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CRISIS, EXTERNAL DEBT, MACROECONOMIC POLICIES AND THEIR RELATION TO THE ENVIRONMENT IN LATIN AMERICA AND THE CARIBBEAN

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Foreword

The purpose of this article is to explore the relations of the external debt crisis and the economic policies associated, with environment.

It is not easy to separate the different causes and efects in the development-environment relationship. On the contrary, the more one delves into the topic, the more difficult it is to separate "crisis and debt" causes, and for a very simple reason; "crisis and debt" causes are themselves effects of exacerbation in the adverse factors in the situation created by the prevailing development style in Latin America and the Caribbean in the recent decades. Consequently, to gain a better understanding of the problem, one must look back to the salient features of development in the region prior to the crisis, when the development style was in full expansion. It was considered more useful to describe the characteristics of that period and the crisis period in terms of traditional economic categories without mixing them with the environmental dimension, since it would allow the reader to note the common view on this topic, without going into factors linked to the environmental sustainability of development, which is a concept that significantly changes the way development is viewed. Owing to the complex network of the factors and interactions that play a role in the crisis, inclusion of the environmental dimension would have detracted from its importance by weakening its presence among all the other factors. Consequently, it was decided to deal with them in different chapters.

The first chapter presents an overview of the economic crisis and of adjustement policies, and introduces them through the period prior to the crisis.

The second chapter is divided in three parts. An analysis of the evolution of the gross domestic product appears in the

first part, and the effects of the crisis and adjustement policies on sectoral production, in the second; because of its environmental importance, the agricultural sector receives a distinct attention. The third part of this second chapter gives consideration to the effects of the crisis in the social environment.

The third chapter attempts to meet the basic objectives of this paper since it explores the effects of the crisis on environmental change and deterioration processes. Consequently, in setting forth the relationship between development styles and the crisis, the first part of this chapter puts forward basic considerations concerning major environmental change and deterioration processes in Latin America and the Caribbean. The second part deals with the immediate effects of the crisis on the environment and their perspectives in the medium and long terms.

I. ECONOMIC CRISIS AND ADJUSTMENT POLICIES

A. OVERVIEW OF THE ECONOMY'S EVOLUTION PRIOR TO THE CRISIS[1]

Following World War II, the societies of Latin America and the Caribbean evolved decisively from a predominantly rural situation towards urban-industrial profiles. Industrialization was the major objective and the global policies implemented were in line with an economic strategy aimed at achieving development through industrialization.

The growing strength of industrialization strategies throughout the 1970s implied resource allocations that clearly favoured manufacturing to the detriment, principally, of the agricultural sector.

Expansion in the production of both durable and non-durable and intermediate and capital goods was possible thanks to protectionist policies that permitted import substitution of these items. The countries applied a great variety of trade policy mechanisms; the main tool for controlling the purchase of manufactured goods abroad was customs tariffs, supplemented by other charges and other tariff-like mechanisms (quotas, prohibitions, and so forth).

An important condition within industrial development strategies was to maintain low food prices because of their implications in determining wages. This led to price policies that discouraged agricultural and livestock activities in general.

Furthermore, in order to avoid changes in real wages by keeping domestic prices low, there was discrimination against the production of internationally tradeable goods, both exportables and non-industrial import substitutions. Additionally, exports

were limited through tariffs, quotas, and so forth, and food imports were directly or indirectly favoured.

Export taxes and restrictions, which not only affected agricultural exports but mining exports as well, were also the result of fiscal policy.

In the past decade and up to the beginning of the 1980s, real exchange rates were constantly revalued, thereby limiting the possibilities for export expansion and diversification, as well as the substitution of imports, which, on the contrary, grew. The sector most affected was agriculture, whose exports grew at an annual rate of 2.8 per cent, while agricultural imports grew 10.2 per cent (14).

Reduced agricultural protection was consistent with State decisions to keep food prices low, as has already been underlined, for political and social reasons. By benefitting consumers, their real income grew and, consequently, anti-inflationary measures were more palatable, although food producers were punished.

It was recognized that such policies had adverse effects on the agricultural sector and, at the same time, there was awareness that rural areas could become a market for manufacturing expansion and that agricultural activity "generates wage goods". Consequently, specific policy measures in favour of the agricultural sector were designed and implemented and efforts were made to ensure that the functions referred to could be achieved. (14)

In the 1970s, most of the countries of the region attempted to deal with the agricultural sector in a comprehensive manner. On the one hand, attempts were made to solve structural land owenership problems and related social and political pressures, basically through agrarian reform programmes and, to a lesser degree, programmes of credit and assistance to small producers, whether or not they were owners.

Programmes were also designed to support production, which encouraged the adoption of technological packages on the part of

producers and support for marketing by developing appropriate infrastructures, establishing institutions specialized in the field, purchasing power and encouraging producers to organize in different types of legal associations in order to assume the management of certain marketing functions.

Emphasis on agrarian social change in the 1960s was replaced by emphasis on agricultural economic growth in the 1970s. This led to the selection of economic policy tools that were aimed at stimulating production. In a complementary manner, income transfers through public investment and direct subsidies, technology transfers through production support programmes and improvements in rural social benefits occurred. (14)

In the 1970s, important changes in relative domestic prices took place caused both by fluctuations in international prices and by the application of the general economic policy. The numerous implications of agricultural price movements, and particularly of food prices, prompted Governments to design and apply different types of intervention to control or neutralize unwanted political effects, to ensure industrial growth and to benefit consumers.

Persistent distortions in farm prices influenced the slow but steady introduction of economic policy measures and tools to favour certain farm products, such as tariff preferences, subsidized loans, supply of capital goods, and technical equipment and transfer of inputs at reduce prices, direct subsidies, tax benefits and income by means of public agricultural investment and technical support programmes for production, and the provision of social services in rural areas. (14)

Before the crisis, credit policies and interest rates in most of the countries of the region openly favoured agriculture. Official lending to agriculture rose notably (from 50 per cent to 100 per cent between 1975 and 1981 in constant terms) and was granted at preferential interest rates. (14)

In the last years prior to the crisis, the public farming apparatus' share in total public expenditures remained relatively stable with slight increases in some countries. State investment in agriculture contributed to its economic growth; the purpose was to encourage, direct and facilitate private investment, and state investment had a pronounced and vigorous effect on the performance and composition of production. (14)

Sectoral public investment was concentrated in irrigation works, land improvement, upgrading of storage facilities and marketing, and the purchase of the machinery and equipment needed by the technical assistance and research services. It was also incorporated in the State programmes for promotion of production, training, research, extension, formation of co-operatives, agrarian reform and rural settlement and development. (14)

The specific agricultural policy goals of stepping up the annual growth rate of the production of food and other agricultural goods were reached quite satisfactorily. Sustained increases in productivity occurred and domestic supply gained certain flexibility. The profitability of crop farms improved and thereby the real income of at least medium and large producers.

