation (*Convenio de Cooperación*), signed in 1993 between the Ministry of Foreign Affairs and the Ecuadorian Federation of Exporters, aimed to coordinate programmes and actions for linkages between foreign importers and Ecuadorian exporters. It also aimed to establish an information network on the exportable products of Ecuador and the possibilities for investment in the country.

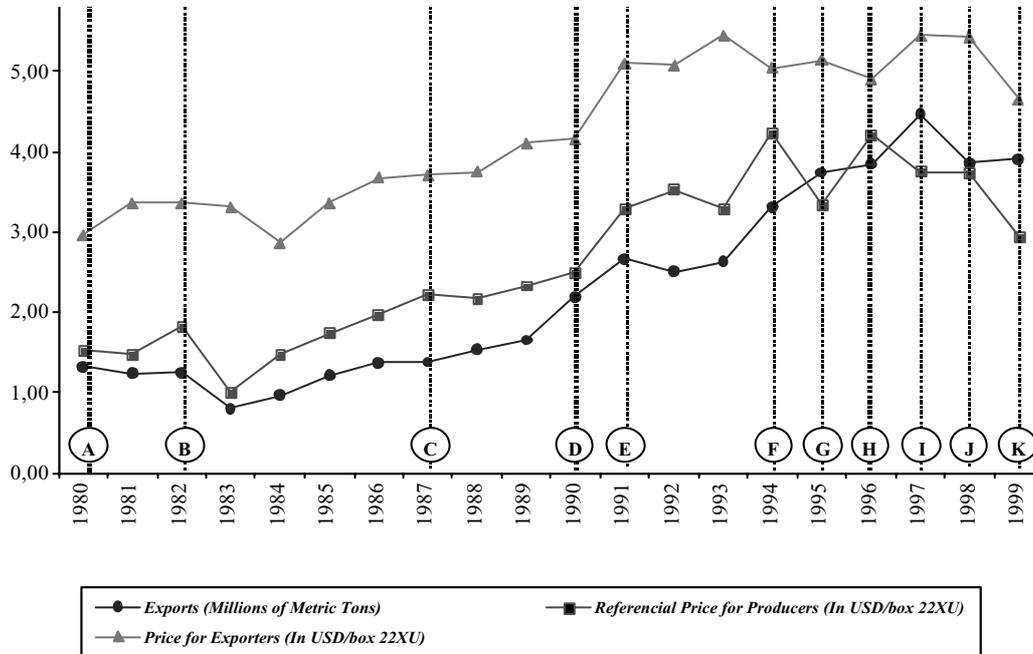
Under the Covenant of Cooperation, several other agreements have been established with Centres of Commercial Promotion (*Centros de Promoción Comercial*) such as in Miami and Hamburg. These measures have reactivated the participation of the ambassadors and other embassy personnel and consulates in charge of commercial and economic tasks.

Parallel to the application of these policies, specific measures for the banana sector were adopted during this period. In 1997, the categories 'Premium' and 'Extra' were established for first-class bananas for the export market, and minimum referential prices were set for those products. During the same year, the Law to Stimulate and Control the Production and Commercialization of Bananas is promulgated. Another important policy was the promulgation of the 'Regulations of Vegetal Sanitation' in 1998, which established certain parameters and applicable norms for the production of bananas.

In 1999, the National Banana Programme was phased out, and the Consultative Banana Council (*Consejo Consultivo del Banano*) was formed. The Council's principal work is focused on the discussion of policies for the promotion of the banana sector. According to this objective, the reform of the Law to Stimulate and Control the Production and Commercialization of Bananas is promulgated in 2000. In the 1990s, several initiatives designed to increase the growth of the economic sectors are adopted with a vision of transparency and the move away from tax, credit, exchange, and customs incentives that tend to distort the evolution of the sectors. External sales rise as is seen in the increase in export volumes, and a favourable performance in the export of bananas, which also influenced the behaviour of total exports.

FIGURE 4

**Relationship between national policies and regulations,
export volumes and prices in the banana sector, 1980-1999**



- A :** The Law of Prevention and Control of Environmental Contamination is in effect (1976).
The State, through the MAG, sets Minimal Reference Prices for the producer and Minimum Levels of Retention for exporters.
The PNB is the regulation entity for the banana-production activity.
- B :** The El Niño phenomenon devastates great extensions of the shore of Ecuador and policies of promotion with subsidized credit are required to recuperate the production of bananas.
- C :** The State promotes Agreements of Technical Cooperation with many sectors, to reduce costs in the fight against the “black sigatoka” and to improve and develop new varieties of bananas.
- D :** The minimum reference amount is set for the payment for quality Premium and Extra, and payments for markets and seasons are established. The fixed prices include a payment for the cost of production and a reasonable profit for the producer.
- E :** The Law of Free Trade Zone is promulgated.
- F :** Various important norms for the banana industry are dictated, among them, Environmental Management Bylaws for Banana Sector. The Manual for Vegetable Quarantine, The Law for the Facilitation of Exports, Norms over control of Plagues, Norms over Control of Packaging, new plantations of banana are prohibited.
- G :** New types of boxes for bananas are produced for “new markets”, regulations on packaging are dictated, measures of standardization are applied. The varieties of Red Banana y Baby Banana are incorporated to the policies of prices (diversification) Exports of those varieties begin.
- H :** The exports of bananas need to be qualified previously, minimum reference prices are set in US Dollars.
- I :** The Law to Stimulate and Control the Production and Commercialization of bananas is promulgated.
- J :** The Regulation on Vegetable Sanitation is promulgated.
- K :** The Banana Consultative Council is constituted and replaces the Banana National Program.

Sources: Various statistics.

Prepared by: CEDA

The process of trade liberalization in Ecuador has been implemented through a series of macroeconomic adjustment measures. The policy measures of liberalization have involved customs duty reform, support of export activities, external promotion, modernization of the institutional structures, and simplification of administrative processes related with external commerce.

The favourable performance of the banana sector was due in part to the commercial policy that aimed to eliminate legal and institutional barriers to international commerce in order to take advantage of the mechanisms of bilateral and multilateral integration and thereby extend and diversify the markets for Ecuadorian products.

In summary, the policies implemented in the 1990s were measures that focused on the incorporation of technology, the increase of production and the modernization of the banana producing sector. Figure 4 shows that generating policies to introduce new technology, liberalization and standardization, and to promote new markets, as well as to establish norms, began in 1994, and were directed to elevate the standards of environmental protection. This date coincides with the entrance of Ecuador into the WTO, and the graph shows that many of the norms and policies were directed to make the technical, sanitary and phytosanitary measures of Ecuador compatible with the standing norms within the WTO.

It can be seen that the exports, the prices to the producer, as well as the profits to exporters relate to the policies adopted. For example, during the 1990s, a sustained growth of exports occurs due to the implementation of better environmental and phytosanitary measures. This is complemented by policies of trade liberalization such as the Law for the Facilitation of Exports, the Free Trade Zones Law and above all, entrance to the WTO. Furthermore, starting in 1995, the prices for the producer declines which coincides with the increase of exports, reflecting an increase in production.

5. VALUATION OF TRADE LIBERALIZATION AND MEASURES OF STRUCTURAL ADJUSTMENT

5.1 Environmental valuation

The adoption of an economic model based on economic openness and the implementation of trade liberalization policies has changed the production patterns of agriculture in Ecuador. Additionally, the need to answer to international demand and increase the levels of productivity of cultivated land has prompted the adoption of new farming techniques that has resulted in the establishment of 'single crop' systems of production.

In the case of Ecuador's banana sector, the single crop system causes environmental consequences associated with the three banana production stages which are (i) the establishment of plantations, (ii) maintenance and management of plantations and (iii) packaging.

Even though environmental factors external to production but related to the banana market exist in Ecuador, there is no quantifiable data with which to measure the real effects caused by this sector. For this reason, the environmental evaluation of structural adjustment and foreign trade policies applied to the banana sector will be qualitative. The analysis begins with a brief description of the environmental effects associated with the three stages of banana production outlined above. Then, in order to determine the relationship of these effects with the adoption of national and international trade policies, the data from cultivated areas by province will be analysed as an indicator of the expansion of the agricultural frontier and of the utilization of natural resources. This data will be compared with the levels of biodiversity in each of the selected provinces. This will determine if the expansion of the agricultural frontier has resulted in changes to biological diversity in high-density production zones.

Import volumes of agrochemical components for banana production is another indicator of the effects of trade policy on the sustainable management of natural resources in the banana industry. The study analyses data from agrochemical component imports for the last three years.

Finally, given the increase in banana production and the changes in foreign demand in recent years, a number of instruments have emerged that are designed to increase the compatibility between the aspirations of both environmental protection and trade by promoting the adoption of clean production systems. Among these instruments are environmental certification programmes. Certification programmes encourage the incorporation of standards of sustainable production and promote conversion to production of other goods, such as organic bananas.

5.1.1 Environmental externalities associated with the banana production cycle

The expansion of banana production and the resulting extension of the agricultural frontier has caused important environmental effects associated with the three production stages. Each stage includes activities which provoke specific effects on the environment.

(i) Establishment of plantations

Because this stage includes land clearing, fertilization, soil preparation and planting, it has significant environmental impact. The need to remove vegetation from the soil to start the farming process, and the use of fertilizers for the preparation of the land causes soil erosion and changes in its natural structure. Furthermore, it affects the fauna and flora of the surrounding region and, in general, the alteration and loss of natural ecosystems, resulting in the loss of biological diversity in farming areas.

(ii) Maintenance of plantations

During this stage, the activities that produce the greatest environmental impacts are irrigation, fertilization, weed and vegetation control, and stalk support.

As far as irrigation is concerned, environmental impact is seen in the increased use of water resources, the loss of aquatic habitats due to changes in the course of rivers, and fewer available water resources for human use.

Fertilizing and weed control require intensive use of agrochemical products. These cause alterations in the composition of soil, water and air, the latter occurring mainly because of air fumigation. There are also alterations caused in natural ecosystems by direct influence (ingestion and contact), and by indirect effect (bioaccumulation) of chemical substances (Ríos, 1996).

According to the Ecuadorian Agricultural and Livestock Sanitary Service (SESA), there was an increase in the use of fungicides between 1997 and 1998 in order to control the diseases that appeared after *El Niño*. The number of fungicide applications in Ecuador is currently estimated to be between 14 and 17 annually. In 1997, after *El Niño*, this increased to 20 applications annually. In 1998, the number was estimated to be between 15 and 17 applications per year. The most common agrochemicals used in the banana industry are the fungicides and nematocides used specifically to combat diseases such as *Sigatoka Negra*. The most commonly applied fungicides are *Cyproconazol*, *Tilt 250*, *Benlate 50 per cent OD*, and *Calixin (Tridemorph)*.

In 1999, there was a notable reduction in the import volumes of fungicides. This can be attributed to the high import costs of these products during the economic crisis of 1999, as well as increasing resistance of the diseases to traditional agrochemicals.

Finally, supporting the tree stalks utilizing cane, guadua, pambil or plastic thread also causes environmental damage by deforestation and accumulation of waste.

TABLE 1
Fungicide import volumes (kilos)

<i>Product</i>	<i>1997</i>	<i>1998</i>	<i>% of Growth</i>	<i>1999</i>	<i>% of Growth</i>
Cyproconazol	5.700	5.700	0.00	1.128	-80.21
Propiconazol	368.376	364.120	-1.16	294.790	-19.04
Benomil	456.406	449.557	-1.50	241.959	-46.18
Tridemorph	202.400	259.800	28.36	144.740	-44.29

Source: SESA.

Prepared by: CEDA

(iii) Packaging

Banana packaging requires the use of a large amount of plastics, and the main environmental impact associated with this production stage is related to the increase of plastic waste. A study conducted in Ecuador to determine the environmental impact caused by the banana sector (Ferro, Rios, and Valdivieso, 1999) shows a waste volume of 12,581 metric tons. The waste is distributed among farms as follows; 9,340 metric tons in technical production units, 2,447 metric tons in semi-technical production units, and 793 metric tons in non-technical production units.⁴

These figures indicate that plantations with more technological development accumulate more waste. It should be noted, however, that technology based farms are, in turn, those that have better systems for management of waste and residue.

In general, during all three stages, banana production causes environmental impacts through the loss of biodiversity, alteration of water, soil, and air quality, accumulation of toxic waste and non-degradable material, and alteration in the health of the banana workers as well as the health of people who live in neighbouring areas of the plantations.

During the last several years, many of these impacts have been reduced through national and international initiatives and regulations as established by multilateral agreements on the environment, and free market mechanisms.

Among the most effective of these measures is the development and proliferation of environmental certifications. These regulations promote the adoption of environmental management systems, environmentally clean technology, and prevention and mitigation of environmental and human health impacts. Their success can be illustrated by the fact that the adoption of environmentally friendly production systems results in the acceptance of the Ecuadorian banana in demanding international markets. Several environmental certification programmes have been adopted by a number of banana companies, including the ISO 14001 standard and the Eco-OK Programme. In terms of organic certification, the banana industry works with the Organic Crop Improvement Association International, Inc. (OCIA) of the United States, which operates primarily in the El Oro province, and Eco-Cert based in Germany and Italy, which operates in the Guayas and Los Ríos provinces.

⁴ This data is based on a field study conducted in 45 technical, semi-technical, and non-technical plantations in the provinces of Los Rios, el Oro and Guayas.

Companies that have adopted the ISO 14001 certification have developed a system of environmental management that is designed, implemented and maintained in accordance with the standard and is applicable to all the activities of banana plantation, farming, harvesting and packaging. These programmes encourage people to comply with environmental principles such as the protection of natural ecosystems, preservation of wildlife, management and appropriate use of chemicals, comprehensive management of degradable and non-degradable waste, management and appropriate use of soil and water resources, and the planning and monitoring of the environment.

Eco-OK is the green label promoted by the Rainforest Alliance and there are presently 7054 hectares certified under this programme. Eco-OK can be differentiated from ISO 14001 because it establishes not only environmental commitments (as above) but also sets forth norms for the fair and just treatment of the workers and their families, and promotes community relations (Muñoz, 2000).

Even though the adoption of environmental certification is a new approach, it represents a change towards the development of sustainable production systems. This will not only increase the commercial value and access to new markets, but it will also promote the conservation of natural resources and a better well-being for those workers who rely on banana production.

In addition to the emergence of environmental certifications, Ecuador's banana industry relies on other important initiatives in terms of sustainable production. One of these initiatives is organic production. Although currently there is no record of the number of producers who have adopted this measure, the National Banana Corporation (CONABAN) has designed a project to encourage the production of organic bananas, principally in the El Oro province. The goal of the project is to convert approximately 25,000 hectares to organic production. Currently, 10 per cent of total banana production is organic, i.e. has totally eliminated the use of agrochemicals, and 90 per cent has attained an 'ecological character', having gradually reduced the use of agrochemicals. The latter 90 per cent is currently in the process of converting to organic production.

Organic production offers both advantages and disadvantages. Included among the advantages are (i) improved biodiversity management and recuperation, (ii) cost reduction as a result of decrease in use of agrochemicals and increase in labour, which will, in the medium term, reduce costs and increase direct employment and (iii) access to new market niches composed of consumers with high standards regarding the genetic, chemical, physical, mechanical and social components of their food.

Among the disadvantages, a number of banana producers have mentioned problems such as (i) prohibitive costs in acquiring organic certification, the majority of which are managed by large monopolies, (ii) intermediaries in the certification process that increase the economic and administrative costs required to obtain certification, (iii) long assessment periods in the certification process, which can last from three to five years, (iv) advantages of organic production cannot be realized in the short-term because the maximum production curve of organic cultivation requires two to three years of organic system application and (v) difficulties in fending off massive attacks of disease with organic techniques, which can lead to renewed use of agrochemicals.

Other important initiatives include the 'fair trade' incentive, which encourages paying producers the real price of the banana and offering incentives for the adoption of 'environmentally friendly' technology and environmental certifications. An example of these latter

incentives in Ecuador is the Max Havelar Fair Trade Organization of Holland which works with 100 small banana producers, and the Small Producers Association (UROCAL) with the assistance of the Dutch Agency for Cooperation for Development to promote the adoption of clean technology, the financing of certain production costs and the monitoring of production systems to ensure compliance with certain environmental and social standards (Muñoz, 2000).

5.1.2 Expansion of the agricultural frontier and its impacts on biodiversity

The structure of the banana industry in Ecuador has changed to the extent that the land area used for banana production has expanded dramatically in recent years.

The establishment of a single crop system, as in the case of the banana, requires the complete removal of the original vegetation in the area to be planted. In addition, the production of bananas requires constant control of weeds and other vegetation that affects the normal development of the fruit. As a result, the possibility of having any biodiversity within the plantation is nil. The native vegetation of the coastal region has been almost entirely eliminated in order to make room for agricultural production suitable to the natural conditions of the area, such as bananas, although there are also plantations of cacao, citrus, rice, maize and, in recent years, palms. Cattle raising in the region is of little significance and occupies a relatively small area of land.

Additionally, modern agricultural practices have gradually displaced the old cultural labours of producers, a change considered to be progress. The general effect of using modern techniques (which usually requires the establishment of single crop systems) is to increase the productivity of the cultivated surface. However, the negative consequences of monoculture farming that excessively uses agrochemical products and sophisticated machinery are widely recognized (Ríos, 1999).

It should be noted however, that there are areas around plantations where some native species can survive. This effect is caused by the presence of adverse farming conditions such as swamps, or because a backup zone is left in front of principal highways. It is also important to consider the remaining vegetation that grows along the water causeways, particularly in those that have not been diverted for irrigation.

The development of this part of the study begins with analysing the increase of the areas cultivated for bananas during the last two decades, and to relate these increases to the impacts of national and international trade policies on the banana sector. The impacts provoked by the expansion of the agricultural frontier for banana production on biodiversity will be determined qualitatively.

Expansion of the agricultural frontier

Comprehensive data concerning the total area of land devoted to banana production is not available. The information that does exist has been collected by the National Banana Programme (PNB). Although a considerable number of hectares have been registered by the PNB, this does not represent the total; it is very difficult to determine the precise number of hectares of banana cultivation in Ecuador for a number of reasons. One is that most of the statistics take into account the harvesting of bananas in the principal production

provinces, but they do not include banana production in the other provinces that produce lesser amounts.

For this analysis, the source of information is the National Institute of Statistics and Census (INEC), which collects information on banana production in all provinces without distinction. This source of information lacks continuity through the years and, as a result, the analysis includes only the years for which there is complete information, i.e. 1986, 1987, 1989, 1990, 1991, 1992, 1994 and 1995.

In 1986 there were approximately 122,400 hectares of land cultivated for bananas nationwide, the majority of which were concentrated in the provinces of El Oro and Guayas—29 per cent and 20 per cent respectively. Additionally the provinces of the highlands (Azuay, Bolívar, Cañar, Cotopaxi and Pichincha) have a small percentage of cultivated surface area (between 1 and 5 per cent), mainly because the economies of these provinces do not depend exclusively on banana production. In 1987, the cultivated surface area is reduced to 116,500 hectares, a 5 per cent decrease from the previous year. This can be attributed to the loss of plantations provoked by the natural disasters caused by *El Niño*. In this year, the largest percentage of area cultivated for bananas, as during the previous year, is located in the provinces of El Oro and Guayas, with 30 per cent and 19 per cent respectively. The situation did not change for the provinces of the highlands previously mentioned. By the end of the 1980s, the cultivated surface increases again to 129,900 hectares, an increase of 12 per cent compared to 1987. In the Guayas province, the cultivated area experienced little growth and continued to represent 19 per cent of the total area as it did two years before. In the province of El Oro, the cultivated surface area increased a little but did not achieve a profound rehabilitation of the plantations and now represents 28 per cent of all cultivated areas.

At the start of the 1990s, the increase in cultivated area continues, and there were approximately 143,400 hectares cultivated in the entire country. This represents an increase of 10 per cent compared to the previous year. Of the entire cultivated area, 29 per cent belongs to the El Oro province, 20 per cent to Guayas, 4 per cent to Los Ríos, 11 per cent to Manabí, 9 per cent to Esmeraldas and the remaining 17 per cent is divided among the provinces of the Highlands. The largest growth rate of the period occurs in 1991, a rate of 17 per cent, from 143,400 hectares in 1990 to 168,100 hectares in 1991. This can be attributed to the implementation of policies of minimum reference price fixing with gradual adjustments, which gave producers more business security and encouraged an increased participation from a new segment of the population in banana production. In 1990, the Los Ríos province had 20,010 cultivated hectares of banana, which represented 14 per cent of the national total. In 1992, it increased to 29,160 hectares, or 17 per cent. A very important aspect to take into account is that the provinces of El Oro and Guayas maintained an accelerated rate of growth in the previous years, but experienced decreases of 27 per cent and 18 per cent respectively in 1992. This can be seen as a favourable factor that indicates diversification from the banana.

In 1992, the number of cultivated hectares increased by 6 per cent to 178,500 hectares. After this year, the cultivated areas of banana begin to decline or to stagnate in the El Oro province due to changes in the production structure, the most important of which is the predomination of large plantations that almost completely control the exportable production, which implies the absorption of small plantations. In the province of Los Ríos, the cultivated surface increased by 20 per cent, due to the presence of large banana plantations.

In the period 1992-1994 there is an enormous growth in land cultivation for bananas—up from 178,500 to 210,400 hectares, an increase of 18 per cent. This growth raised great concern for the preservation of the environment in these areas. In response, the Ecuadorian state promoted new normative and national regulations.

The result of the application of these laws has been evident since 1995, particularly as can be seen in the general lack of expansion of the banana cultivating area nationwide. In 1995, the increase is only 2 per cent compared to the previous year, up from 210,400 to 213,700 hectares. This same result is evident at the provincial level. The majority of banana producing provinces have maintained relatively constant cultivated area totals in recent years, and some provinces have considerably reduced their cultivated areas.

Impacts on biodiversity

Ecuador has sustained the greater proportion of yearly increases in agricultural production by expanding its agricultural frontiers. Although most of these expansions occurred in the lowland areas of the coast and the eastern regions of the Andes, a significant growth has also occurred in the highlands, mainly on the steep mountainsides.

The fragile soils of the slopes have been under increasing threat from the expansion of the agricultural frontier. The rate of soil erosion has accelerated with the disappearance of the natural vegetation, resulting in a substantial loss of superficial layers of the soil. The effect of erosion also changes water currents downstream due to sedimentation.

The biological diversity of the native forests of Ecuador's coast is an important natural endowment of the country. Regrettably, many wild species are threatened by the constant destruction of their natural habitats (Ríos, 1999).

Ecuador's coastal zone lies on the western slopes of the Andes and borders the Pacific Ocean. The coast is subdivided into north, central and southern regions that are also composed of various sectors such as mountainous ranges and lowlands. With the exception of the north, many centuries of human activity have reduced the natural vegetation of the region to small isolated remains. Its transformation has been particularly rapid in the last five decades.

From the end of the 1960s to the mid 1980s, the area of coast used for agriculture has doubled (Whitaker and Alzamora, 1990). Its transformation was initially related to the need to accommodate a rapidly growing population and to adjust to the growing national and international demands for agricultural products (Bromley, 1981; Devalaud, 1980; PMRC/FPVM, 1989; Sierra, 1996; Sierra and Stallings, 1998). Some researchers estimate that close to 20 per cent of the species and plants in the region are endemic (Dodson and Gentry, 1993). Various studies suggest that the transformation and degradation of the natural ecosystems of the Central American region are occurring most rapidly in Ecuador.

Several ecosystems were identified in the principal banana producing provinces, Esmeraldas, Los Ríos, Guayas and El Oro, and the twelve banana producing cantons,⁵ in the Map of the Vegetation of Continental Ecuador (Sierra et al., 1999).

⁵ Quinindé, Babahoyo, Baba, Quevedo, Ventanas, Milagro, Naranjito, El Triunfo, Machala, Pasaje, El Guabo and Santo Rosa.

1) Northern sub-region (humid)

This region is located at approximately 0° on the border with Colombia. It includes the provinces of Esmeraldas, part of Carchi, Imbabura and Manabí, and is very humid. The vegetation is a continuation of the Colombian Chocó. The Quinindé canton, which belongs to the province of Esmeraldas, is located in this region.

Evergreen Piedmont Forest—sector on the slopes of the Western Mountain Ranges.

This formation is characterized by a dominance of arboreal species, in particular the group of palm. The canopy can reach 30 metres or more. The forest is dense, is located in the province of Esmeraldas and includes the entire area of the banana producing canton of Quinindé at the foot of the western ridges in the provinces of Carchi, Imbabura and Pichincha.

This ecosystem has been breached principally for agricultural purposes, but also for human settlement. The complete removal of the original vegetation of this ecosystem of this area is not attributable exclusively to banana producing activity since this canton is one of the least banana cultivated areas. The plantations which predominate in the area produce banana, African palm, hearts of palm and rubber.

2) Central sub-region (dry and humid)

This region extends from approximately 0° in the province of Manabí to 3° S in the province of El Oro. Its southern extreme extends to where the Jubones River meets the Pacific Ocean, and follows the river along the mountain ranges. The northern limit of the region coincides approximately with the cold Humboldt Current, which advances from the south and turns towards the Galapagos Islands in front of the province of Manabí.

Evergreen Forest of the Lowlands—lowland sector.

This is an ecosystem of arboreal vegetation of more than 30 metres in height with a predominance of species from the families of the *Arecaceae*, *Moraceae*, *Meliaceae*, *Lauraceae* and of the order of the *Fabales*. The *epiphytes* (orchids and bromeliads) and herbaceous species of diverse families are prominent in decomposing forest materials in various places along the shores of the Rivers Guayas, Palenque and Jauneche in the province of Los Ríos, and in the forests between Naranjal and Ponce Enríquez in the province of Guayas, at elevations of 100 to 300 metres above sea level.

The wide expanse of this ecosystem means that most of the banana producing cantons in the country are located in this area, including Babahoyo, Baba, Ventanas and Quevedo (Los Ríos); Milagro, Naranjito and El Triunfo (Guayas); and El Guabo (El Oro).

The northern part of this forest has been eliminated in its entirety and there is no remaining native vegetation. The principal agricultural activity of the cantons located here is focused on banana plantations that cover large extensions of land and are concentrated in the hands of a few producers. The Quevedo canton, due to its natural characteristics (in soil, air, water and light) has become one of the most attractive regions for the cultivation of the most profitable agricultural products where yields are among the highest in the country. Crops of importance include banana, African palm, rice, mangoes and sugar cane.

The central part of this ecosystem has been breached to a great extent by the populations that inhabit the area and that are dedicated to extensive and intensive agricultural

labours using the natural resources of this ecosystem. A sizeable portion of the land in this area is occupied by the Manglares-Churute Ecological Reserve (35,042 hectares), which extends to the lower river basin of the Guayas River. However, Milagro, Naranjito and El Triunfo are banana producing cantons located in the area whose agricultural activities are similar to those practiced by the cantons in the northern part of the ecosystem. In the El Triunfo canton, short-term crops are also cultivated, such as corn, soy, beans and others. Such practices provoke less deterioration of the soil due to the rotation of the crops.

The southern part of this ecosystem has been substantially eliminated, but to a lesser extent than in the north and central areas. The Cajas National Park is very important here, primarily because of the 28,808 hectares it preserves. In this zone, the threat to the ecosystem relates principally to the ownership of land and to human settlements in areas surrounding the National Park, and in particular to the continuous pressure for agricultural production. The harvesting of cacao, banana, sugar cane, corn and soy are characteristic of this area. The El Guabo canton, one of the best banana producing regions of Ecuador, is located in this region, where banana production is based on small areas of land.

3) Southern sub-region (dry)

This region is located from approximately 3° S in the southern part of the Jubones River basin to 4° S on the border with Peru. It covers the provinces of El Oro and Loja and represents the continuation of the northern limit of the arid and semi-arid formations of northern Peru.

In this sub-region are the traditional banana producing cantons of Machala, Pasaje and Santa Rosa, in the province of El Oro.

Semi-deciduous Piedmont Forest—sector of the slopes of the Western Ridges.

The arboreal vegetation is somewhat dispersed, with trees of no more than 20 metres in height with a dense herbaceous strata of ferns and non-graminaceous plants, found on steep slopes. It is located in the province of El Oro between Pasaje and Chilla, and in Macará in the province of Loja in the petrified forest of Puyango at elevations of 200—400 metres above sea level. Some floristic elements of this zone represent the remains of the type of vegetation that originally advanced as far as the Guayas province but which has disappeared in most places.

The cantons of El Guabo (partially) and Pasaje (almost entirely) are located in this zone. El Guabo has an agricultural structure almost totally dedicated to banana production. In Pasaje, although the principal activity is the production of bananas, there are other crops cultivated such as cacao and corn. The limits of the banana producing zone are set by the four cantons from El Oro. They form a circular area dedicated exclusively to bananas and they do not contain any remaining native vegetation.

The native Piedmont ecosystem of this region has been destroyed, with no elements of the semi-deciduous vegetation remaining. A small presence of other ecosystems were found within the semi-deciduous Piedmont Forest (*Bosque Semideciduo Piedmontano*) such as the Mountain Mist Forest (*Bosque de Neblina Montano*) and the Dry Highlands (*Páramo Seco*) in Pasaje, and the Dry Mountain Bush (*Matorral Seco Montano*) in El Guabo.

Mangroves—sector of the lowlands.

The natural formation of this region is similar to the Gulf of Guayaquil. Some authors distinguish these mangroves from the mangroves of the central coast of Ecuador. They are the most meridian mangroves of continental Ecuador and are found on the shores of the provinces of El Oro, Machala, Puerto Bolívar and Santa Rosa.

A significant part of this mangrove ecosystem is found (although in a reduced proportion) in Machala. The mangrove ecosystem has been devastated in order to make room for the shrimp industry. The other part of this canton is dedicated exclusively to the production of bananas. Bananas have also been produced for many years in this region which has caused an intensive use of natural resources. This is due to a large extent to the exhaustion of soils caused by single crop production.

In the Santa Rosa canton, mangroves are present in a larger proportion than in Machala. Similarly, a significant portion of its surface is directed to the production of bananas, (principally in the southern and eastern part), while another large portion (the northern and western part) is directed to the production of shrimp.

In both cantons, there is little remaining mangrove vegetation and other existing ecosystems have been breached by the populations of those cantons (for agricultural and fishing purposes). *Included among these breached ecosystems are the Humid Mountain Bush (Matorral Húmedo Montano), the Herbaceous Highlands (Páramo Herbáceo) in the region of the Machala canton, the Dry Mountain Bush (Matorral Seco Montano) and the Dry Highlands (Páramo Seco) in the Santa Rosa canton.*

Considering that most of the continental surface area has been infringed upon, it can be argued that the pressure on the natural habitats of Ecuador originates principally from the expansion of the agricultural frontier and the conversion of natural vegetation to plantations of different scales (including banana plantations). According to Whitaker and Alzamora (1990), in the coastal region where most of the areas under the most critical pressure are located, the surface area under agricultural use has doubled between 1960 and the mid 1980s.