Social advances, however, were very limited and did not offset the adverse effects of concentrating imbalances that were typical of production modernization, concentrated in agribusiness economy. In many countries, the State was unable to ensure the broad social sectors incorporated themselves properly into the process of technological change or as suppliers of food to the big urban markets. (14)

Agribusiness continued to coexist with peasant farming, each with different amounts of land, capital and technology, with different types of economic units and levels of output, productivity and income, and with different kinds of production goals and links with the other sectors of the economy and the foods, factor and financial markets. The economic and social

consequences of this dichotomy have been exacerbated by the steady increase in the number of landless workers and the growing heterogeneity of production in terms of resources, technology, productivity, employment, income and formation of human capital. (14)

The combination of biased and compensatory policies produced an expensive pattern of agricultural development, which was by its very nature unsustainable in the long term and which in its financing had some impact on the national external overindebtedness, for it had a high administrative cost. This pattern also discouraged the substitution of farm imports, and this was exacerbated by the exports subsidies introduced by the developed countries. (14)

In summary, pre-crisis economic management was typically biased against the production of tradeable goods, and efforts were made to compensate for that bias through specific policies, and for the most part sectoral policies, which, in cases some, nullified the adverse effects of such management.

B. ECONOMIC CRISIS

The economic crisis in Latin America and the Caribbean became apparent in 1981, but it was not until August 1982, however, when Mexico announced that it could not continue meeting its international financial commitments, that the world became aware of the problem. That date marks the beginning of the crisis which, at the outset, was viewed as an isolated case of temporary lack of liquidity, but rapidly spread to most of the underdeveloped world.

The Economic Commission for Latin America and the Caribbean (ECLAC) has shown that the gestation and evolution of the crisis was affected by many different internal factors which were both structural and temporary and not only economic in nature, but also political and social; nevertheless the influence of external factors was decisive.

During the 1970s, within a process that favoured great international liquidity resulting from substantial increases in oil prices, the countries of Latin America and the Caribbean, as well as other developing countries in Africa, Asia and Europe, considerably increased their external indebtedness. Net inflow of capital was such that it not only allowed total payment of debt servicing, but also provided financing at values much higher than those of exports. These positive net flows were not matched by investment which, in a time horizon consistent with that of debt servicing, would expand the net availability of foreign exchange to confront such servicing.

At the end of the 1970s, with the panorama of excessive indebtedness already underlined in a context of world recession caused by the anti-inflationary policies of the advanced countries in response to the 1979 hike in oil prices, there was a convergence of deterioration in external demand and terms of trade, which had been evident for some years, a sharp fall in net capital inflow, a significant increase in external debt interest rates and, as a consequence, in servicing payments, and an increase in net payments of profits abroad.

A voluntary factor of importance in the drop in net capital inflow was that, following Mexico's explosive announcement in 1982, the international financial community, in fact, greatly reduced the amount of medium-term funds for the underdeveloped world. This reduction even affected some countries, such as Colombia, which were not facing payment difficulties, did not have macroeconomic imbalances, and had not accumulated debt at a rapid pace. For the underdeveloped world, as a whole, external financing dropped by almost 40 per cent from 1981 to 1983. (6)

The result was a current account deficit in the regional aggregate that reached figures equivalent to 35 per cent of exports in 1981-1982, more than US$40 000 million in 1982 in spite of a significant surplus in the trade balance. More than half of the negative balance of the current account had to be financed from international reserves. (14) and (17).

A recent ECLAC study has estimated that, in the case of the countries of Latin America and the Caribbean, price deterioration in non-oil exports and increases in international interest rates account for almost 50 per cent of the deficit in the region's current accounts in 1981 and 1982.

External imbalance itself or in combination with various other factors, produced internal imbalances. To confront both, but particularly the serious deficit in current accounts which could not continue being financed by a net inflow of loans and investments from abroad, at least to an extent that would allow a net flow favorable to the country, the Governments were compelled to design and apply relatively severe adjustment programmes whose effects have been dramatic because of their recessive and inflationary nature.

In the region as a whole, the effects were a sharp fall in the growth rate of the domestic product in 1981, a reduction in absolute terms in 1982 -which had not occurred in the preceding 40 years- and an even greater reduction in 1983. In 1984, the downward trend was interrupted by slight growth in economic activity, which fell again in 1985; in 1986, the growth rate of 1984 was recovered, but it became less favorable in 1987.

Public spending was cut back considerably, as were private expenditures and income. Reduced economic activity encouraged greater unemployment, underemployment and marginality. Real wages fell and food, health and housing conditions deteriorated.

The crisis became generalized and affected both countries with relatively more developed economies and countries with poor economies, countries that applied interventionist strategies and policies addressed to the internal market and those that followed strategies of greater openness to foreign trade and developed market economies, to oil economies and to economies dependent on imports for their fuel supply.

In any way, there was a tendency to oversimplify explanations of the external debt crisis; great uniformity in behaviour among the countries of Latin America and the Caribbean

has been implicitly assumed. And, although there were factors in common, the influence of factors specific to each country produced crucial differences between countries.

As a result of the 1973 oil crisis, there was a deliberate indebtedness strategy in Brazil to undertake large investment projects for imports substitution. In Mexico and Ecuador, growth in public spending and fiscal deficits, encouraged by the optimism resulting from oil wealth, were important factors in external indebtedness. In Chile, fiscal policies did not play a direct role in the rapid accumulation of foreign debt; the openning of the Chilean economy allowed the private sector to finance consumer increases through foreign loans.

Another decisive internal factor in the crisis, in addition to those indicated in the preceding paragraph, was, in the case of the countries of the South Cone, accumulated delays in exchange rate adjustments, which were part of the anti-inflationary policies followed by those countries. According to some authors, who also recognize the influence of external impacts, this factor was one of the most important causes in triggering the crisis. (6)

C. ADJUSTMENT POLICIES

Even though the causes of imbalances that the countries of the region faced were diverse, the adjustment programmes applied between 1981 and 1985 tended to be similar. Thus, the key premise of these programmes is that the root of the imbalances was excessive demand that produced a deficit in the balance of payments and inflation, and distorted the relative prices of tradeable and non-tradeable goods. Consequently the efforts of such programmes principally sought on the one hand, to correct the distorted prices (normally through devaluation); and, on the other, to attack the allegedly basic cause of imbalances- excessive aggregate demand- by reducing the fiscal deficit, restricting credit and controlling wages. (17)

At the roots of disequilibria, there is always an imbalance between supply and demand, but the causes of relative excessive demand differ between countries (it may be approached as an excess in demand or as a deficit in supply). Viewing both cases as problems of excess in demand distorts the nature of these problems and results in more pertinent policies being overlooked as a means to attack the true causes of imbalances. (17)

In any case, it should be noted that, to a great extent, the shift in economic policy with regard to the bias previously-mentioned of the macroeconomic policy against tradeable goods was the result of dynamics in an automatic adjustment process. Nevertheless, as a whole, the adjustment process in the region has consisted of both involuntary components, such as the elimination of the trade deficit, and voluntary components, such as the generation of a surplus in the trade balance and the transfer of resources abroad. (11)

In general, these programmes are in line with those promoted by the International Monetary Fund (IMF). Agreements with the IMF including restrictive provisions in monetary and fiscal matters and the reduction of Government deficits through greater taxation, higher rates for public services and reductions in current expenditures. The real exchange rate had to be raised, and real interest rates had to be positive. It was accepted that real wages dropped.

Just as the intensity and persistence of adjustment policies differed for different countries, the degree of success achieved in meeting the goals set forth also varied. Qualitatively, however, the results were similar among countries, just as the programmes applied were also similar.

The region as a whole was able to significantly reduce its external imbalance with extraordinary rapidity, which proved to be much easier than controlling inflation; which, in contrast, accelerated.