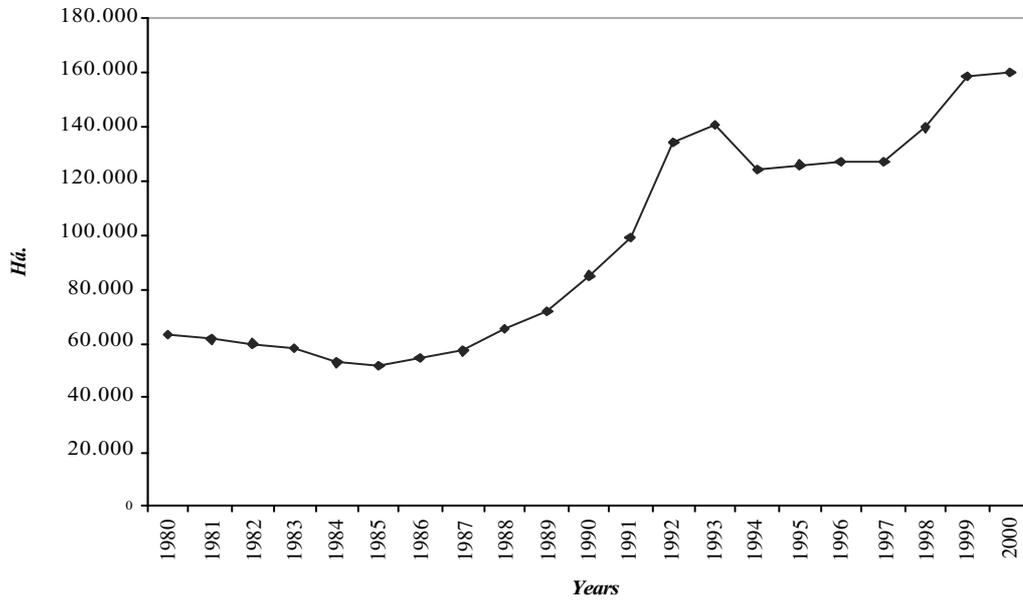
Since the mid 1980s, the extraction of wood by small and large scale producers, as well as the unrestricted cultivation for agricultural products, has become the principal reason for the destruction of the forests of the region. Sierra and Stallings (1998) estimate that the rate of deforestation in the northern part of the coast is nearly 1.9 per cent annually, the highest rate in the country, compared to the 0.6 per cent in the northern Ecuadorian Amazon. The natural areas which border the breached areas, are thus subject to enormous pressure due to the extensive use of certain resources, specifically the selective extraction of wood.

5.2 Economic valuation

5.2.1 Production, acreage and productivity

The land cultivated for banana production increased by 153 per cent between 1980 and 2000, from 63,235 hectares to 160,001 hectares (Figure 5). This growth rate can be explained in two stages—the first stage corresponds to the 1980s and is characterized by a moderate growth of 14 per cent (to 71,824 hectares) in 1989. The second stage includes the 1990s, in which the rate of growth is 88 per cent (according to estimated data from 2000).

FIGURE 5
Cultivated surface of banana, 1980-2000

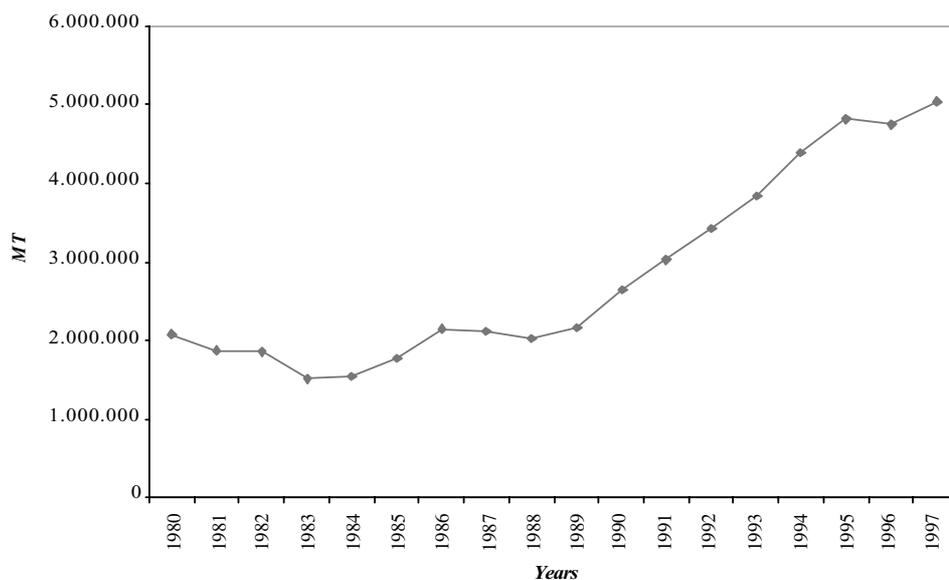


Source: *El Bananero* Magazine, November 2000.

Prepared by: CEDA.

Banana production increased by 150 per cent between 1980 and 1997 (Figure 6). During the 1980s, production grew from 2,270,000-2,460,000 metric tons, which is an 8 per cent growth rate. In the 1990s, the production of bananas increased from 2,850,000 to 5,750,000 metric tons, equivalent to a growth rate of 100 per cent.

FIGURE 6
Banana production in the coastal region, 1980-1990

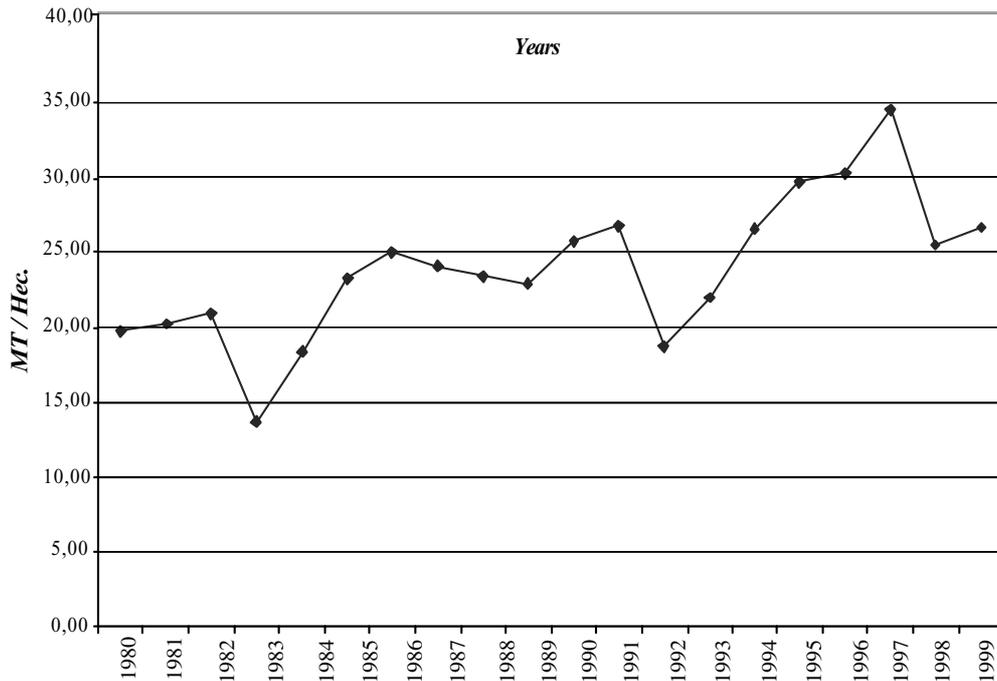


Source: Statistics from INEC.

Prepared by: CEDA

The banana industry experienced relatively favourable productivity between 1980 and 1999. In 1980, productivity per hectare was approximately 19.71 metric tons (1,011.40 boxes). In 1999, productivity increased to 26.99 metric tons per hectare (1,375.30 boxes per hectare) (Figure 7). The increase in production occurred because of an increase in the cultivated surface area rather than because of an increase in productivity.

FIGURE 7
Banana yields, CEDA, 1980-1999



Source: Statistics from INEC.
Prepared by: CEDA.

In contrast, in the 1990s, banana productivity did not vary significantly from year to year. In 1990, banana yield stood at 26 metric tons per hectare; by 1999, it rose to only 27 metric tons per hectare (Figure 7). The degree of increase in production was partially independent of the increase in the cultivated area, which is demonstrated by a comparison between the rates of increase in the cultivated area and the rates of increase in production for the decade. This relationship is reflected in the low yield per hectare.

5.2.2 Effects on the productive structure

Ecuador's foreign trade policies implemented during the 1980s and 1990s significantly affected the productive structure of the banana sector in terms of the size of the plantations and the levels of production.

In relation to size, it should be emphasised that the size of plantations has been relatively stable over the years. In 1989, farms ranging in size of between 21 and 50 hectares represented most of the national banana production surface at 28.1 per cent. In the following two years, this figure remains essentially the same at 28.8 per cent in 1990 and 29.0 per cent in 1991. On the other hand, farms with an extension ranging between 6 and

10 hectares represented 10.2 per cent of the national banana production surface in 1989, 10.4 per cent in 1990, and 10.1 per cent in 1991. Finally, plantations of between 501 and 1000 hectares or more represented 2 per cent in 1989, 1.7 per cent in 1990, and 1.8 per cent in 1991. Table 2 summarizes the national distribution of the banana production surface from 1989 to 1991.

TABLE 2
Distribution of the national banana production surface by plantation size

<i>Size of the Farm (Hectares)</i>	<i>1989</i>	<i>1990</i>	<i>1991</i>
1 – 5	3.6	4.2	4.2
6 – 10	10.2	10.4	10.1
11 – 20	13.6	14.4	14.5
21 – 50	28.1	28.8	29.0
51 – 100	20.9	21.4	21.8
101 – 200	9.5	8.9	9.8
201 – 500	9.8	8.2	7.3
501 – 1000	2.0	1.7	1.5
1001 – plus	2.3	2.0	1.8
TOTAL	100.0	100.0	100.0

Source: PNB.

Prepared by: MAG, PRSA, DAP.

Although this tendency remained constant during this three-year period, important changes occurred in 1993, such as an increase in the number of smaller farms. According to data provided by System Information and Agricultural Statistics (SICA), in 1998, 80 per cent of the banana producers owned plantations ranging between 1 and 30 hectares, 10 per cent owned plantations ranging between 51 and 100 hectares, and 3 per cent of the national producers owned plantations with more than 100 hectares (see Table 3). These figures show that the agricultural frontier expanded, with a particularly significant increase in smaller plantations. This occurred even though in 1994 the national Government enacted Executive Decree 2294 to initiate the Banana Plantations Reconversion Plan, with the main objective to prohibit the plantation of new areas and to establish an economic compensation for felled and burned hectares.

TABLE 3
Productive structure of banana plantations (1998)

<i>Size of the Farm</i>	<i>Number of Producers</i>	<i>Percentage</i>
1 – 30	3.965	80.10
31 – 50	480	9.70
51 – 100	366	7.39
More than 100	139	2.81
TOTAL	4.950	100.00

Source: PNB

Prepared by: Project SICA.

Today there are 5,491 banana producers in Ecuador, of which 80 per cent own plantations no larger than 30 hectares. This means that the productive structure of the banana sector depends considerably on the small and medium sized producers (SICA, MAG, 1998).

5.2.3 Effects on the technological structure

In the 1980s, technological changes in Ecuador's banana sector arose from the need to deal with events of natural phenomena. Beginning with *El Niño* in 1982 and the first outbreak of the *Sigatoka Negra* disease, the sector began to incorporate better water drainage systems and modern aerial fumigation systems and to develop new and more plague resistant varieties of banana. However, this technological development did not happen evenly throughout all farms. Today, Ecuadorian farms are classified as technology based, semi-technology based, and non-technology based.

The classification criterion is based on infrastructure and agronomic management aspects. The technology based farms have a suitable aerial irrigation infrastructure, functional drainage, central packaging and cableways, and have developed appropriate agronomic practices for weed and nematode control, fertilization, plant propping, bunch casing and age felling. The semi-technology based farms have only some of the above-mentioned practices and generally have limitations in their drainage systems, packaging and cableways. Additionally, their agronomic practices tend to be incomplete and their yields reach approximately 1,600 boxes (22XU)⁶ per hectare per year. The non-technology based farms do not have irrigation, drainage, or fertilization systems and their agronomic practices are based on traditional planting and harvesting practices.

In the 1980s, a high percentage of banana production came from non-technology based farms. In 1989, 28.2 per cent of production came from technology-based farms, 15 per cent from semi-technology based farms, and 57.3 per cent from non-technology based farms. In 1990, this tendency continued; 24 per cent of the production came from technology based farms, 12 per cent from semi-technology based farms, and 64 per cent from non-technology based farms.

In 1991, important changes occurred in the technological development of the sector which resulted in a continuous increase in the number of plantations with higher levels of technology. According to the National Banana Programme and the Southern Littorals and the Galapagos Regional Under Secretariat of the Ministry of Agriculture and Livestock, at the end of the 1980s the technology based farms represented approximately 30 per cent of banana cultivation. By 1999, the land occupied by technology based banana plantations reached 70 per cent (see Figure 8), while the area occupied by non-technology based plantations was at only 10 per cent. In the case of the semi-technology based plantations, the proportion does not vary greatly from 1989 to 1999. The technological level reached over the last decade is quite significant; since 1996, the technology-based and semi-technology based businesses represent 90 per cent of the total planted surface. This reflects the efforts made by the banana sector to improve its production process efficiency over the last few years.

⁶ 22 per unit.

The causes of the increase in levels of technology in banana production are closely linked to the implementation of national production and trade policies, as well as international trade policies, i.e., national pricing and commercialization policies. Since the regular fixation of a minimum price for the Ecuadorian banana producers in 1993, the level of technology based production has increased.

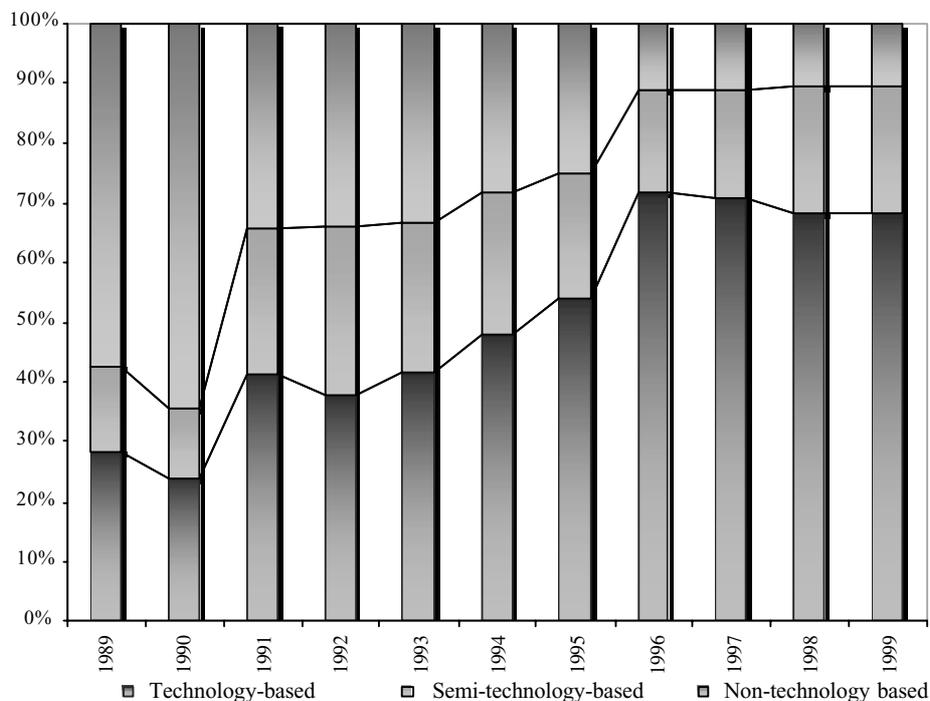
While the implementation of price fixing policies occurred in 1993, the European Union adopted a quota regime for their banana imports which forced Ecuador to channel its export offer to new markets, and also incorporate better technological processes into its banana production systems.

In addition, Ecuador joined the WTO in 1995, forcing the banana producers to respond to the sanitary and phytosanitary norms and requirements of that organization, as well as to adapt to the competitiveness requirements of a free market economy.

Another important phenomenon related to the technological development of the sector is the demand for more environmentally friendly products. An important niche was established for the marketing of organic bananas. In 1998, world imports of organic bananas were estimated to reach 27,000 metric tons in comparison to the total import of bananas at about 11 million metric tons. Even though the commercialized percentage of organic bananas is still small in comparison to the total, it has increased at an approximate rate of 30 per cent per year. The most important markets for organic banana are the United States, the European Union, Japan and Canada.

FIGURE 8

Technology based, semi-technology based and non-technology based banana plantations, 1989-1999



Source: PNB

Prepared by: CEDA.

In Ecuador, this market has become especially important for the small producers, who have the best conditions in which to implement organic production systems. In this regard, several projects involving the direct participation of small producers have been developed. In the medium and long term, increase in the demand for organic bananas holds great potential for small producers.

The major markets for agricultural products have shown a growing tendency to demand products that have incorporated environmental and social factors into the production processes, reducing the negative impacts on the environment and improving the quality of life of the social stakeholders involved in the production activity (Riofrío, 1995).

During the last decade, the world banana market has been characterized by an increasing demand for product quality. This demand generates technical and economical problems from the harvesting stage to the time it reaches the final consumer. The feasibility of the banana sector depends on a number of physical changes, including pathological and physiological alterations (Riofrío, 1997). In order to have access to world markets, the exporting countries need to make sure that their products meet international levels of safety, quality and appearance as required by the product norms in the *Codex Alimentarius* (FAO/WHO).

In order to access international markets with a high quality product, the banana sector has developed a consciousness of the environmental effects of its activity. In this context, the sector has improved the use of its resources and avoided practices that may lead to environmental degradation. Furthermore, the sector has developed its own environmental rules and norms, which assume a technological improvement and include:

- Capacity building and training programmes for its workers in the use and application of agrochemicals.
- Water quality monitoring in the wells for human and animal consumption.
- Liquid waste treatment systems, such as for agrochemicals.
- Use of polyethylene bags according to the size of the bunch, prohibiting the presence of plastic bags on the plantation grounds.
- Integration of environmental research for productive processes, such as the substitution or reduction of agrochemicals.
- Environmental waste management.
- Water flows treatment.
- Reduction of non-biodegradable materials.

In order to satisfy the increasing demand for environmentally friendly bananas, the producers have integrated clean technologies for waste management and recycling (use of organic material, re-use of empty bottles, etc.).

Another initiative involves certification mechanisms, such as 'green seals'. These have become a tool with which producers and consumers can integrate and reconcile their interests using production quality and environmental logic (Riofrío, 1999). Environmental certification helps banana producers demonstrate their environmental commitment to consumers and also helps them to be more competitive in the global market.

5.2.4 Effects on the banana sector's international terms of exchange

Another key aspect in the valuation of trade policies related to the banana sector is the analysis of the terms of trade. This section will emphasize the evolution of the terms of trade for both the production and the exporting sectors, in order to have a clearer understanding of the economic situation of the stakeholders in the banana production cycle.

The terms of trade reflect to an extent the level of competitiveness of a sector of the economy by connecting international prices to national prices. However, it is important to mention that the terms of trade are different for producers and exporters, which is the reason why a comparative cost analysis is necessary for the former group in order to determine their purchasing power in relation to the prices they receive. For the latter group, a similar analysis exists that includes the volume of exports in order to examine the economic situation of the exporting sector.

Effects on the producer's terms of exchange

In order to analyse the effects of the terms of trade on producers, we use the minimum referential price, which is fixed by the Government, and at which the exporting companies buy the product from the Ecuadorian producers. This price is a function of the type and size of the box of bananas, and can vary according to quality and the final destination market. In this analysis, we use the minimum referential price for a box of bananas (22XU).

Before determining the effects of the terms of trade and in order to understand the tendencies of the referential price, it is first necessary to describe its evolution over the last two decades. The price for the producer has shown a generally positive evolution, especially in the 1980s when it seldom decreased. During the 1990s, the evolution of the minimum referential price continued to be favourable. This favourable tendency during the 1980s and into the 1990s doubled the producers' income (measured in constant sucres) from one decade to the next (Davila, 1991).

During the 1980s, there was, in general, little government policy to foster agricultural production, particularly as related to pricing. Furthermore, the few government policies that were in place were directed to foster the export of agricultural products. Thus there was no control over the price that was paid to the banana producers until the beginning of the 1990s, when price fixing policies appeared. As previously mentioned, in 1983 there was the greatest economic crisis of the decade for banana producers as far as income generation. The economic crisis of 1983 can be explained by poor channelling of emergency fund resources, among other reasons.⁷

On the other hand, a fall in the minimum referential price in 1988 can be attributed to two policy measures of great importance for the banana sector and the economy in general. First, a foreign trade policy was set in place to fix minimum prices for the purchase of agricultural exports, in order to assist the sector with trade liberalization and simplify customs procedures and controls. Second, a vague exchange rate policy was set in place that applied a system of weekly mini-devaluations and resulted in a deterioration of the purchasing power of Ecuadorians in general and even more so for agricultural and banana producers who could not afford inputs for their production since most of them were imported.

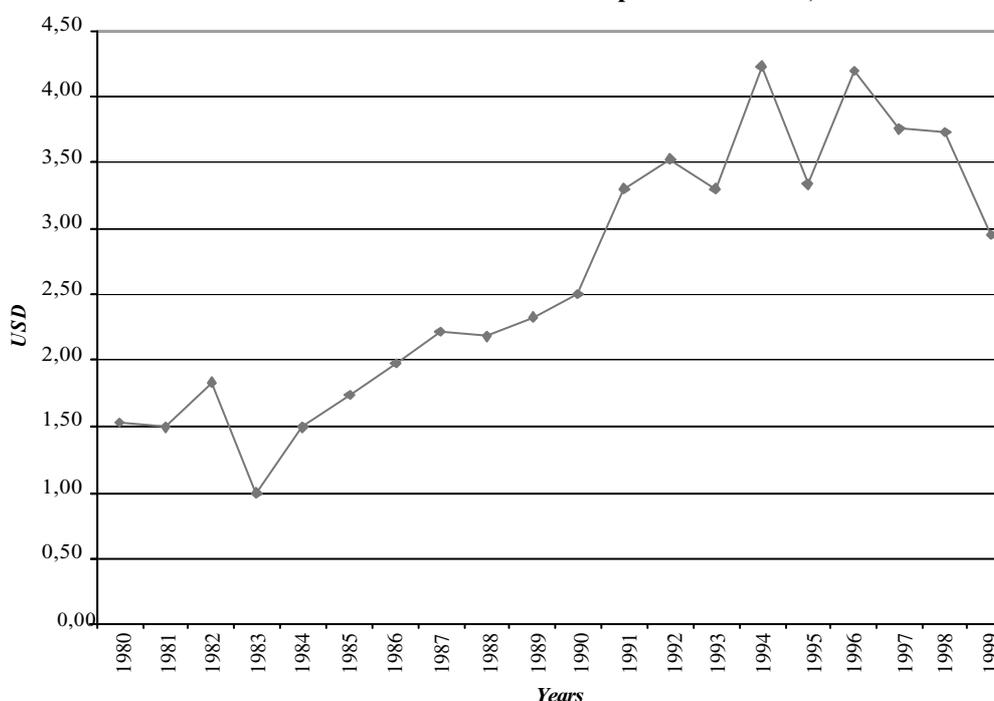
⁷ By 1993, a foreign trade policy was in place, which reduced tariff exemptions in order to create an emergency fund to attend to the damages caused by floods.

The significant increase in prices during the 1990s conveys the competitiveness policy of the Ecuadorian banana in world markets and the translation of international market prices to local producers, improving the producers' terms of trade. On the other hand, the cyclic behaviour of prices during 1993-1996, may be explained by the increasing macroeconomic instability of the country, mainly in terms of the exchange rate policies. In 1994, for example, an *exchange rate bands system* was set in place to manage the dollar. Pricing policy during the 1990s was variable and in some instances favourable to banana producers. Since 1993, the Government periodically fixed the *minimum sustenance prices* that the exporters would have to pay the banana producers. In 1995, two other banana varieties, the Baby Banana and the Red Banana, are included into the minimum price fixing system, which resulted in the diversification of banana production that would help producers improve their economic situation. This policy affected the production structure of the plantations by making it more efficient.

Finally, during the last three years of the 1990s, there was a deterioration in the terms of trade for the producer. First, the macroeconomic instability was still present and affected the producers. The *exchange rate bands* policy was eliminated in 1999 and a new system of free flotation of the dollar was implemented, which resulted in a significant loss in the purchasing power of banana producers. Additionally, there continued to be a deficient appointment of funds towards the agricultural sector in general. Last year the National Financing Corporation (CFN) made available economic reactivation bonds worth US\$ 2 billion to the production sector in order to exchange these bonds for debts held with financial institutions. The following graphic shows the evolution of the minimum referential price.

FIGURE 9

Evolution of the minimum referential price for bananas, 1990-1999



Source: Inter-ministerial Agreements 90/98/PNB/MAG, PRSA, DAP/Agricultural and Cattle Statistical Compendium/SICA Project /CONOBAN.

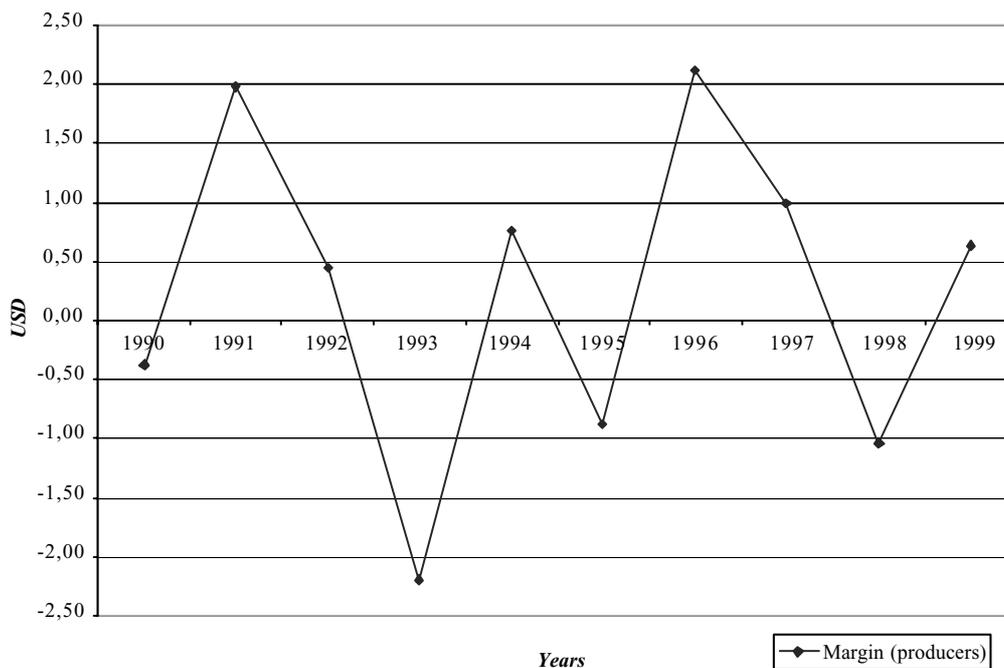
Prepared by: CEDA

The diverse price policies that aimed at adjusting and fixing the minimum referential price for bananas in general resulted favourably, as shown in the increased feasibility of banana plantation activity. However, it is important to take into account that the production prices, costs and income are directly linked to the technological level of the plantation.

In some years the medium and small sized producers have been barely able to cover their production costs and even less able to generate a profit. The next graphic shows how the minimum referential price has increased a few times, while the production costs have constantly increased.

In summary, there has been a general deterioration in the terms of trade for the banana producers due, among other reasons, to the loss in their purchasing power as a result of the low prices they received for their products. In the following graph this analysis is shown.

FIGURE 10

Producer: margin of cost coverage in relation to the price received, 1980-1999

Source: Inter-ministerial Agreements 90/98/PNB/MAG, PRSA,
Agricultural and Cattle Statistical Compendium/SICA
Project /CONOBAN.
Prepared by: CEDA

Effects on the exporter's terms of exchange

In order to analyse the terms of exchange for the exporters, we used the *minimum price of retention*, which is also determined by the Government and represents the minimum price of the exchange holdings per box of bananas (22XU). The exporting companies previously declared this price to the Ecuadorian Central Bank in order to receive the equivalent amount in Ecuadorian sucres. These prices varied according to the final market

destination and to the weight of the box. The referential price for the producers is a dollar component of the exporter price. Thus, the minimum price of retention used in this analysis also refers to the minimum referential price for a box of bananas.

The macroeconomic instability of the last two decades, with particular reference to the exchange rate variation, did not affect the banana exporters as it affected the producers. The exporters mostly traded in foreign currency (US dollars), which helped them to feel the effects of exchange rate fluctuations only superficially. Hence, the effects on the terms of trade for the producers came mainly from foreign trade policies, which were mostly aimed at promoting exports, reducing and substituting imports, helping liberalize trade and seeking integration of the markets.

During the 1980s, these policies were different in nature and often favourable to the banana exporters, except in 1984 when the Government decreed that 10 per cent of the foreign exchange holdings from traditional agricultural exports would be transferred to the free market, which decreased the exporter's income from sales. However, in 1986, the foreign trade policies favoured exporters again. For example, in January of 1986, the Government gave export tariff exemptions and reductions, which gave greater freedom to exporters in placing their product abroad. On the other hand, in August 1988, the Government fixed minimum prices for the purchase of agricultural exports, which in some ways secured a basic price for the sale of bananas.

In the 1990s, the political exchange rate instability continued. Since the late 1980s, the weekly mini-devaluation system encouraged speculation in some sectors, including the exporting sector, which was able to benefit from the manipulation of the US dollar supply and demand.

From 1992 to 1997, similar to the tendencies in the producers' price, the exporters' price was variable in spite of the continued fixation of the referential FOB (free on board) price for the banana in 1992 and for the plantain in 1994. The changeability of the exporters' price may be explained by the regular fixation policy over the minimum sustenance prices for the producers. The policy did not follow a rational criterion with respect to either Ecuador's or the international economic situation at the time, and did not take into account various aspects beyond fixing or not fixing the price. Furthermore, even though the goal was to seek some equity in the income of the banana sector, in many cases the policy resulted in deterioration for both the producers and exporters.

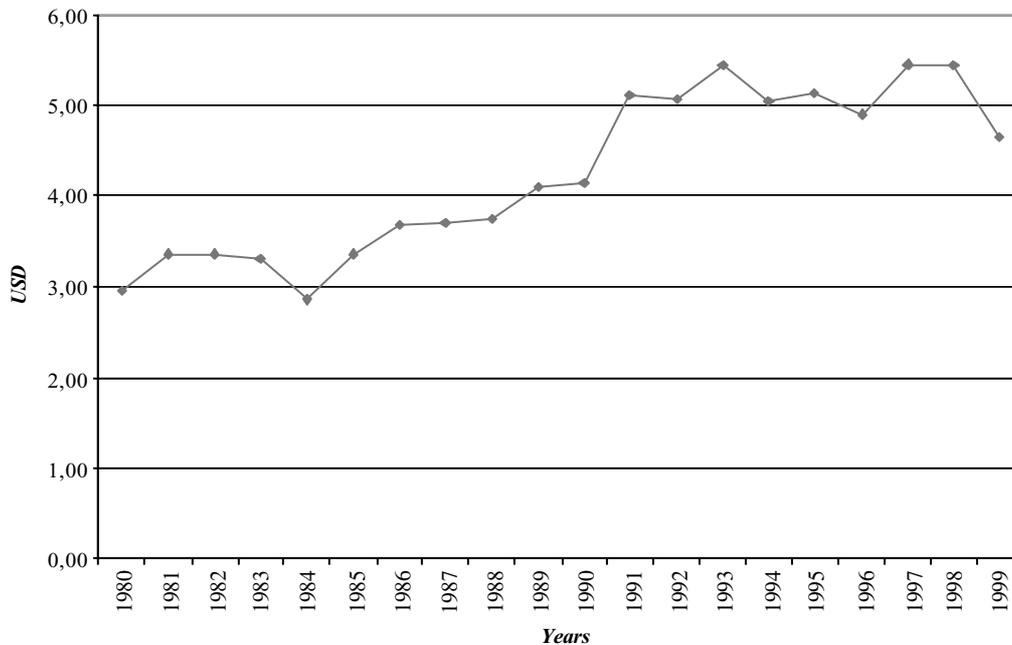
During the unstable period (1992-1997), a dramatic change occurred in the banana sector which allowed for the diversification of production and consequently exports. In 1995, the banana for export began to be differentiated according to the demands of new markets, and the prices of the new varieties of banana (Baby and Red) began to be controlled. Even though prices fluctuated from year to year, 1995 showed an improved price for banana exporters because they were able to identify a box of banana as '22XU', subject to the fixation of the minimum referential and FOB prices. This allowed exporters to differentiate the markets, resulting in their diversification as well as improved income. Additionally, the Government extended the time in which the exporters had to abide by their obligations under the National Banana Programme in 1995, which relieved their financial situation.