The current account deficit, which was equivalent to 35 per cent of exports in 1981 - 1982, as previously indicated, was

reduced to 5 per cent in 1984-1985. These results were achieved at the expense of an average drop of 7 per cent in per capita gross domestic product (GDP), a significant increase in unemployment, a drop of more than 20 per cent in investment and an increase in the annual inflation rate of nearly 300 per cent in 1985. (17)

The exchange rate has been one of the most important macroeconomic policy tools in the adjustment process in its role as the principal regulator of foreign trade.

The countries devalued nominal exchange rates notably by stages until, in 1987, they reached a level at which the real rate was above those prevailing before to the crisis.

Corrections in the exchange rate allowed production activities for export and import substitution to be stimulated. At the same time, the cost of imported inputs and capital goods rose and harmed more technified activities.

Devaluations, however, encouraged inflationary processes and hindsight consequently shows that more importance should have been given to the stabilization component in the programmes under way.

The role that the exchange rate began to play in trade minimized, in a certain manner, the role of trade policy tools that were aimed principally at complementing the effects of the exchange policy, particularly in reference to exports. Bureaucratic red tape was reduced, as were tariffs and paratarriff measures.

In general, most of the Latin American countries made significant real devaluations between 1982 and 1986 which, in some cases, more than offset the overevaluation of the effective real exchange rate that preceded the crisis.

Both exchange rate policy and trade policy provided the means for considerable reductions in imports and increases in the physical volumes exported.

Nevertheless, the expected effect of the exchange policy on the relative price structure of tradeable and non-tradeable goods was only partially reached in the short term. The devaluations coincided with a sharp and sustained fall in the international prices of the main products that the region exports. Increased inflation contributed to cancel a large part of the policy's effects.

The general trend in price controls was to free them and thereby reduce the role of State administration and, at the same time, strengthen the participation of the private sector in the marketing of farm products. When prices continued being administered by Government authorities, the increase in the cost of the imported component in farm production, and the higher prices of imported foods, argued for adjustment.

Monetary policy, just as exchange policy, became one of the principal factors in macroeconomic management during the adjustment, specifically in reducing the aggregate demand.

In most countries, the adjustment process led to considerable reductions in lending and, in many cases, subsidized interest rates were also eliminated. Official lending to agriculture was cut back appreciably from 1983, together with the reduction or elimination of subsidies, both of which were components of compensatory policies of the pre-crisis period previously referred to in this paper.

Public spending was reduced drastically and, at the same time, underwent changes in its composition, which had a strong impact on the economies where the weight of the fiscal sector was most significant, and on the sectors of the economy where the State's role was also most significant. In some countries, public expenditures dropped in real terms; reductions were concentrated in public investment and in the remuneration of civil servants. The main adverse effects were in the overall process of productive investment, in the general level of economic activity and in the social components of public spending. The sector most affected was agriculture.

In any case, in certain countries, efforts to reduce public spending were partially neutralized by increases in interest payments on the foreign and domestic debt, resulting from the devaluations which led to stabilization programmes and deliberate policies to raise domestic interest rates to curtail aggregate expenditures.

In spite of everything, fiscal deficits of the group of principal debtors grew in relation to the pre-crisis period, mainly because Government revenues were also very adversely affected by the recession that followed the crisis and by the effect of increased domestic debt interest rates on fiscal accounts.

The wages policy adopted was also linked to the objective of cutting back aggregate demand. Real wages fell as a result of the declines in revenue of domestic expenditure, which were in turn due to the deterioration in the terms of trade, the higher interest rates, the reduction or elimination of external financing, and ineffective adjustment policies. Furthermore, there were deliberate wage reductions in some countries (cut by decree in Brazil, frozen in Argentina, reduced by indirect measures in Chile and increased below the inflation rate in Mexico).

Between 1980 or 1981 and 1985, real wages fell in several countries of the region. The drop in wages reached 39 per cent in Peru and Ecuador. In some countries, such as Argentina, Brazil and Colombia, however, there were increases during the same period of time. (6)

A fact of great importance to adjustment policies and their results is that, in spite of the great efforts made by almost all the countries of the sub-continent to confront the crisis, the magnitude of their trade surpluses has been systematically insufficient to cover their interest payments. For the region, while the amount of interests rose to 5.3 per cent of the gross domestic product in 1986, the trade surplus reached 2.3 percent. For most of the countries, the gap has been covered after long

and extended negotiations by private banks and multilateral institutions. (6)

In the same context, several studies have suggested that for the great majority of the highly-indebted countries it would be impossible in the short term to generate sufficient trade surpluses to cover interest payments without also reducing their level of real consumption. (6)

The emergency packages recently implemented have been successful in preventing what some considered to be an almost inevitable collapse of the world financial system. However, this has been achieved at a significant cost to the principal debtors in terms of lower employment levels, income and standard of living. (6)

All in all, the adjustment was inefficient. Indeed, the region not only endured a reduction in domestic absorption out of all proportion to the balance of payments impact of permanent external and domestic policy shocks, but all suffered enormous unnecessary welfare losses, principally due to an untoward dearth of external finance, but also in consequence of domestic institutional and structural imperfections and the absence of commensurate domestic policy initiatives. (11)

Four characteristics of the adjustment process carried out, which explain their markedly recessive and inflationary nature, are cited below. (17)

First of all, there was a "forced overadjustment". Prior to 1982, the net inflow of capital was, as was noted in the preceding section, sufficient to cover total payment of the external debt service, and also to import goods worth up to 20 per cent more than the value of exports. From 1982 on, this net transfer of resources became negative to a degree equivalent to 25 per cent of exports; that is, there was a deterioration in terms of trade of almost 40 per cent ... without taking into account possible deterioration in the trade balance caused by changes in trade levels or in the relative prices of the goods traded. The countries had to adjust not only to possibly

permanent deterioration in their external accounts (overindebtedness, oil prices) but also to temporary deterioration (increases in international interest rates, cyclical movements of capital).

Second, the adjustment was recessive and inefficient because it had to be made so rapidly. An efficient adjustment implies both a reduction in spending and reallocation of resources from the production of non-tradeable goods to the production of exportable goods and import substitutes, a process that is necessarily more time-consuming. That is, changes in real flows may be necessary in addition to changes in nominal values.

Third, the adjustment programmes were also recessive because they focused excessively on tools that were aimed at reducing demand; in addition to reductions in expenditures, changes in relative prices also resulted in contraction. The rapidity of adjustment in external accounts did not initially direct the impact of the devaluations towards the substitution of foreign products by domestic products, but rather towards even less spending. That is, instead of resulting in a "price effect" -substitution in consumption- it resulted in an "income effect"- reduced expenditures.

Finally, the adjustment programmes were inflationary because the principal instruments used in attempts to reallocate demand were devaluation and adjustment of relative prices. The initial impact was an increase in prices and, through indexing mechanisms and expectations of economic agents, the acceleration of inflation, which made the adjustment results both recessive and inflationary in the short term.