The fall in prices during the last years of the 1990s was mostly in response to external circumstances. Surpluses from an oversupply in the international markets were common, especially during the last year, creating a situation in which the exporters could buy the banana under the official price, gain an advantage that then permitted them to negotiate freely in the market, causing the prices to drop and maintain these conditions. From this situation there arose a need to control the oversupply, a job that falls with the banana exporters, since the producer has nothing to do with international commercialization.

However, it is important to note that in spite of the implementation in 1998 of measures to establish certain norms and procedures to counter the effects of unfair trade practices to protect national production, it has not been possible to help the sector rise above the current crisis it faces, without taking into account the external factors that have significantly affected setting the price.

Finally, during the last months of 1999, Ecuador suffered a publicity campaign that spent US\$1,500,000 to misinform the public regarding the real interests of the banana producers. The objective was to set a price at below the cost of production, despite the fact that the market was entering a high season with high demand and historically high prices—US\$ 7 per box—for the American market and US\$ 15 per box for the European Union. The producers received only US\$ 3.50 per box. The most important markets had no participation in the decisions regarding this campaign. The evolution of the exporters' prices are shown in the following graph.

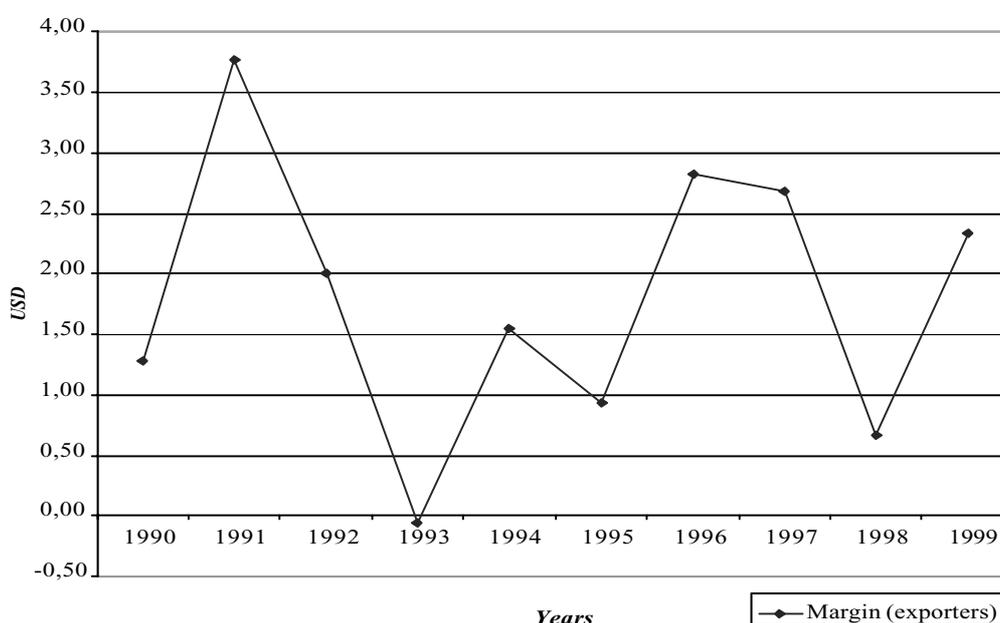
FIGURE 11

Evolution of the minimum price of retention for exporters, 1980-1999

Source: Inter-ministerial Agreements 90/98/PNB/MAG, PRSA,
DAP/Agricultural and Cattle Statistical Compendium/SICA
Project /CONOBAN.
Prepared by: CEDA

The terms of trade are completely different for the banana exporters compared to the producers. During the last decade, the exporters have had to cover their costs only once, in 1993,⁸ since prices reached approximately US\$ 6 per box, while the minimum holdings price was US\$ 5.44 per box of 22XU. The rest of the period was favourable to the exporters, especially in 1991, when they were able to realize an approximate profit of US\$ 3.78 per box of 22XU due to a 30 per cent increase in the minimum price of retention with respect to the previous year. The following graph illustrates these cost coverage margins for the exporters, using the minimum price of retention per box of 22XU.

FIGURE 12

Exporter: margin of cost coverage in relation to the price received, 1980-1999

Source: Inter-ministerial Agreements 90/98/PNB/MAG, PRSA,
DAP/Agricultural and Cattle Statistical Compendium/SICA
Project /CONOBAN.
Prepared by: CEDA

Analysis of exportable offer

The international banana market is dominated by an oligopolic structure composed of three American enterprises; Dole, Del Monte and Chiquita. Through this market structure, those enterprises have complete control over prices and commercial flows. The power and control of international negotiations lies with them, including the capacity to target annual levels of production because they have substantial levels of investment in Central America. From the considerations above it follows that they have the power to manage international price policies. This particular aspect of the commercialization of bananas defines a competitive disadvantage for all those countries that do not have investments from these

⁸ This year was critical for the banana sector, producers and exporters equally.

enterprises in their countries. To access the market those countries need to develop strategic alliances with them.

The consumers of bananas are characterized as demanding high quality products, so it would follow that not all the production of bananas is fit for its commercialization. A portion of production is used for domestic consumption, industrial production or as feed for livestock. A country that could reduce this percentage of 'exports lost' could improve its capacity to generate hard foreign currency. In Ecuador, the 'exportable offer' consists of the following varieties; Grand Cavendish, 40 per cent, Grand Naine, 4 per cent and Lacatán 1 per cent. For 1999, this offer has extended to the Orito or Baby Banana 0.30 per cent and the Morado or Red Banana 0.04 per cent. It is important to point out the growth in the use of *meristematic*⁹ plants of the varieties Grand Naine and Williams.

In Ecuador the main export companies are nationals, such as FRUJASA with 22.91 per cent participation in total exports, UBESA with 15.85 per cent, A.C. PALMAR with 11.73 per cent, REYBANCORP with 4.99 per cent and ORO BANANA with 4.60 per cent.

5.3 Social valuation

The data required to determine a direct relationship between trade liberalization, export growth and social impact is fairly scarce, thus the analysis will concentrate on relating those policy measures that have had some type of impact on wage levels and on the demographic and socio-economic characteristics of the towns near the banana plantation zones. The objective of this section is to estimate whether or not the trade policies adopted by Ecuador, primarily in the 1990s, has provoked important social improvements in the national banana sector compared to the situation of the 1980s.

In order to establish the relationship between policies and wage levels, the study compared the average income of a worker in the banana sector to the general living wage.¹⁰

Furthermore, the analysis relates the evolution of the banana workers' income with such indicators as export volumes and the evolution of the exporters' price. This will reveal whether an increase or decrease in banana trade and in the exporters' price influences a better or worse wage situation. The analysis will be completed with information on other situations that influence the evolution of the banana worker's income, including plantation productivity and yield, producers' prices, changes in the international market and natural events.

In order to estimate changes in socio-economic and demographic levels, indicators from the Integrated System of Ecuadorian Social Indicators (SIISE) for the main regions dedicated to banana production were analysed. These indicators are related to demographics, housing, health and education and reflect social and economic structural changes in these zones over the past two decades.

⁹ This is because of the need to produce banana and plantain plants free from viruses. It is characterized by its productive cycle that is shorter and it produces a better yield compared to other traditional plants.

¹⁰ In the banana sector, workforce employment is categorized by activity. Therefore, different wages exist depending on whether the worker works at the plantation or at the ports. This analysis refers to the wage earned by workers at the banana plantations.

5.3.1 Effects on the banana workers' wage levels

Analysis of banana workers' income first requires a knowledge of the wage structure in Ecuador, as well as the wage structure particular to the banana industry.

In Ecuador, labour law establishes two types of salaries; the Minimum Living Wage that is established for all workers, and the Sectoral Wages, which are established in each branch of economic activity. In the banana industry, different wages exist according to the occupational structure, including a) agricultural workers who work at the plantations, b) workers who work in the field by units of work, by day or by job (clearing, irrigating or harvesting) and c) workers involved in packaging.

Although these two minimum wages for banana and agricultural workers may present the impression of an evolution in wages in Ecuador, they do not represent the total or real income received by Ecuadorian workers in general. To perform a comparative analysis we have chosen the general workers' income and the banana workers' income, instead of the Minimum Living Wage which represents only a part of the monthly compensation. Income is complemented by bonuses and, because of the high cost of living, social benefits including social security, vacations, transportation and the reserve fund.

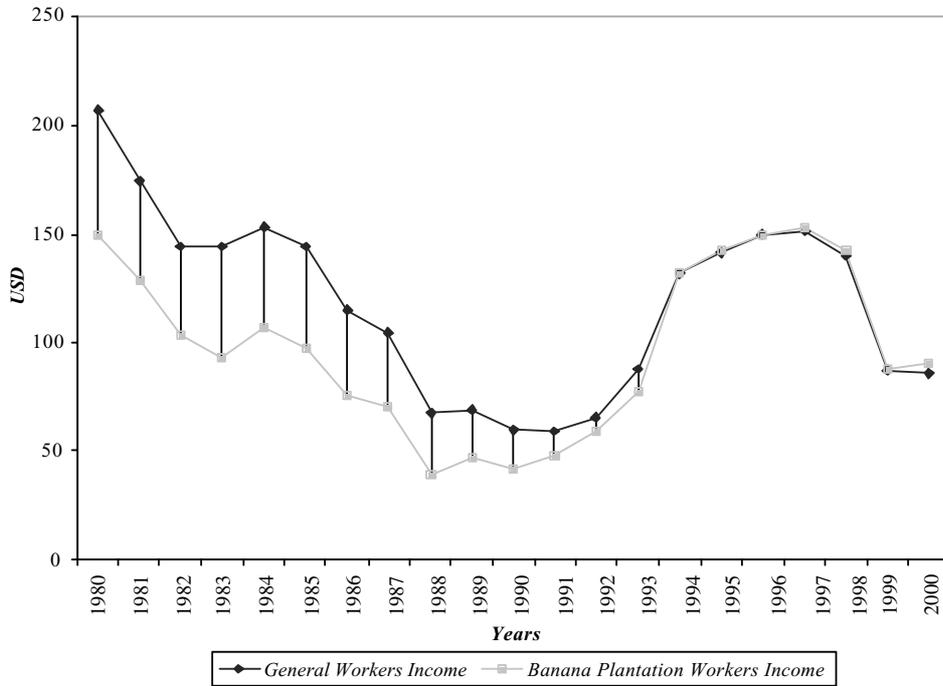
Furthermore, banana workers are seasonal labourers whose income depends on the type of work done, the number of hours worked or the number of bunches of bananas harvested. These factors have created a complex wage structure that makes systematic data analysis concerning wage income of banana workers in different types of plantations difficult to achieve.

During the 1980s, changes in wage levels were related to the introduction of new technology and of new varieties of bananas, and to natural events such as El Niño and the *Sigatoka Negra* disease. In general, these situations generated an increase in capital investment and greater work productivity, factors that led to a reduction in the personnel involved in the banana industry, particularly workers contracted by job (Larrea, 1987). Although the increased work productivity could have generated increased wages during the 1980s, no substantial increases occurred. In fact, between 1981 and 1983, wages were frozen. The situation in 1983 can be explained by the grave economic crisis facing the banana industry as a result of *El Niño*, which resulted in lost plantations and reduced productivity, and as a result, reduced employment in the industry and wage freezing. The following graphic shows the comparative evolution of the banana plantation workers' income and the general workers' income, in US dollars.

In 1984, despite the fact that there is an increment, from 1985 the tendency is a reduction in banana workers' income as well as the general workers' income (see Figure 14). This also happened when banana exports and the internal referential price experienced an increment, as Figure 15 shows.

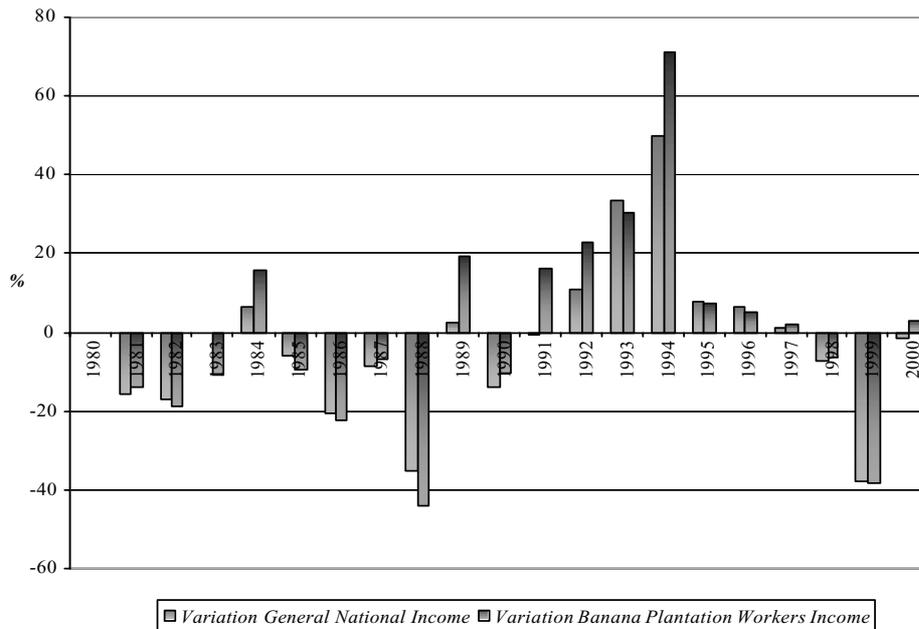
From 1989 there is an improvement in banana workers' income that slowly equals—and sometimes surpasses (1994)—the general workers' income. Despite the fact that during the 1990s the tendency is toward equilibrium, in the last couple of years an important deterioration in the two can be observed.

FIGURE 13
Comparative evolution of the plantation workers' income and the general workers' income, 1980-2000



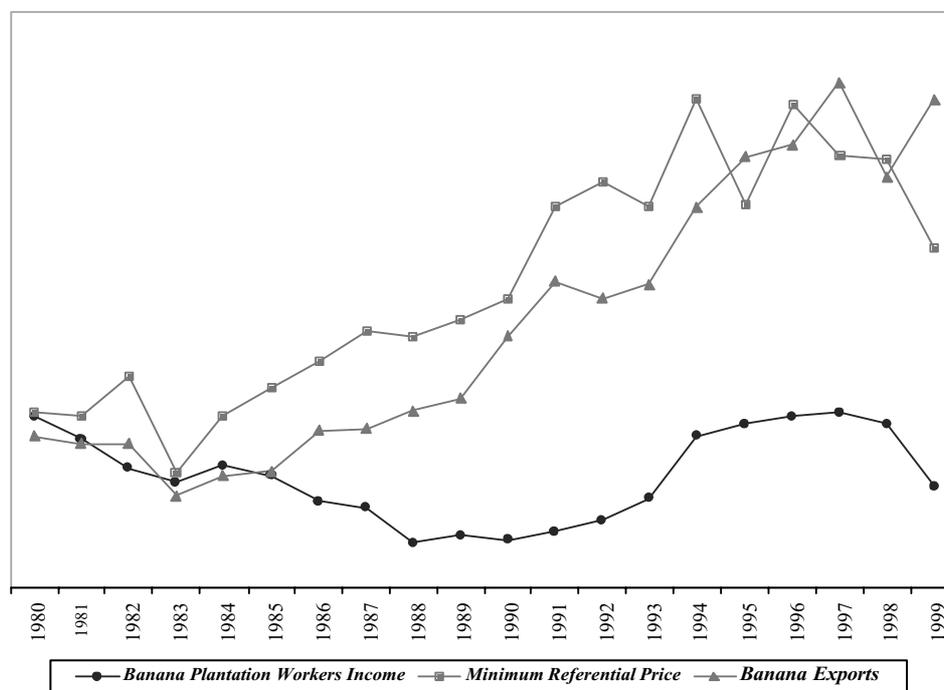
Source: Statistics, Ministry of Work, Official Registry (various issues), Central Bank of Ecuador, Prepared by: CEDA.

FIGURE 14
Percentage variation between banana plantation workers' income and the general workers' income. 1980-2000



Source: Statistics, Ministry of Work, Official Registry (various issues), Central Bank of Ecuador, Prepared by: CEDA.

FIGURE 15
Comparative evolution of banana plantation workers' income with the minimum referential price and the export volume of the banana sector, 1980-2000



Source: Statistics, Ministry of Work, Official Registry (various issues)/INEC/MAG/PNB, Central Bank of Ecuador

Prepared by: CEDA.

Although for the past few years the tendency has been toward equilibrium, the value in real terms of both wages has suffered. This may be explained by the economic and financial crisis that Ecuador experienced between 1998 and 1999 that resulted in a reduction in credits directed especially to small and medium sized producers, the freezing of bank accounts, the reduction of banana exports to the European market and the exporters' non-fulfilment of the minimum producers price. These situations not only deteriorated the wage levels for banana workers but also resulted in the bankruptcy of many small and medium sized producers, and resulting in reduced employment in the sector.

In terms of the relationship between the banana workers' income increase with the general workers' income, from 1989 a major augmentation takes place in comparison to the percentage of augmentation of the general workers income. This situation goes on until 1994 (with the exception of the years 1990-1993), in which the two incomes begin to equal. Figure 14 shows the changes in both salaries during the last two decades.

The income increases between 1989 and 1994 coincide with two situations; the growth in banana exports and a significant increase in export and production prices, except for 1993. This situation increased the profitability of the banana producer and increased the number of planted hectares, the number of employed workers and their level of income. Between 1994 and 1998, although the tendency is towards export growth and stability of the producers' price, there are no positive changes in the banana sector wages (see Figure 15 above).

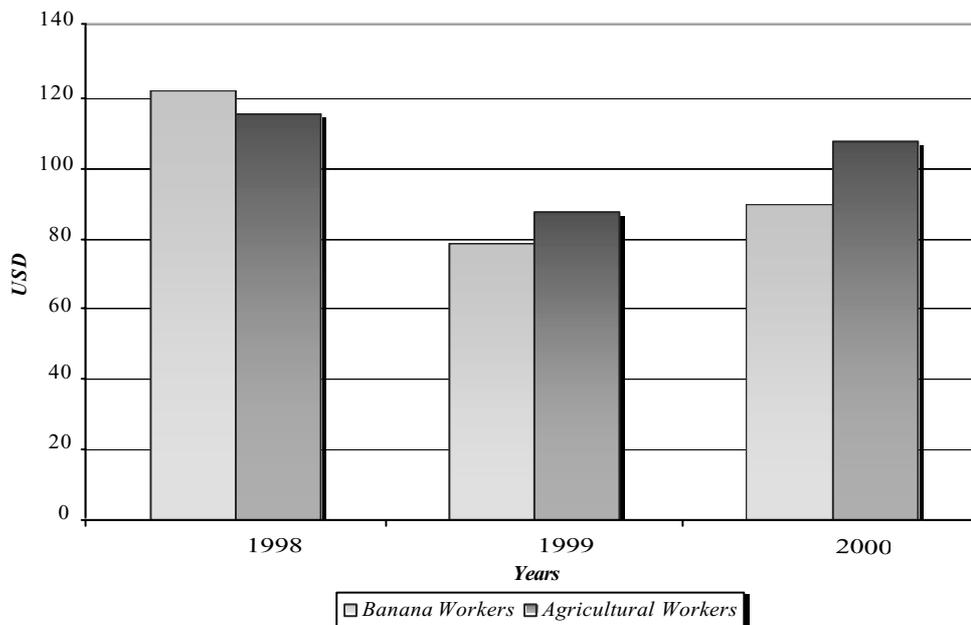
The application of the European Union banana import regime in 1993 caused a significant reduction in the international price of Ecuadorian bananas. Although this affected the price received by the exporters, it did not directly affect the banana workers' income, which is connected more to the producers' price that was fixed by government authorities.

To better appreciate the wage situation of the banana worker, the study also includes information on the average income received by a technology based banana plantation worker during the last three years. Although the data is isolated and does not show a particular trend in the last three years, it is more illustrative of the actual wage situation.

The analysis compares this information with the average income of an agricultural worker. A cyclical trend is observed, with marked increases and decreases related to internal problems concerning preferential pricing and the economic crisis that has confronted Ecuador in recent years. However, the decreases in income are not so abrupt. Figure 16 shows that in the last two years, there has been a decrease in banana workers' income in comparison to the agricultural workers' income.

This is particularly important when considering that the sectors' growth has taken place at a high social cost. The social impacts of the banana production activities during the 1990s were, in general, related to the adoption of economic and trade policy measures, among them structural adjustment policies, the implementation of a pricing system in the sector, and the elimination of credits to the agricultural sector. Linked to credit elimination is a lack of integrated promotion of policies directed to banana producers and to all agricultural producers in general.

FIGURE 16

Evolution of average income in technology based plantations, 1998, 1999, 2000

Source: Statistics, Ministry of Work, Official Registry (various issues)/CONABAN

Prepared by: CEDA.

5.3.2 Most representative banana production zones

Analysis of the demographic and socio-economic characteristics of the most representative banana production zones requires a brief review of the situation in the equally representative banana producing provinces. Banana plantations demand certain climatic, topographic and logistic conditions—which define the coastal region of Ecuador as the prime banana producer, trader, and exporter. However, some highland provinces (Sierra), especially those bordering the coastal provinces, also have the right conditions to cultivate bananas. Each province that has dedicated most of its surface to banana plantations also has a particular characteristic in terms of the banana plantation extension. According to CLIRSEN's study (CLIRSEN-PNB, 1991), 10 out of the 21 provinces in Ecuador produce banana.¹¹

- *Pichincha*, Santo Domingo de los Colorados region.
- *Cotopaxi*, La Maná region.
- *Bolívar*, Echandía and Chillanes regions.
- *Cañar*, Cañar and La Troncal regions.
- *Azuay*, Santa Isabel and Pucará regions.
- *Esmeraldas*, Esmeraldas and Quinindé regions.
- *Manabí*, Bolívar region.
- *Guayas*, Naranjito, Balzar, Balao, Guayaquil, Milagro, Naranjal, Baquerizo Moreno, El Triunfo, Yaguachi, Velasco Ibarra, Marcelino Maridueña, Simón Bolívar, Urbina Jado, Santa Lucía, Mariscal Sucre and Daule regions.
- *Los Ríos*, all of its regions.
- *El Oro*, Machala, Pasaje, Santa Rosa, Arenillas, Piñas and El Guabo regions.

The prominent banana regions are grouped in the central and southern coastal provinces of Los Ríos, Guayas and El Oro. There are different reasons why banana plantations are concentrated in these provinces. After the economic crisis of the 1980s and the change in banana varieties, the province of El Oro contained half of the national banana planted area, consisting mostly of small and medium farms; however, the provinces of Los Ríos and Guayas hold the most extensive banana properties compared to El Oro. The exportable production of banana in these regions is quite significant since it represents its main economic activity.

The level of production reached by each province and supported by the banana exporters is of great importance since it has transformed the regions in one way or another to become the representative axis of social development. In order to quantify the social development of the banana sector, we can analyse the socio-economic and demographic conditions of each region and compare them to each other and to the national average. The 12

¹¹ This classification was based on the banana surface per owner, zones and letters taken from the banana surface inventory in Ecuador developed by CLIRSEN.

most representative regions were identified in the coastal provinces, except for Manabí,¹² as far as planted surface and the number of producers per zone.

- Province of Esmeraldas: Quinindé.
- Province of Los Ríos: Babahoyo, Baba, Quevedo and Ventanas.
- Province of Guayas: Milagro, Naranjito and El Triunfo.
- Province of El Oro: Machala, Pasaje, El Guabo and Santa Rosa.

TABLE 4
Social indicators

<i>Area</i>	<i>Indicator</i>
DEMOGRAPHY	Population — <i>number of inhabitants (POP)</i>
	Infant Death Rate — <i>per 1,000 born alive (IDR)</i>
HEALTH	Number of Doctors — <i>per 10,000 inhabitants (MED)</i>
EDUCATION	Illiteracy — <i>population over 15 years of age (LIT)</i>
	Schooling — <i>population over 24 years of age (ED)</i>
HOUSING	Electrical Services — <i>% of homes (ELEC)</i>
	Sewerage System — <i>% of homes (SEW)</i>

Source: SIISE.

Prepared by: CEDA.

The socio-economic and demographic indicators were taken from the Integrated System of Social Indicators of Ecuador (SIISE),¹³ which includes more than 300 social indicators. The selected variables are described in the following table.

Demographic data from the National Census of Population and Housing for 1982 and 1990 is used to compare both decades with regard to education and housing. The health indicators are available in time series and, in order to relate with the national census information, the data from 1980 and 1996 is used. The following table summarizes the selected indicators.

Demography

The demographic indicators of the 1982 census clearly show an uneven population distribution in the banana producing regions. Quevedo was the region with highest population (164,920 inhabitants), while Naranjito was the region with the lowest population level (17,762 inhabitants). El Triunfo might have been the region with the smallest population, but there is no information available to confirm this. However, the 1990 census shows that El Triunfo was the least populated (24,551 inhabitants) of all the banana producing regions, while Machala was the most populated (157,607 inhabitants). The weak concentration of

¹² Banana production is minimal in this province compared to the other coastal provinces; according to a study, only one region of this province produces the fruit.

¹³ SIISE integrates the main sources of statistics in Ecuador: population and housing census, living condition polls, urban employment and unemployment polls, health statistics, National System of Educational Statistics, National Accounts, etc.

land holdings among the banana producers was one of the factors influencing demographic growth in the region. The change in the variety of the bananas, the improvement of the minimum referential prices, the dominance of medium sized properties that favour a development of internal micro-regional markets and reinvestment of the province's surpluses, led to a large migration of banana producers, particularly small and medium producers, into this region. As will be seen later, Machala is one of the regions with the best socio-economic conditions; furthermore, its proximity to the port has made the banana export activities important in the area.

TABLE 5
Social indicators of the banana producing regions

Country	Demography		Health		Education		Housing							
	POP CENSUS 1982	POP CENSUS 1990	IDR CENSUS 1982*	IDR CENSUS 1990*	MED CENSUS 1980*	MED CENSUS 1996*	LIT CENSUS 1982	LIT CENSUS 1990	ED CENSUS 1982	ED CENSUS 1990	ELEC CENSUS 1982	ELEC CENSUS 1990	SEW CENSUS 1982	SEW CENSUS 1990
Qinindé	47.746	71.901	74.9	65.4	4.0	7.9	24.2	17.4	3.2	4.3	24.5	37.7	7.4	13.4
Babahoyo	106.628	105.471	65.4	44.1	2.9	6.4	17.2	12.6	4.6	6.4	49.2	66.5	22.4	24.6
Baba	27.299	29.496	65.4	44.1	2.9	6.4	32.7	24.7	2.4	3.5	10.9	22.8	2.2	4.3
Quevedo	164.920	104.175	65.4	44.1	2.9	6.4	18.8	9.4	4.0	6.9	45.0	81.5	15.5	28.9
Ventanas	50.779	58.494	65.4	44.1	2.9	6.4	21.4	14.2	3.5	5.0	28.0	53.6	10.0	18.1
Milagro	107.188	116.397	42.4	32.6	10.7	13.5	11.2	8.0	5.2	7.0	78.4	89.5	26.3	27.7
Naranjito	17.764	25.698	42.4	32.6	10.7	13.5	16.7	14.1	3.7	5.1	68.6	81.9	18.6	19.7
El Triunfo	nd	24.551	42.4	32.6	10.7	13.5	nd	13.3	nd	5.3	nd	76.6	nd	2.1
Machala	116.091	157.607	41.0	27.2	5.9	13.5	5.3	4.1	6.4	8.2	81.5	93.6	43.9	51.2
Pasaje	46.774	51.406	41.0	27.2	5.9	13.5	9.1	6.3	5.1	6.9	67.5	89.9	45.7	47.6
El Guabo	20.801	28.058	41.0	27.2	5.9	13.5	11.4	7.7	4.2	5.7	56.0	83.7	11.5	17.0
Santa Rosa	42.262	50.852	41.0	27.2	5.9	13.5	8.1	5.9	5.2	7.0	66.0	87.0	41.4	53.1
Country	8.060.712	9.648.189	56.4	39.8	8.0	13.2	16.5	11.7	5.1	6.7	62.1	77.7	33.6	39.5

* The statistics indicated represent provincial data groupings.

In 1982, the El Oro province had the lowest Infant Death Rate (IDR) (for which there is only data per province), while Esmeraldas had the highest IDR—41 per cent and 74.9 per cent respectively. In the 1990s this pattern is repeated, El Oro having an IDR of 27.2 per cent CDR and Esmeraldas 65.4 per cent. The lower IDR in both cases shows that there have been improved social conditions related to health issues, Esmeraldas showing a 12.7 per cent drop in the IDR, and El Oro a 33.3 per cent drop. The higher drop in El Oro may be explained by a higher public income and a higher social investment by the local government. El Oro is considered the banana-producing Province par excellence, and shows the best socio-economic conditions.

Health

The number of doctors for every 10,000 inhabitants provides an indication of the level of health services coverage. There are also other indicators of the health system, including the number of ill people and the number of beds in health establishments, among others. Since it is difficult to gather regional information, provincial data is used. In 1980, Guayas was the banana producing province with the highest number of doctors per 10,000 inhabitants (10.7), because the most frequented health centres and hospitals are located in this region of the coast. The Los Ríos province had the lowest number of doctors per 10,000 inhabitants (2.9). By 1996, there is an improvement in this ratio, with Los Ríos increasing

its number of doctors by 102.0 per cent (or 6.4 doctors per 10,000 inhabitants). Guayas continued to be the top province with regard to medical assistance with 13.5 doctors per 10,000 inhabitants. El Oro also improved its services significantly during the 1990s due to the growth of the banana business in the region, to share top position with Guayas in medical assistance. The health services improvement in El Oro is related to the improvements introduced by the local government and by the socio-economic contribution brought into the region by the banana business. The health indicators for Guayas during the last two decades have always been above the national average, which is mostly attributable to good local authority management and not to the presence of banana production. The Quinindé region in the Esmeraldas province shows a poor health situation; its medical assistance indicator is half the national average. Banana production activity is not very strong in this region and thus its health services may not be attributed to its presence. The Los Ríos province reveals a very serious social situation, as most of the health indicators are below national average. This province has suffered from a lack of attention from the authorities and a deficient funnelling of the resources generated by the banana business.

Education

The level of education in a region is the most real and precise indicator of the social and economic status of its population. The workforce required for banana plantations requires a certain level of knowledge regarding the production process; the higher the level of education, the higher the potential to receive better wages. However, most of the banana plantation workers are aged between 17 - 19 years of age, a very young population that does not often have access to education. According to the 1982 census, the region with the highest illiteracy rate was Baba in Los Ríos province at 32.7 per cent, while the region with the lowest illiteracy rate was Machala at 5.3 per cent. The 1990 census confirms this tendency, but with lower rates than those recorded during the 1980s. Thus, Baba had an illiteracy rate of 24.7 per cent and Machala 4.1 per cent in the population over 15 years of age.

An indicator that corroborates the above is the number of school years completed by people over 24 years of age. In the 1980s, the average number of school years attended by the population of the banana producing regions was approximately four years, meaning that they did not even complete primary schooling. Only the El Oro province surpasses this average. Machala has an average of 6.4 years of schooling, meaning that its population, on average, has at least completed primary level education. Baba is the region with the least amount of education (2.4 years). However, the educational situation during the 1990s improved and it is worth mentioning the increase in Machala to 8.2 years of schooling, although Baba continues to have the lowest level with 3.5 years.

In a national context, the level of education in most of the banana producing regions registers indicators below the national average. This fact reveals a critical situation in the regions within the Esmeraldas, Guayas and Los Ríos provinces (except for Quevedo, which showed an improvement during the 1990s). These regions have neglected their investment in formal education because of the development of several capacity-building programmes oriented to the specialized taskforce needs of banana production in the big plantations, mainly in Los Ríos. El Oro Province registers the only indicators that surpass the national average.

Housing

Access to basic services such as electricity and sewage is an indicator of living standards. In the banana sector, access to these services is limited, since the plantations are located far from towns. Additionally, availability of these services has often determined the technological levels of the banana plantations, its production and packaging processes, as well as transportation speed and efficiency. In Machala, 81.5 per cent of all homes had access to electricity in 1982 (1982 Census), a situation that improved during the 1990s to reach 93.6 per cent (1990 Census). On the other hand, and following the pattern described in the previous section, Baba is the most neglected region with only 10.9 per cent of its homes having access to electricity (1982 Census). During the 1990s, this region improves its electricity services to reach 22.8 per cent, still a precarious situation for the population.