Last of all, it should be noted that the adjustment process is not yet complete. Regional averages hide important deficits in the current account- more than 25 per cent of exports in Bolivia, Chile and most of the Central American countries, or the alarming increases in Ecuador and Mexico. Consideration must

also be given to the actual or potential presence of inflationary phenomena whose control calls for stabilization policies. (17)

The economic problems of the first half of the 1980s are expected to continue during the rest of the decade and beyond, unless radical measures are taken in the field of debt and capital flows or strong recovery takes place in the economies of the industrialized markets which would revitalize world trade and, consequently the price of goods. (3)

II. EFFECTS OF THE CRISIS ON PRODUCTION AND THE SOCIAL ENVIRONMENT

A. EVOLUTION OF THE GROSS DOMESTIC PRODUCT

Tables 1 and 2 provide a view of the evolution of the total regional GDP and a breakdown by economic activity. Table 3 presents total and per capita regional GDP growth rate by activity.

The reduction in the annual growth rate in 1981 may be seen in table 2; there is a decrease from 5.5 per cent in the 1975-1980 period to 0.7 percent in 1981. In 1982 and 1983 there is an annual decrease in GDP equivalent to 1.2 per cent and 2.7 per cent, respectively, in absolute terms. There is growth recovery in the following years, but without reaching the rate observed in the 1970s. In 1984, the GDP reached US$719.4 billion, near the historical peak of US$721.8 billion in 1981. In 1986, GDP reached US$772.1 billion. For the entire 1980-1986 period, the annual accumulative growth rate was 1.2 per cent.

Per capita GDP in the 1980-1986 period fell at an annual accumulative rate of 1 per cent (see table 3). Estimated per capita GDP for 1986 was US$1 893.5 even lower than the 1980 level of US$2 005.9.[2]

As may be seen in table 1, the crisis caused changes in the structure of the relative sectoral share of GDP. In 1981 changes may be observed in the trends observed up to 1980, which are consistent with the evolution of the economy during the precrisis period briefly described in the first chapter of this report.

In 1983, the year that GDP reached its lowest point, the agriculture, construction, trade and the complex of service sectors (financial, housing, and so forth) all improved their percentage contribution to GDP, in relation to 1980, the final

year of the pre-crisis period. Meanwhile, the mining sector maintained its relative contribution and the remaining sectors -industry, public services and transport/communications- decreased their share.

Between 1983 and 1985, the contribution of the agriculture, hunting, forestry and fisheries sector grew; in 1986 it fell, although not to the level of 1980. During the same 1983-1986 period, once again there was a turnabout in the trend of the industry sector whose relative participation in the regional GDP began to grow, with similar occurrences in general services (electricity, gas and water). The share of the construction sector increased even more between 1993 and 1986. Mining, trade and aggregate services practically maintained their share. In contrast, the transport, storage and communications sector decreased its relative share an even more.

In the 1980-1986 period, the sector that experienced greatest growth was the construction sector, which grew at an annual rate of 6.3 per cent. It was followed by the macro-sector of personal and other services with an annual accumulative rate of 4 per cent. Agriculture and commerce grew at the same rate, 1.6 per cent annually. Transport, industry and mining grew at rates under 1 percent. The electricity, gas and water sector was the only sector with a negative annual accumulated growth rate in GDP of 2.2 per cent (table 2).

The growth rates indicated are significantly lower than those between 1970 and 1975 and from 1970 to 1980, except in the case of mining, which presented negative rates between 1970 and 1975.

The adjustment policies adopted, with their involuntary adjustment component resulting from the crisis, caused an important reduction in the bias against tradeable goods in the macroeconomic policies that prevailed at that time.

A change in relative prices occurred, owing to an increase in the real exchange rate; the prices of exportable and importable tradeable goods rose relatively in relation to non-

tradeable goods. Consequently, the production of tradeables became more profitable than production of non-tradeables, particularly in production activities that use more sophisticated technology, since they depend to a greater extent on imported inputs than less technified activities do.

For the most part, the above explanation accounts for the change in the structure of sectoral shares in GDP between 1980 and 1983.

The other major component in the adjustment, reduction of the aggregate demand through, among other activities, a drastic reduction in real public expenditures and in the real availability of credit for the production sectors -without sufficient compensatory measures that favoured the reallocation of resources between the production activities of non-tradeable and tradeable goods- was responsible for lower production, which contributed to the drop, in absolute terms, of GDP observed in 1982 and 1983.

The favourable response in the production of tradeable goods, particularly in the agricultural sector, which was necessarily slower than the voluntary or involuntary changes that favoured it, was not sufficient to offset falls in the production of other sectors.

Increases in GDP beginning in 1984 are explained basically by the change in the recent industrial GDP trend which, in turn, resulted from the readaptation of the sector and the partial reestablishment of some protection measures.

The reduction in GDP of the agricultural sector, as well as the slow growth of the mining sector, may be attributed to fluctuations in the relative weight of the decisive factors in GDP evaluation following the crisis, factors produced or not produced by the adjustment, such as movements in international prices.

B. EFFECTS OF THE ADJUSTMENT POLICIES ON SECTORAL PRODUCTION

1. Production of the agricultural sector

a) Influencing factors

The exchange policy -aimed at nominal devaluations to raise the real exchange rate- and trade policy -to deregulate exports- encouraged exports and import substitution. The effect should have been a change in the relative price structure of tradeable and non-tradeable agricultural products. Thus, the adjustment should have favoured the agricultural sector.

However, changes in relative prices were achieved partially because the devaluations were followed by large and sustained declines in the international prices of the main farm products exported by the region.

In the 1980-1986 period, the prices of sugar, cocoa, soybeans, cotton and coffee -which experienced recovery in 1986- fell systematically. In 1985, wheat prices began to fall and, in 1986, banana prices. (14).

In addition to the indicated effects of the drop in international prices, inflation became worse and, in many cases, annulled the effect that the devaluation in relative farm prices could have had. Such is the case, for example in 1980-1986 in Argentina, where, vis-a-vis an average annual devaluation of 301.2 per cent, annual inflation reached 366.5 per cent. In Brazil, average annual devaluation was 195.1 per cent and annual inflation, 175.5 per cent. In Mexico, devaluation and inflation were 81.5 percent and 76.9 per cent, respectively; in Peru, 111.4 per cent and 113.5 per cent. (6).

Deterioration in the terms of trade in Latin America is reflected in table 5 and the evolution of the real exchange rate of a group of Latin American countries is shown in table 6.

During the 1981-1986 period, there was significant deterioration in their terms of trade, particularly in the case of the oil-producing countries.

In connection with the real exchange rate, table 6 shows the orientation of exchange policies that should maintain the real exchange rates or, in the case of countries with outdated exchange rates, raise them. These policies were one of the most outstanding components of the adjustment.

The structure of exports shows a change favourable towards farm exports in 1983, the year in which the downward trend in the FOB value of total exports was interrupted. From almost 51 per cent en 1960, it dropped to 25 per cent in 1982. In 1983, it increased to 27 per cent and remained at approximately that value, at least until 1985 (see table 4).

It should be noted that the adjustment had other adverse effects on agricultural activity and that these effects were stronger in the economies with strategies aimed at the domestic market and at making the Government's role, in agricultural processes more active. Their capacity to respond to the change in relative prices by reallocationg resources to favour the production of non-tradeables was more limited and many of their production activities had to face foreign competition, a process that some countries with free market and trade openness strategies had already experienced prior to the crisis.

Nominal increases in production costs, resulting from the higher real exchange rate, particularly in the case of production for the domestic market, strongly affected their profitability.

Another factor in cost increases were higher interest rates and/or elimination or reduction of subsidies for farm credit and production processes.