Access to sewage services is even poorer than access to electricity. While on average 70 per cent of homes had access to electricity, only 50 per cent had access to a sewage system. The 1982 Census shows the Pasaje region to have had the largest coverage of this service where 45.7 per cent of its homes had access to a public sewage system in 1982. The remainder of the regions analysed had a lower percentage. For example, Baba only provides 2.2 per cent of its homes with a sewage service. By the 1990s, the Census shows the Santa Rosa region to have the highest coverage (53.1 per cent), while Baba and El Triunfo have the lowest (4.3 per cent and 2.1 per cent respectively).

Los Ríos province is one of the most profitable in Ecuador as far as banana production is concerned. However, the province does not provide efficient public health services with wide coverage (except for the Quevedo region, which has improved its situation significantly, at least with respect to electricity). The El Oro province, on the other hand, has improved the situation in most of its banana producing regions compared to the national average. This situation may be explained by the natural factors favourable to banana production, including good climate, soil and light conditions, and by economic factors that enable high investment in technological improvements. Thus, this region has been able to compensate for national and local government neglect in regions of productive potential.

It is of great importance to consider the situation of the Los Ríos province. It has the best performance at the national level as far as banana production, and yet has lamentable health conditions and poor access to basic services. It is one of the most neglected provinces due to the large extensions of banana plantations that belong to economic groups that are based in the city of Guayaquil. They make little contribution to local consumption and social investment and generate an outflow of the region's economic resources. Conversely, in El Oro province there is a small and medium sized regional bourgeoisie that reinvests and consumes within its zone.

6. INTEGRATED ASSESSMENT OF TRADE LIBERALIZATION

6.1 Scale effect

The scale effect occurs when economic growth, based on the increase of a country's production and exports, determines a change in the use of natural resources and in the general environment. Thus a *positive scale effect* occurs when economic growth fosters a demand for an improved environment and the internalization of certain environmental costs. On the other hand, a *negative scale effect* occurs when economic growth generates or fosters an increase in the use and depletion of natural resources.

The implementation of structural adjustment and foreign trade policies, as well as national and international norms, has influenced the banana sector in different ways. An increased volume of banana exports has increased banana production and thus, use of land and natural resources. The analysed data shows that during the 1980s there was a sustained rate of increase in export volumes, with only significant decreases in 1984 and 1987 due mainly to the El Niño phenomenon and the Sigatoka Negra disease which caused a decrease in the cultivated land and damage to the banana plantation zones ecosystems.

Important changes in international and national trade policy occurred during the 1990s. At the international level, implementation of the EU's banana imports regime, the signing of the Complementary Economic Agreements with Chile and Argentina, trade agreements with China and Japan, and Ecuador's entry into the WTO had a significant impact on the volumes of export.

The EU banana imports regime caused a reduction of the prices of the Ecuadorian banana in the international markets, which made Ecuadorian exporters attempt to increase export volume to compensate for the lower price. The increase in the exports and production volumes, coupled with the fact that banana production in general is a monoculture process occurring in extended areas, has generated a great burden on the natural environment, thus causing a *negative scale effect*. However, in this case, the increase in exports did not per se generate this burden; rather it was generated by trade distortions produced by the EU's trade regime.

Because of the Complementary Economic Agreements, adoption of other trade agreements, and Ecuador's entry into the WTO, there has been an increase in exports and the opening of new markets, as well as a consolidation of those markets previously marginalized. The introduction of new technologies to internalize certain environmental costs, to increase yields in the cultivated areas and to have better access to the more demanding international markets has not necessarily generated a positive scale effect. On the contrary, there has been an increase in production and export volumes since 1994, but not a subsequent improvement in the yield per hectare. The increase in production was mostly due to

an increase in the planted surface area rather than to an increase in production yields, signalling a *negative scale effect*.

6.2 Product or composition effect

This type of effect is associated with goods or inputs that can improve or deteriorate the environment. Trade in energy efficient equipment, or sewage treatment technology would be an example of a *positive product effect*. On the other hand, trade of hazardous substances and endangered species would constitute a *negative product effect*.

Ecuador's banana sector production structure is characterized by the level of technology of the plantations, which determines the use of inputs for banana production. Producers with high levels of technology have the capacity to invest in the technological improvements necessary for complying with new market demands in terms of fruit quality and environmental requirements. Other producers with lower technology levels may be able to achieve these requirements using practices that are more traditional. However, they tend to use natural resources in a less sustainable manner.

For example, a high technology producer will utilize an aerial fumigation system, which not only affects the banana plantation area, but also surrounding areas. Additionally, water resources used for irrigation may generate a negative effect over the surrounding area. On the other hand, the producers who do not use aerial fumigation systems, and in many cases don't irrigate their plantations but instead use alternative or traditional methods, may tend to cause more damage to natural resources.

By adopting trade liberalization and structural adjustment policies that are mainly concerned with the banana sector, as referred to in Section 2, the Government has sought to improve the producers' competitiveness in the market. In many cases this situation has determined an increase in the use of agrochemicals, and many producers have not adopted environmental regulations, which would indicate a preliminary *negative product effect*. However, more recently, an increase in the use of 'clean' technology has occurred, indicating a *positive product effect*.

6.3 Technology effect

The technology effect refers to the changes in technological developments in an economic activity that are generated or fostered by trade liberalization policies. A positive *technology effect* occurs when trade liberalization and increase in exports promotes the improved use of technology, which improves the economic yield, and internalizes environmental and social impacts.

Banana production in Ecuador has experienced several stages in technological development. These changes have been in response to natural phenomena (e.g., El Niño and plagues), changes in international demand (e.g., the demand for environmentally friendly products), and trade policies that have forced national producers to gradually incorporate new technological processes.

The introduction of new varieties of banana was one of several important developments in the sector that resulted in higher profit levels for producers. However, this

advancement did not generate a positive technology effect because it did not lead to the improved use of natural resources or to an increased level of technology among the workforce. As seen in Section 4, the expansion of the agricultural frontier during the 1980s occurred without positive environmental transformations.

The increasing international demand for quantity as well as improved quality of bananas during the 1990s generated a higher use of technology in the farms and there was an increase in the number of hectares being farmed using higher technology during the first years of the decade.

Although the criterion to determine technological levels in a plantation does not necessarily include environmental factors, technological development generates a *positive technology effect*. High technology not only improves the economic yield by reducing certain production costs, but also improves the efficiency in the use of natural resources.

On the other hand, the use of environmental certifications and environmental management systems is an important indicator of a positive technology effect. There has been a significant increase in certified banana plantations and businesses that use environmental management systems that abide by national environmental laws. These initiatives include waste and toxic products management programmes, plague control programmes, conservation and restoration of natural areas, and capacity-building programmes for employees in the sector. Although only a few of the businesses in the sector have actually adopted clean technologies for their production processes, the initiatives above mentioned show the occurrence of a *positive technology effect* in the banana sector.

6.4 Structural effect

The structural effect focuses on microeconomics in order to explain changes in the patterns of economic activity. It refers to the changes in a sector's production structure because of internal and external policy reforms. With economic opening and trade liberalization reforms, countries tend to reassign their resources as a function of their comparative advantages. A *positive or negative structural effect* would result from a smaller or larger impact on the environment arising because of the comparative advantage.

A series of trade liberalization and structural adjustment policies have been implemented in Ecuador in order to satisfy the requirements of the world market. These new requirements have influenced consumer behaviour and consumption patterns by promoting the consumption of organic or environmentally friendly foods and the sustainable use of natural resources. Thus, banana plantations have undergone a re-engineering process, and most of them have become specialized in banana farming. The degree of specialization depends on the adoption of different technology levels (as mentioned in section 5.2.3). In 1990, most of the producers were non-technology oriented (64 per cent). In 1999, that figure dropped to 10 per cent. This situation has produced a relatively specialized taskforce, giving the country a comparative advantage in this respect.

Ecuador's economic opening has fostered the specialization of banana producers in order to maintain their access to world markets. The sector's farming techniques have improved with the use of top technology, which requires the intensive but more efficient use of water and land resources. Thus, specialization at all levels in the banana production cycle has generated a *positive structural effect*. From another perspective, this specializa-

tion in products that use the comparative advantage, has led to an increased use of natural resources, (by the use of more intensive technology) which can on the other hand, have influenced a *negative structural effect*.

6.5 Regulatory effect

The regulatory effect arises when trade policy measures or the adoption of agreements produces a change in the legal and political structures of a country. A *positive regulatory effect* occurs when these agreements or policies strengthen or maintain the state's ability to develop and implement effective environmental policies. A *negative regulatory effect* occurs when a trade agreement or policy makes it difficult for the state to implement adequate environmental policies.

As seen in Section 2, the 1990s were characterized by a tendency towards trade liberalization. The Government implemented significant structural adjustment policies and signed trade agreements relevant to the Ecuadorian banana sector. The most important trade agreements include, as mentioned, the Complementary Economic Agreements with Chile and Argentina in 1994, Ecuador's entry to the WTO in 1995, and the Complementary Economic Agreements with China and Japan in 1996. These occurred at the same time that important trade and environmental policies and regulations came into place. In 1994, the Environmental Security Regulations for the Banana Sector, the Plant Quarantine Handbook, the Export Facilitation Law, plague control norms, packaging norms, and the banana policy for plantations reconversion were implemented. In 1995, norms to diversify markets and varieties of banana and to control packages and bales were established. The Plant Health Regulations and the Environmental Management Law were passed in 1998 and 1999, respectively.

Ecuador's entry into the WTO in 1995 produced uniformity in the sanitary, phytosanitary, technical and environmental norms. At the same time, the political interest in environmental issues as well as on modernizing the production sector increased significantly due to the threat of environmental restrictions and an increased competitiveness in international markets. The perception of a threat arising from environmental restrictions increased with the European Union's regime, which generated a search for new markets and a greater concern for the quality of the banana and the environmental considerations of its surroundings.

Although the economic and trade liberalization reform policies have structured a *positive regulatory effect*, it is not possible to determine the degree of compliance to these norms due to institutional weakness and the lack of control and follow-up mechanisms. However, there is an increased interest in the banana sector for the implementation of environmental management mechanisms to obtain environmental certifications, especially among the larger businesses with the economic capacity to make the large investments necessary for a more environmentally friendly production process.

7. POLICY RECOMMENDATIONS PACKAGE

7.1 Economic and non-economic incentives

The proposed policy recommendations package includes both economic and non-economic incentives. Some of the economic incentives include direct or indirect aid to the sector, according to the banana producers' structure. As has been determined throughout the study, an important percentage of banana producers are small and medium sized producers. They should be provided with feasible mechanisms with which to access technology transfer in order to achieve clean production systems.

Some of the economic incentives must take into consideration the multilateral trade system rules and the need for financial support from the Government.

7.1.1 Tax and tariff incentives

This mechanism intends to establish a database of capital goods that constitute 'certified clean technology'. These technologies should have significant import tariff reductions to encourage small and medium producers to adopt clean production processes. However, this tariff reduction cannot operate alone. To make tariff reductions successful, they must be applied in accordance with other tax and customs services reductions. The average tariff for raw material and capital goods is approximately 5 to 7 per cent, but burden taxes and customs services can increase it to as high as 20 per cent.

Implementation of this incentive will require a strong political will to promote the use of clean technology, because it requires a substantial fiscal sacrifice through tax and tariff concessions.

7.1.2 Credit incentives

There is no current policy in Ecuador for granting preferential credit rates to businesses that wish to adopt clean technology processes. Due to the high costs, it is almost impossible to use credit as a means of implementing technology transfer in the financial system.

The National Financing Corporation (CFN), which operates as a second tier bank, could create a credit line with funding from the National Environmental Fund, debt swaps or debt condemnation, as well as using resources from international funding organizations like the Inter-American Development Bank (IADB), the Andean Corporation of Development (CAF), and the World Bank, among others.

The resources obtained through debt condemnation will constitute the national counterpart for international funds and credit, and at the same time will anchor a low average rate in any of the combinations of funding sources.

The interest rate paid to the final beneficiary will act as the financial incentive or credit facility that could be granted to those banana producers that are willing to convert their production from traditional varieties of banana to organic bananas, to adopt environmental certification systems or to raise their land productivity through the adoption of efficient technological processes. These preferential credits will be administered by the CFN.

Traditionally, economic agents and the national Government have managed their projections in the short-term as a measure to safeguard their interests. As a result, long-term loans to acquire and finance fixed assets for production have never been longer than five years. The proposed credit incentive will require longer terms. The current dollarization process in Ecuador will lessen the risk of inflation and longer terms can be established.

7.1.3 Environmental certification

Environmental certification has proven to be one of the most effective market-based incentives. Certification has arisen in response to an increasing concern for the deterioration of the global environment and has fostered the emergence of a new class of consumer to whom the environmental impact of the goods they purchase is an important consideration in their selection of goods. The result is the creation of niche markets for environmentally sound products.

In recent years, there has been a significant increase in the adoption of certification programmes among banana producers. Unfortunately, because of the high cost of certification, most of the banana producers that have acquired certification are large companies. Therefore, to include small and medium sized producers, special credit lines are required, as explained above.

Some certification programmes are being successfully promoted among producers and it is important to foster their implementation. These are: Eco OK, which was created in 1991 by the Rainforest Alliance and is used to certify all types of bananas; PROBIO, which is awarded by a group of agricultural producers who seek to promote the elimination of the use of chemicals in farming; ISO 14001, which certifies environmental management within the product chain; MAX HAVELAR, which is awarded by an organization from the Netherlands, and certifies 'fair trade' and fosters higher payments to banana producers in order to internalize social and environmental costs; and UROCAL, which is an association of small producers that is developing certification for clean technology in banana production, monitoring production systems to reach higher social and environmental standards, and financing some of the higher costs of technology transfer.

Apart from the environmental benefits they are designed to bring in terms of an efficient use of resources and diminished pollution, certification programmes can also offer a variety of other advantages. The first and perhaps the main reason that firms opt for certification, is the potential access to new markets. Producers that apply for eco-labelling hope to attract 'green consumers' who are prepared to pay higher prices for bananas that are guaranteed to have generated lower negative environmental impacts in the process of production. At the same time, while many schemes at present remain voluntary, the possibility that certification will become a mandatory requirement in the future, makes early application for certification and consequent technological improvements a rational strategy as banana producers plan for the future.

In social terms, programmes promoting the use of clean technologies have a direct positive impact on the well-being of workers involved in the production process. The elimination of toxic chemicals, more controlled use of fungicides and pesticides in banana production and agrochemicals in general, and the provision of at least basic safety equipment and training have already reduced adverse health effects in some regions. Likewise, the construction of sanitation facilities improves worker hygiene, while the creation of suitable rest areas and dining rooms improves worker satisfaction and productivity. The construction of nurseries and schools has further improved conditions for workers and their families.

7.1.4 Referential price fixing policy

Since 1980, the Government has fixed the referential price for banana producers. Given the importance of banana production in social and economic terms, the Government has been interested in providing small and medium sized producers with basic conditions, by regulating the internal market, even though such regulations do not cover all the indirect social costs.

In recent years, despite the efforts to liberalize trade, the Government is still fixing the referential price for producers. Banana production is considered to be a strategic product in terms of social and economic well-being. However, the referential price for producers does not consider all the externalities related to banana production. The referential price is rarely fair, and controls and monitoring have not always achieved their purpose.

The referential price fixing policy is an important mechanism to prevent large corporations from setting the price and driving away small producers. Therefore, it is important that this fixed price be substantial enough to allow for the internalization of some of the most important environmental and social costs. This could be an important tool to increase technology transfer among producers and to re-establish the value of banana production. The price must be set in accordance with all the sectors involved and it must be competitive in the international markets.

7.1.5 Research and capacity building

One of the consequences of the proliferation of environmentally friendly market niches in developed countries is the need for capacity building and development of research in developing countries. Therefore, capacity building and technology transfer must be encouraged by creating special programmes among producers and exporters.

Some banana producers' associations have been interested in increasing the availability of clean technologies in order to take advantage of the benefits of complying with higher environmental standards, but this initiative needs to be reinforced if it is to reach the small and medium sized producers. The Government must support these initiatives and foster their nationwide availability by enforcing institutional policies on research and capacity building.