Real farm wages deteriorated in the 1980-1986 period, both because of inflation and because of high unemployment and underemployment rates. In the period indicated, averaging the case in 16 countries, deterioration was 15.2 per cent. By

reducing their farm wages bill, farming enterprises sought to offset the increase in the other components of production costs and to keep their profit levels relatively stable.(14)

Public spending policy is another factor that influences sectoral behaviour. As already indicated, the adjustment programmes included significant reductions in expenditures. The effects of these policies were stronger in the countries that assigned a leading role to State intervention, and also stronger in sectors of economic activity in which State intervention was traditionally greater, as is the case with the farm sector, particularly since the 1960s.

The influence of Government spending on the growth of the farm sector has been demonstrated empirically. A study conducted in nine Latin American countries, covering the 1950-1980 period, concluded that Government spending on agriculture, considered as an input, accounted for 20 per cent of the sector's growth in the period. (7)

Average Government expenditures for agriculture were equivalent to approximately 0.25 per cent of GDP growth and to almost 7 per cent of the increase in farm output. This share grew proportionally to the share of public spending on irrigation works, research and extension services. (7)

Finally, restricted spending was a factor in the contraction in the demand for farm products. Nevertheless, agriculture was less affected than the other sectors of national economies by the prevailing type of food demand. (14).

Since average income elasticities (0.3 and 0.4 per cent) are low, the decline in domestic spending, which was around 13 per cent between 1979-1981 and 1982-1985, did not have a severe effect on the farm sector.[3] (14)

In summary, the adjustment affected both the productivity of factors and production levels, but the intensity and direction of the changes differed depending on whether the products were tradeable or non-tradeable and whether it was agribusines or peasant agriculture.

It should be borne in mind that an analysis, such as the present one, of the region as a whole, has serious limitations and can only deal with certain aspects in an ambiguous manner, owing to large national differences both in natural resources and production skills, and in levels of relative development, to pre-crisis and post-crisis development strategies and policies, and to the influence of national phenomena, which were dramatic in many cases.

The available quantitative and qualitative information leads to the conclusion that the region's agriculture was damaged by the adjustment to a comparatively lesser extent than other sectors of the national economies. However, it must be pointed out that four or five years is not a sufficiently long period for an effective assessment of what has happended in agriculture as a result of the adjustment and, in particular, of the capacity of the various production agents in farming to respond -as measured by changes in the production structure- to the changes in the macroeconomic variables and in the specific policies for the sector. (14)

b) Agricultural gross domestic product

Reference has already been made to agricultural GDP (agriculture, livestock, forestry, hunting and fisheries) in the 1970-1986 period. Tables 1, 2 and 3, cited above, show the sector's share of GDP and total and per capital GDP growth rates.

The sector's pre-crisis evolution culminates in 1980 with an agricultural GDP of US$72 500 million (at 1980 prices), 41.5 per cent above the 1970 figure of US$82 100 million in 1985. (1)

The sector's share of total GDP (table 1) fell from 11.8 per cent in 1970 to 9.8 per cent in 1980. As a consequence of the crisis, there was a turnabout in this trend beginning in 1981 and the agricultural sector's share of GDP grew until it reached 10.7 per cent in 1985. (1)

The annual growth rate of the sector's GDP in the 1980-1985 period was 2.5 per cent, which, if the 1980-1986 period is taken into account, drops to 1.6 per cent, owing to the reduction to 1985. These rates should be compared to the 3.5 per cent annual growth of the sector's GDP between 1970 and 1980. (1)

This brief analysis shows that, although the agricultural growth rate after the crisis fell in relation to the 1970s, its share of the region's GDP improved from 1980 up to 1985.

It may consequently be concluded that the net effect of the adjustment was relatively favourable for agricultural production. If there had not been interaction with the other previously mentioned factors, which were adverse for production growth but unrelated to the crisis, such as the drop in international prices and exceptionally bad climatic conditions, the effect could have been even more favourable.

c) Physical dimensions of agricultural production

The evolution of the agricultural sector in Latin America and the Caribbean as a whole, in physical terms, is clearly shown in tables 7 to 12.

The farming area -land under annual or short seasonal crops, permanent crops or pasture land, natural or cultivated- expanded during the five-year period from 1961 to 1965 and in 1980 by 18 per cent, amounting to some 110 million hectares. In relative terms, most of the expansion was for annual crops with a 52 per cent increase, equivalent to approximately 50 million hectares.

In absolute terms, pasture land grew most, by 55 million hectares, but this growth only represents 11 per cent of the area under pasture land in 1961-1965. Permanent croplands increased by 22 per cent, a little more than 5 million hectares (see table 7).

Between 1980 and 1985, the expansion of total agricultural area, including the categories that comprise it, was minimal,

amounting to 1.4 per cent for the total area, 4.5 per cent for annual and permanent croplands and 0.4 per cent for pasture land. The annual growth rate was 1 per cent for annual crops and almost zero for other categories (table 7).

The irrigated area underwent great expansion between the 1961-1965 five-year period and the year 1980 -it grew by 68 per cent- equivalent to 5.7 million hectares. But, between 1980 and 1985, the accumulated growth of 4 per cent did not surpass 110.000 hectares annually (table 7).

By examining of the aggregate figures for a group of selected crops appearing in table 9, which are the principal crops in the region, although it should be remembered that there is another set of important traditional crops for which cultivated area figures were not available, it may be seen that there was an accumulated growth of 5.5 per cent in the 1980-1985 period, compared to 4.5 per cent for the set of short seasonal and permanent crops in table 7.

If the figures are consistent, it could be concluded that a large part of the approximately 7.7 million hectares increase in the area under cultivation during the period, 4.1 million hectares, could be accounted for by non-traditional crops ... whose growth has been favoured by the adjustment policies.

It should be noted that there will be a considerable margin for the expansion of annual or short seasonal crops that require arable land. This may be deduced by comparing the arable land under cultivation up to 1986, some 148 million hectares (table 7), with estimates of arable land in Latin America and the Caribbean amounting to some 575 million hectares.[4]

Table 8 presents a set of production indexes for the 1960-1986 period, which shows the evolution of overall agricultural production, as well as quantum indexes for crops, livestock, food and per capita food production.

According to these indexes, agricultural production has been increasing consistently since 1960. In the period following the crisis, as may be seen by examining the farm GDP, production

continued to expand until 1985 and then fell in 1986. During the 1970s, livestock production grew more than crop production, on the order of 37 per cent compared to only 25 per cent.

After the crisis this trend reversed; between 1980 and 1986, crop production grew 15 per cent, while livestock production only increased 10 per cent. In 1986, however, livestock production continued rising, but crop production fell four points.

Tables 10 and 11 focus on the production and productivity of the group of crops selected, which is referred to in table 9. The growth rates, together with the rates indicating the areas of such crops under cultivation (table 9), are presented in table 12. The crops are grouped in basic grains (soybeans, beans, rice, maize, sorghum and wheat), roots and tubers (cassava and potatoes) and some industrial crops (cotton, sugar cane and coffee).

In the pre-crisis period from 1965 to 1980, grain production expanded 4.1 per cent annually, as a result of both expansion of the area cultivated and of improvement in productivity.

Except for bean production, which fell during this period, all the other crops the comprise the group expanded considerably; although to different proportions. Soybeans grew almost 3.000 per cent and sorghum by almost 400 per cent. Rice, maize and wheat increased 51 per cent, 46 per cent and 36 per cent, respectively.

The roots and tubers group, in contast, grew weakly and its productivity decreased. In the entire period, cassava did not even increase 3 per cent, although potatoes rose 22 per cent.

A set of factors influence the above-mentioned behaviours. The notable expansion of grains was largely the result of the adoption of new technology; apparently, during this period the stage of adoption accelerated at increasing rates, particularly up to 1970. In the 1970s, the adoption of new technology began to slow down; the annual growth rate of average production in the

group of basic grains fell from 2.5 per cent, recorded for the 1965-1970 five-year to 1.3 per cente in the 1970s.

In the 1965-1970 period, however, there was also expansion in the area under cultivation with these crops (almost 42 per cent), as was the case for annual crops as a whole (on the order of 50 per cent) (table 7), which was an important factor in the physical production growth of basic grains. Furthermore, the technological effect on the increase in production between 1965 and 1980 can be estimated at 50 per cent (assuming that production without innovation would have been equal to the area planted in 1980 at 1965 yields).

Expansion was also related to the "degree of tradeability" of the product -the greater or lesser ease with which it was traded on international markets- and to its "category" as either a popular-rural foodstuff or a middle class-urban foodstuff. The greatest expansion took place in products that were more tradeable and/or had been replacing more traditional foods in the diet of urban inhabitants (basic grains in general).

At the other extreme are the more traditional crops that are not intended for intense international trade and comprise an important part of the common diet, particularly in rural areas (roots and tubers in general).

Agrarian reform progammes in the 1960s were also an incentive for the traditional farmer to put new land under cultivation and improve productivity in order to avoid its being classified as "unexploited" or "poorly exploited" with the risk of expropriation.

The production of traditional foodstuffs which are not traded internationally or only traded in a limited manner, are concentrated in peasant agriculture, which is more conservative towards change and equally or more concerned about meeting consumption needs than about producing a surplus, and is a marginal beneficiary of government programmes for the sector.

In the case of the agro-industrial crops examined -cotton, sugar cane and coffee- the behaviour during the 1965-1980 period

is closely associated with the movements in international prices. As a result of stagnation and even a decline in the growth rates of the crop area and productivity, the volume production of cotton in 1980 was virtually the same as in 1965, and coffee production fell 18 per cent. Sugar cane production, in contrast, rose 51 per cent, basically owing to expansion in the area cultivated (2.2 per cent annually); productivity grew modestly (0.6 per cent annually).

Still in relation to the group of crops selected, the trends during the post-crisis period from 1980 to 1986 differed from those of the pre-crisis period and some changes in behaviour may also be seen within the post-crisis period.

Basic grain production grew at an annual rate of 3 per cent, lower than that of the 1965-1980 period which reached an annual rate of 4.1 per cent. Tradeables, particularly of import substitutes, grew more dynamically. During the first half of the period, up to 1983, production growth should be attributed to better productivity, which increased 3.3 per cent annually, while the area cultivated only expanded by 0.6 per cent. Beginning in 1983, the situation reversed with most of the growth being attributable to expansion of the area dedicated to basic grains, which expanded 2.7 per cent annually, while yield for the group of crops remained stagnant at slightly more than 1.8 tonnes per hectare.

In the case of roots and tubers, practically the opposite occurred as regards the behaviour of variables being analysed, when 1980-1983 is compared with 1983-1986. In the first half of the period, the area, production and productivity growth rates are negative ... the production rate fell 2.1 per cent annually. But, during the second half of the period, there was notable improvement in productivity, 3.9 per cent annually, which vis-a-vis the minimum expansion in the area dedicated to this group of crops, allow annual production growth of 4.6 per cent. The result was that, opposite to what occurred with basic grains, the 1980-1986 production growth rate is higher than that recorded

for the 1965-1980 period. The behaviour of cassava and potatoes was relatively similar.

Cotton production continued to fall between 1980 and 1986 as a result of decreases in the area cultivated and in spite of improvements in productivity. Coffee production improved slightly, but sugar cane production rose substantially by 28 per cent at 4.2 per cent annually. Once again, differences between 1980-1983 and 1983-1986 may be observed in the behaviour of the variables. The relative amounts in the first half of the 1980-1986 period are far above those in the second half for sugar cane and coffee; the opposite is true in the case of cotton.

In summary, it may be seen that, although there seems to be a more favourable reaction to tradeables in the 1980-1986 period, the influence of factors unrelated to the adjustment, such as international prices, was decisive.

The regional supply of farm products -the result of adding GDP and imports and subtracting exports- fell in 1982 as a result of the crisis and fell even furtherin 1983, but it recovered in 1984 and 1985. But, at the same time, the structure of the supply of farm products changed as a result of a reverse in the import and export growth trends of farm products. Following the crisis, exports, which were slower in the 1970s, rose, and the opposite occurred with imports against a background of change in structure and slow growth. (14)

2. Production in other sectors

a) The forestry subsector

Since the forestry subsector is part of the agricultural sector, the background data on the influence of certain factors and on GDP presented previously apply, in general, to the forestry subsector as well. This section is limited to presenting some further background data on forestry volume production.

The following figures present the areas with forest vegetation in the region (thousands of hectares): (9)

Dense broad-leaved forest	704 757
Dense coniferous forest	26 859
Open forest	207 242
Forest subtotal	938 858
Bush	175 091
Fallow	171 972
Plantations	6 215
Total forestry area	1 292 136
Total area of the region	2 018 467

Forest area represents 64 per cent of the region's area; dense forests, in turn, account for 57 per cent of the forest area and 36 per cent of the area of the region. These proportions and the figures above give some idea of the significance of the forestry subsector.

Table 13 presents annual forest volume productions for four three-year periods from 1961 to 1985.

The category "roundwood" comprises wood for fuel, principally as fuelwood and -less than one third- wood for industrial uses. Its production grew from 191 million cubic metres in 1961-1963 to 328 million cubic metres in 1979-1981 and to 358 million cubic metres in 1983-1985. In terms of annual accumulative rates, the behaviour was quite uniform throughout the period; it was 3 per cent annually between 1961-1963 and 1979-1981 and fell to 2.2 per cent annually between 1979-1981 and 1983-1985.

Industrial uses include three groups of products: sawnwood, wood-based panels and pulp for the manufacture of paper. For the three groups, expansion between 1961-1963 and 1979-1981 is greater than that of roundwood and increases at annual rates from 4.2 per cent to 11.4 per cent. As in the case of roundwood,

expansion between 1979-1982 and 1983-1985 is substantially lower, although quite high in the case of pulp -6.4 per cent annually- but similar to that of roundwood for the other two products. Paper and paperboard production grew significantly during the entire period, but also at a lower rate after 1979-1981.

Exports, in terms of physical volume, for the same products during the same three-year periods, are presented in table 14. With the exception of sawnwood, the export of all products underwent great expansion between 1961-1963 and 1979-1981. Annual expansion rates fell sharply between 1979-1981 and 1983-1985, except for paper and paperboard, whose export rate is higher than in the preceding period, it rose from 15.5 per cent annually to 17.4 per cent annually.