7.1.6 Environmental awards

Businesses interested in complying with environmental and social standards are sometimes motivated by the desire to change the national and international image of the corporation.

The modern consumer's perception of a product is sometimes more important than the product itself. It may be highly beneficial for banana producers to create a system of environmental awards granted by municipalities in order to give recognition to those banana businesses that are making significant efforts to adopt clean technology in Ecuador.

In addition to the awards, the regular publication of the list of companies that comply with national and regional environmental regulations could motivate banana producers to pursue such awards and also to improve the image of the Ecuadorian banana internationally.

7.2 Institutional policy

One of the most significant effects of globalization, structural adjustment and trade liberalization policies lies in the diminishing power of governmental institutions charged with implementing command and control policies. For example, the National Banana Programme was phased out in 1999 and the Banana Consultative Council was created in its place. The Consultative Council is in charge of fixing the referential price for producers, but is not in charge of controlling and monitoring banana production or with providing producers with technical assistance. The National Banana Programme was no longer viable because of a lack of resources. Private exporters' and producers' unions assumed some of the functions of this programme, but those functions relating to the creation and implementation of controls and monitoring are still missing.

There is a need to strengthen the institutions that can address the internalizing of sustainable policies for Ecuador's banana production. Command and control policies cannot rely on the will of private businesses to raise environmental standards in order to achieve certification. National environmental regulations and controls are needed which requires a strong governmental and institutional capacity for implementation and enforcement.

7.3 Capacity building measures

The following section estimates the costs of implementing the policies with their respective actions.

1. To control the environmental impacts caused by banana production requires the participation of the actors in training programmes. The proposed measures to facilitate training include: (i) training meetings and workshops (particularly with small and medium sized producers), (ii) the creation of information manuals and (iii) the creation of an interactive Internet site with information concerning the environmental impacts produced by the banana industry and alternative methods of internalizing such impacts. Furthermore, this page could include information on international environmental certification companies, such as their standards and costs. The cost of implementing this policy depends primarily on the amount

of time required by the involved parties to attend such meetings and to update the Internet page on a regular basis. The cost of producing the manuals would rest primarily with the unions who ask for the technical and economic assistance to create and disseminate the manuals.

2. To implement the policy of promoting cleaner production alternatives, the proposed action consists of producing a manual outlining the advantages and disadvantages of organic production, environmental certification and recycling systems. The cost of producing the manual will depend on the level of help needed from the unions to create and disseminate the manuals.
3. To strengthen access to international markets, the proposed action consists of developing open trade contacts in order to promote the export of organic bananas. In order to assist in this process, the producers must increase their efforts to search for more environmentally compatible products and to develop markets for organic bananas. Given that an organization for export promotion, the Corporation for Export and Investment Promotion (CORPEI), and an infrastructure between open trade points already exist, the cost to the state and private enterprises of implementing this policy should be minimal.
4. Implementation of the recommended social policies comprises the greatest economic costs for the banana company owners. Promoting worker training will create an additional cost for the small and medium sized producers. However, if these costs are covered through preferential credits or with the help of the workers' unions, training workshops could be organized and manuals produced at minimal cost. To implement a policy of local reinvestment, the proposed actions include the adoption of recycling programmes by the companies together with the local populations, who would receive economic incentives for their labour. This action would not only reduce the environmental impacts caused by waste generation, but would also create an additional income for the local population.

Each policy was discussed in previous meetings of the National Steering Committee, which is composed of government representatives, banana producers and exporters, NGOs and industry investigators. Many of the suggested actions arose from the discussions in these meetings.

8. PROJECT EXPERIENCE AND MAIN CONCLUSIONS

The country study project has revealed important issues concerning the development of an industry of great economic and social importance in Ecuador. The project has also revealed the positive and negative effects of distinct policies of foreign trade, structural adjustment measures and national and international regulations, on the sustainable development of the banana sector. The research involved in carrying out the project has facilitated an appreciation and understanding of a number of specific and important aspects concerning this industry.

1. The banana industry is an agricultural industry based on the export of its production. Banana production requires the direct use of natural resources and a labour force. The banana industry has become extremely vulnerable to fluctuations in international prices, changes in world consumption standards, trade and environmental regulations and sanctions applied by Ecuador's principal buyers, and the opinions of the general society. These situations have increased the awareness that the banana sector must not only analyse the effects of the industry in terms of sustainable development, but also discuss policy measures that need to be implemented in order to achieve sustainable production.
2. The extreme vulnerability to foreign trade sanctions, particularly those relating to the environment, has led to initiatives in the public and private sectors in Ecuador to promote the adoption of standards of clean production, as well as production alternatives, such as organic cultivation. In this manner, the producers are able to harmonize the objectives of environmental protection with their objective to increase their competitiveness in international markets. These initiatives are generated in large part by the producers themselves, and the role of the Government in promoting production alternatives has been minimal.
3. During the development of the study, the need to discuss and analyse the trade policies applied by Ecuador's principal buyers has become obvious. Non-tariff measures applied by the European Union have increased the economic, environmental and social costs to the industry. Although these costs are not the only cause of the difficulties in managing sustainability in the banana industry, they are barriers that impede efforts to adopt systems of production that are more compatible with social and environmental aspirations. This situation exposes a need to empower the policy decision makers in the banana industry.
4. The study has revealed a need to promote the analysis of national trade and production policies, as well as to study existing environmental regulations in Ecuador. Many of the problems encountered originate from the lack of consensus and cooperation between all the actors involved in the banana industry, the incoherency of existing policies, the non-compliance of many producers with existing standards and regulations, the lack of policies to promote sustainable

production, and the lack of information in government institutions and private trade organizations.

5. The study has revealed a serious problem with regard to access to information as well as insufficient record keeping concerning the development of the banana industry. There are clear indications for a need to implement governmental record keeping and mechanisms for information transfer.
6. The project reveals both the need to promote studies to evaluate and analyse the effects that trade and domestic economic policies have had on the Ecuadorian production sectors, as well as the role that policies adopted by international governments play in the sustainable development of developing countries, particularly the role of the World Trade Organization, the World Bank, and the International Monetary Fund, among others.

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O.R. No. 726	June 5, 1991
O.R. No. 69	May 30, 1972
O.R. No. 989	July 30, 1992
O.R. No. 436	February 22, 1983
O.R. No. 524	September 12, 1994
O.R. No. 991	August 3, 1992
O.R. No. 442	May 22, 1990
O.R. No. 461	June 14, 1994
O.R. No. 233	July 15, 1993
O.R. No. 610	January 12, 1995.
O.R. No. 461	June 14, 1994
O.R. No. 233	July 15, 1993
O.R. No. 610	January 12, 1995.

ANNEX I

Background and evolution of the commercial dispute over bananas

The commercial dispute over bananas began in 1994 when Costa Rica, Colombia, Nicaragua and Venezuela initiated a commercial claim through GATT against the application of the Banana Regime of the European Union. This measure, enforced by provisions 404/93 and 1441/93, determined the application of custom duties of 2 million tonnes with a custom duty of 100 ecus¹⁴ to bananas imports from countries not members of the Lomé Agreement (ACP).

Although the GATT ruling was favourable to the complainants, the delays in the dispute settlement system prevented the adoption of the report. Additionally, the affected countries started a new claim and the GATT conformed a Second Special Group to study this case. However, shortly before the group presented its report, Colombia, Venezuela, Nicaragua and Costa Rica achieved an understanding with the EU through the subscription of a Framework Agreement. This mechanism established the extension of the custom contingent to 2 million and 200 thousand tonnes with a duty of 75 ecus starting in 1995.¹⁵

In 1995, shortly after becoming a member of the WTO, Ecuador made use of its rights and presented its first complaint to the Dispute Settlement Body of the WTO, joined by the USA, Mexico, Guatemala and Honduras conforming the Group of Five. Ecuador based its complaint on the violation of the principles of non-discrimination, articles I and III, and also on the illegal imposition of quantitative restrictions in the imports of bananas (articles X and XI), the illicit distribution of contingencies of custom duties (article XIII), the violation of articles II and V of TRIMS and of articles II, IV, XVI y XVII of GATS, as well as the lack of respect over agreements subscribed in the Accord on Agriculture.¹⁶

In October of 1997 the panel resolved in favour of the five countries and conditioned the EU to change its regime for imports of bananas within a term no longer than 15 months. In July of 1998 the countries of the EU, through regulation 1637/98, issued new rules for the imports of bananas that were based on three principles. A customs contingent of imports exclusive for the ACP countries of 875 thousand tonnes of imports with a zero tariff, another customs contingent of imports from third party countries of 2 million 200 thousand tonnes with a tariff of 75 ecus per tonne; and the establishment of import licences. As it is derived from this regulation there were no major changes, and the complainant countries rejected the structure of this 'new' regime.

¹⁴ Former term for the euro, €.

¹⁵ Betancourt, R., Espinosa, M. C., Falconí, J., "*Ecuador and the World Trade Organization*" Central Bank of Ecuador, Quito, 1996, Pp. 193.

¹⁶ Ibid., pp. 196.

Within the framework conducted by the WTO, Ecuador maintained its complaint, that in the year 2000 obtained a favourable resolution. The resolution of the DSB authorizes Ecuador to impose sanctions for 201 million US dollars against thirteen member countries of the WTO on the following products: meat, alcoholic beverages, cosmetics and toys. Due to the fact that the imposition of sanctions on those products do not imply a significant compensation for Ecuador, the country is studying the possibility to impose a system of 'cross retaliation'. Through this system, Ecuadorian authorities could set compensations on areas such as services and intellectual property. This possibility has been rejected by the EU, arguing that "sanctions should be first applied on the product or commercial sector where the violation of norms occurred".¹⁷

But the complaints for the application of the EU trade policies against Latin American banana have not ended. Last year, as a display of coherency with the multilateral trading system, the EU Ministerial Council eliminated the quota system for bananas and the licences for traditional operators, as well as the global quota for banana (2 553 000 annual tons), this in a five year term.

As a replacement for this old system, the trade authorities from the EU proposed a mechanism called 'first come, first served', a mechanism that obliged that when a shipment was sent to the EU, a warranty has to be sent as well to a European operator, specifying the quality of the product and the date of arrival. Once the shipment arrives in port the exporters are informed of which percentage of the shipment can be downloaded, and the calculation is based according to the supply and demand in the European market. This system, that according to EU authorities, is in compliance with WTO regulations, has confronted two postures. One, held by the USA, Costa Rica, Colombia, Guatemala, Honduras, Nicaragua and Venezuela that rejected the new imports Regime for affecting international competitiveness, and damaging the workers' conditions and for causing social problems and perpetuating EU favouritism to ACP countries. (El Comercio, 2000). A second one, held by Ecuador, was in favour of the system application. According to national authorities and national chambers of producers, through the new Regime, Ecuador could have taken advantage of the lower prices and enter the EU market under better conditions, and therefore regain its position against its main competitors. (El Comercio, 2000). Nevertheless, and despite that the implementation of the 'first come, first served' system was a fact, the USA achieved a late agreement with the EU and made it revoke the new system and commit to the enforcement of the old quota system, with which the USA still preserves the hegemony of its traditional operators and traders: the multibillion transnational companies. This decision was announced on 11 April 2001 and shall be in effect from 1 July 2001.

The new system establishes import licences which are distributed among two groups: the 83 per cent for the traditional exporters and the remaining 17 per cent for the non-traditional. The system recognizes in Ecuador the category of main supplier and reinforces its commitment of enforcing a tariff system from 1 January 2006. (Semana de Economía y Negocios Líderes: Año 3 No. 185, 7 May 2001).

¹⁷ *El Comercio*: Ecuador wins the dispute with the European Union. Section B. Quito, 18 March 2000.

The effects on the access of the Ecuadorian banana to the European market

The Government and the banana producing sector have claimed that important effects have derived from the application of the EU Banana Regime. Among the principal effects of the application of the European Regime are: the reduction in the export prices of bananas and the reduction in the expected rates of growth of exports to the traditional European markets, as well as effects on the diversification of export markets and impacts on the profitability of producers.

The first real effect of the imposition of the EU Regime was felt in Ecuador in 1993 through the decrease of the price of the Ecuadorian fruit that caused a loss of approximately US\$49,000,000. This loss was the result of excess of supply in the US, Asia and non-EU European countries because of the impossibility of accessing the traditional European markets (MAG/PSA-1994: 4). In the later years of the application of the EU Regime, a more stable trend is observed on export prices.

The second major effect occurred in terms of volume. Due to the imposition of the regime for bananas, the exports towards the European market were reduced 21 per cent in 1994 and 19 per cent in 1995. "In free market conditions, the exported volume would have been 694,969 metric tons in 1994 and 731,722 tons in 1995. Because of the regime, the actual exports were 548,400 metric tons in 1994 and 566,313 metric tons in 1995" (MAG-1995: 3). The study also reveals that taking into account the loss of volume plus the income generated from transportation and insurance by the banana producing activity, the estimated losses for Ecuador were at least US\$144 million in 1995.

The third effect provoked by the application of the Regime is related to the diversification of markets for the exports of Ecuadorian bananas. Due to the expectations generated by the implementation of the Regime, particularly for the decrease of exports to Germany, the country designed a strategy to access new markets and to reactivate those that had been left behind, such as the former Soviet Union, Argentina, Spain, Portugal, Romania and Switzerland (MAG,1994: 4). It should be pointed out that although the increase of exports of bananas to those markets did reduce the commercial vulnerability of the banana sector, they did not offset all the losses that Ecuador confronted due to the reduction of its exports to traditional markets.

ANNEX II

General policies of the banana producing sector

- ⇒ 1980 Minimal reference prices are fixed by the MAG.
- ⇒ 1990-1999 Prices for Premium and Extra categories of bananas are set.
- ⇒ 1992-III-25 The Law for the Facilitation of Exports is promulgated.
- ⇒ 1994 The last Organic Functional regulations are issued by PNB.
- ⇒ 1994-I-5 The Decree 1351 is promulgated for phytosanitary control of plagues that is to be executed by PNB.
- ⇒ 1994-II-25 The Environmental Sanitation Regulation for the Banana Industry is promulgated.
- ⇒ 1994-VII-5 The Decree 1850 is promulgated which requires adjustments in boxes and packaging to comply with specifications of the MICIP and the MAG.
- ⇒ 1994-IX The Law of Reforms to the Law of Facilitation of Exports is promulgated.
- ⇒ 1994-XI-22 Decree 2294 that prohibits new banana plantations and requires that the PNB oversees compliment of this regulation.
- ⇒ 1995-I-25 Inter- Ministry agreement 014 establishes the production of boxes for “new markets”.
- ⇒ 1995- II-24 Inter-Ministry agreement 0077. The PNB to co-ordinate all mechanisms so that packaging complies with technical specifications.
- ⇒ 1995-V-15 Ministry Agreement MICIP-MAG. The exports of banana need to comply with the information characteristics of the INEN.
- ⇒ 1995-V-29 Ministry Agreement 122. Baby banana and Red banana are incorporated to the policy of prices for the international market.
- ⇒ 1996-IV-19 Agreement 128. The DE 1351 of R.O. 352 from 5-Jan-94 is suspended.
- ⇒ 1996-IX-25 Agreement 025. The exports of bananas need to comply with the classification of the fruit.
- ⇒ 1996-X Agreement 032 leaves without effect A128.
- ⇒ 1996-XII-27 Inter Ministry Agreement 114 sets minimum reference prices FOB of exports of bananas in US Dollars.
- ⇒ 1997-I-03 Inter Ministry Agreement 002 that sets new reference prices FO in US Dollars.
- ⇒ 1997-VII-24 The Law to Stimulate and Control the Production and Commercialization of Bananas is promulgated. (This reforms the Law of 6 of August of 1997 and that of the 22 of May of 1998)

- ⇒ 1997-VIII-06 OR 124- Law to Stimulate and Control the Production and Commercialization of Bananas.
- ⇒ 1998-X-5 The Regulation for Vegetal Sanitation is promulgated.
- ⇒ 1999-XII-29 The Banana Consultative Council is conformed
- ⇒ 1999-XII-29 The Rerorm Law of the Law to Stimulate and Control the Production and Commercialization of Bananas is promulgated.

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