Implicit prices of exports increased greatly up to the 1979-1981 three-year period, in relation to 1969-1971, from 74 per cent for panels to 266 per cent for paper and paperboard. The implicit prices of exports for roundwood, which fell 67 per cent, were the only ones to decline in the same period. Between 1979-1981 and 1983-1985, all implicit price fell significantly, but remained above those observed for 1969-1971. The following figures represent the percentage decrease referred to above:[5]

Roundwood	31
Sawnwood	28
Wood-based panels	6
Pulp	13
Paper and paperboard	26

The slowdown in the growth of exports, both in physical volume and in nominal value, beginning in 1981, and their decline in absolute terms in 1985, were undoubtedly influenced to some degree by the reduction in implicit prices noted above. Reference was previously made to the growth rates in physical volume of exports presented in table 19. For the same periods,

table 19 also shows that growth in the value of exports was 0.5 per cent after 1979-1981.

Table 15 shows the evolution of foreign trade in forestry products, including exports and imports, year by year from 1961 to 1985. In the 1960s, exports and imports grew 124 per cent and 91 per cent respectively. In the 1970s, increases were 622 per cent and 298 per cent, and fell 13 and 25 per cent, respectively, during the first half of the 1980s.

It has been estimated that one fifth of the region's energy consumption is met with fuelwood. Among the poorest classes, that proportion is much higher: it is fundamental, renewable, locally available and practically the only source accessible to meet the needs of the poorest classes in Latin American societies. Approximately 60 per cent of the region's entire population depends of fuelwood and charcoal as fuel for cooking and heat. (9)

Table 16 deals with the production and foreign trade of fuelwood and charcoal during the period from 1974 to 1985. Production volume depends basically on local consumption and the rate of trade is minimal. Export figures reach a maximum in 1979 and fall drastically thereafter, without any apparent decrease in prices.

The potential for the energy use of forestry resources in very high in the region, both because of the current existence of great biomass resources for energy and because of the perspectives for forestry plantations for energy purposes. However, the geographic distribution of the resources is unbalanced in relation to the geographic distribution of the demand for them. (9)

There are situations of acute fuelwood shortages that affect some 25 million people, and situations with growing deficits of fuelwood that may eventually affect some 140 million people. When there is a shortage of fuelwood, the rural population uses farm residues and manure instead, affecting the cycles of basic elements for maintaining land fertility.

Furthermore, some 45 million people live within systems with surpluses of fuelwood resources. (9)

In brief, the information presented on forestry production shows that the expansion trends seem to have slow down since 1980, particularly for products with less value added. Forestry exports, in terms of volume, also slowed down, although less for pulp, paper and paperboard than for sawnwood and panels; roundwood with its notably high figures in the past, also slowed down, but its growth rate was higher than that of other export products, except paper and paperboard, with an annual accumulated growth rate of 4.3 per cent, equivalent to an increase in exports between 1979-1981 and 1983-1985 of 243.000 cubic metres (a 20 per cent increase).

b) The fisheries subsector

The economic impact of this subsector in the region is of very little significance. With the exception of Panama, where fisheries share of GDP fell from 3.5 per cent to 2.3 per cent, and Ecuador and Peru, countries in which fisheries share fluctuated between 1 and 2 per cent in the 1980-1984 period, its share in the remaining countries of the region has been less than 1 per cent.

Catches recorded between 1970 and 1986, according to the fisheries areas defined by FAO, appear in table 17. It may be seen that, beginning in 1983, prior to which growth in catches was minimal, there is a notable increase. Between 1983 and 1983, catches increased 57.6 per cent. The South-East Pacific with an increase of 90.4 per cent and the Central-East Pacific, with an increase of 68 per cent, is where the expansion took place; in the Central-West Atlantic, there was a significant reduction of 7.1 per cent in catches, owing to depletion of the resource.

Absolute increases, as well as annual growth rates, show widely differing behaviour in the different areas of marine fishing in the region, and anchovies are the reason for some of

these differences. Between 1970-1974 and 1980, catches in the South-East Pacific, the area in which Peru and Chile obtain well over 90 per cent of the catch, and where the fish meal industry plays an outstanding role, fell substantially by 21.5 per cent, while in other areas, there was notable expansion from 20.9 per cent to 145 per cent (see yable 17). The collapse of anchovy fisheries in 1972 was a decisive factor in the decline in catches.

In the Central-East Pacific and the Central-West Atlantic, United States catches in 1986 represented 8.9 and 63.2 per cent, respectively. However, its share has declined; in 1970-1974 it was 34 and 68 per cent, respectively.[6]

Table 18 presents information on the production of fish meal and table 19, on the distribution of catches between human consumption and other uses, consisting principally of inputs for the fish meal industry.

The recovery process of the fish meal industry in the period recorded in table 18 and its notable expansion after 1983, following a moderate decrease between 1980 and 1983, may be noted. This occurred in 1983, the year in which Peru's catch also fell as a result of the El Niño phenomenon. Subsequent expansion is evident in the 108 per cent increase in production between 1983 and 1986, equivalent to an annual accumulative rate of 27.8 per cent.

Catches for human consumption between 1970-1974 and 1975-1979 grew relatively more than catches for other purposes, particularly fish meal. Catch distribution between human consumption and other purposes, 22.2 per cent and 77.8 per cent, respectively, moved to 36.6 per cent and 63.4 per cent. Since 1975-1979, these shares have undergone minor fluctuations (see table 19).

Although continental fishing tripled from 1970 to 1976, reaching 458 000 tonnes, it represents less than 3 per cent of marine fishing. (9)

Commercial aquaculture began to gain economic importance in the 1960s with shrimp activities in Ecuador. Regional volume production was 283 400 tonnes in 1985, 245 000 of which were from Mexico, Brazil and Ecuador. (9)

Fisheries imports and exports are presented in table 20. The increase of almost 30 per cent in exports between 1977-1981 and 1982-1986 should be especially noted. Although the annual growth rates of 20.5 per cent in the 1970s were notable, the annual rate of 5.3 per cent recorded between 1977-1981 and 1982-1986 is still significant, particularly taking into account the El Niño phenomenon which greatly affected production in Peru and Ecuador.

c) Energy and mining subsectors

Table 21 presents information on volume production of mining between 1960 and 1985 for the region as a whole and for the non-oil producing countries. According to that table, regional volume production has grown steadily with a slight drop in 1984. The production of the non-oil producing countries has also grown steadily, but at a higher rate. Between 1980 and 1985, total regional production grew by almost 12 per cent, while, the increase in the non-oil producing countries was above 19 per cent.

Since 1970, the volume production of the non-oil producing countries has grown at rates higher than those of the oil-producing countries; however, while growth accelerated in the oil-producing countries in the 1980-1985 period, it slowed down in the non-oil producing countries. From the indexes in table 21, it may be deduced that these rates for the region as a whole were 1.5 per cent and 2.3 per cent for 1970-1980 and 1980-1985, respectively; excluding the oil-producing countries, for the same periods, these rates were 4.1 per cent and 3.6 per cent, respectively.

Apparently, the crisis led the oil-producing countries to intensify their dependence by increasing crudes extraction; the other countries, in contrast, with motivation dating back before the crisis, maintained their approximate rates of exploitation.

Regional deposits of the following products are of some importance at the world level: antimony, sulphurs, bauxite, zinc, copper, diamonds, manganese, mercury, iron, molybdenum, nickel, gold, silver, lead, salt and tungsten. (5)

As regards energy resources, sources indicate that the proportional contribution to conventional energy reserves in 1979 was (in percentages):[7]

Petroleum	14
Natural gas	7
Hydroelectricity	67
Coal	6
Uranium	2
Biomass	4

The production of energy, by type of plant, in 1978 was (in gigawatts/hour):[8]

Hydroelectric plants	144 970	(58.0%)
Thermoelectric plants	101 712	(40.7%)
Nuclear plants	2 572	(1.0%)
Geothermal plants	830	(0.3%)
Total production	250 084	

As may be seen, there was an imbalance between the supply and the use of energy resources at the end of the 1970s, which still persists today. Resources for thermal generation are being used in higher proportions than the proportion of their supply, in terms of reserves, and the opposite has occurred with resources for hydroelectric and nuclear generation.

In Argentina, where the energy problem has become somewhat dramatic, owing to the requirements of 45.6 million tons of oil equivalent (toe) in 1984, contributions, according to the sources, were (in percentages): (18)

Petroleum	49.2
Natural gas	32.7
Coal	1.4
Hydroelectricity	10.2
Nuclear energy	2.4
Vegetable fuels	4.1

Energy reserves during the same year were estimated at 2 958 million tons of oil equivalent (toe), whose distribution, according to the sources was (in percentages): (18)

Petroleum	11.2
Natural gas	20.3
Coal	5.8
Hydroelectricity	6.9
Vegetable fuels	2.0

As previously observed at the regional level, there is an imbalance between the distribution of reserves and distribution of needs. The proportion of fossil fuels, except coal, and biomass consumed surpasses their reserves. The opposite occurs with hydroelectricity, coal and nuclear energy. The case of hydroelectric energy, which only contributed 10.2 per cent to the needs established for 1984, although it is attributed with 53.8 per cent of energy reserves, should be noted.

In 1978 global petroleum production in the region was of 1 777,5 million barrels of crudes and 1.563,4 million barrels of refined oil, respectively, while exports amounted to 686.9 and 362.9 million barrels, respectively. Proven reserves during the same year amounted to 54 087 million barrels of crude oil with a

production horizon of 30 years, and 3 538 million cubic meters of gas with a time horizon of 40 years. (5)

Hydroelectric energy's share in the generation of electricity may be seen in the following percentages:[9]

1960	49.2
1970	53.9
1980	60.0
1981	60.9
1982	61.3
1983	61.8
1984	63.2
1985	59.8

There is a great increase in hydroelectricity's share in the total generation of electricity between 1960 and 1980; from then on, it becomes stable at about 60 per cent; except for 63.2 per cent in 1984.

Table 22 provides information on regional per capita consumption of oil and electric energy, and their respective growth rates for the 1960-1985 period. Since 1981, there is a clear evolution in favour of electric energy that may be seen in the sustained growth in its per capita consumption compared to the inconsistent behaviour of per capita consumption of oil, which finally declines in absolute values in relation to 1980.

Fuelwood and charcoal production were already dealt with in the section on the forestry subsector, where their importance was underlined.

C. EFFECTS OF THE CRISIS ON THE SOCIAL ENVIRONMENT

1. Unemployment and income

Per capita GDP in Latin America and the Caribbean, which had reached its historic peak in 1980, fell 30 per cent in 1983, reaching the lowest value in the six-year period of 1980-1986 under consideration.

The total per capita GDP evolution for that period is shown below:[10]

1980	US $2 005.9
1981	US $1 974.3
1982	US $1 908.4
1983	US $1 816.8
1984	US $1 841.1
1985	US $1 863.8
1986	US $1 893.5

Table 23 presents urban unemployment rates beginning in 1970 for a group of countries of the region. In the 1980-1986 period, 1980 is the year in which the indicator is lowest for almost all the countries in the table; in three of them, the minimum rate is in 1981. In any case, for some of these countries, the lowest unemployment rates occur prior to 1980.

In 1981, in almost every case, there was an increase in unemployment rates, which was quite significant in some countries. In other cases, the increase or slowdown in the downward trend occurred in 1982. In the group as a whole, 1984 is the year in which the unemployment rate reached its peak; it decreased in 1985. In 1986, the unemployment rate of the group of countries was equal to the 1980 rate, but for most of the countries, their 1983 rates remain above those of 1980.

The following figures are the weighted average unemployment rates for the group of countries included in the reference table (in percentages):[11] [12]

1970	6.7
1980	6.0
1981	6.7
1982	6.7
1983	7.8
1984	8.2
1985	7.2
1986	6.0

There would also be indications of significant rates of underemployment, in addition to changes in the unemployment structure with a growing proportion of unemployed people in the 24-25 year-old age group, greater average duration of unemployment and high frequency among low-income individuals. (3)

Furthermore, real wages dropped dramatically by more than 12 per cent, as may be seen in the following figure for the 1980-1985 period:[13]

Manufacturing industry	-12.2%
Urban minimums	-16.3%
Construction	-17.8%
Public sector	-17.1%
Farm	-15.2%

Regional per capita GDP for the same period, according to figures presented on previous pages, fell 7.1 per cent.

In this reduction of real wages beyond the reduction in the real regional GDP, an influence must have been exerted by the expansion of the labour force (people needing work) caused by the need to increase family income to offset the fall in the income of heads of families.

Inflation, extremely accelerated by the effect of adjustment policies, has had a greater impact on the poorest sectors than reflected in the real wage indexes. These are determined by using the consumer price index as a deflactor; none the less, the index represents the average situation of all income strata. The food price index, calculated on the basis of a basket of purchases of the poor, reveals greater increases than the consumer price index in most of the group of ten countries studied. (3)

In any case, the food component of the official consumer price index, during the post-crisis period, underwent greater variations than the general index in most of the countries. Table 24 shows the annual variations in the general index and in the food component of the index for a group of selected countries before and after the crisis.

It is obvious that the decreases in real wages are greater than those in per capita GDP and that the inflation rates of goods consumed by wage earners are higher than those of the general consumer price index; both indicators show that the drop in real resources of the poor has been greater than the average decrease. This has been the case in the formal sector and there are sufficient indications to believe that is has also occurred in most of the so-called informal sector of the economy. There must be evidence of increases in the concentration of income during the economic crisis and also that growth recovery reversed that trend in certain cases. (3)

Deterioration in the relative distribution of income, as well as its reduction, have "almost certainly" significantly increased the proportion and number of people below a certain poverty level. (3)

Real per capita public expenditure in the social sector has fallen in the countries of the region. This, together with the absence of consistent and comprehensive attempts to redirect public resources towards more equitable programmes of low social cost, explain the widespread contraction in the supply of

services, at increasingly high costs to the user and with deterioration in their quality in most of the developing countries.

2. Nutrition and child welfare

Consumption deteriorated to a certain degree as a result of the crisis. In the section dealing with volume production of the agricultural sector, reference has already been made to the regional supply of farm products, which fell in 1982 and 1983, but began to recover in 1984. The supply of farm products plays an important role in meeting consumption needs; this factor, together with the lower levels of real wages -which, in turn, are the result of higher food costs, as has been stated- determine the population's level of consumption.

Examination of the supply of total calories and proteins in the 1964-1983 period does not readily reveal deterioration in consumption levels. As will be seen, the behaviour of countries is not uniform and contradictory trends may even be observed.

Furthermore, supply averages for a group of countries show certain improvement in the per capita growth rates between the 1974-1976 and 1981-1983 three-year periods. Averaging the 1981-1983 triennium, however, may conceal differences in behaviour in the two years.

In any case, the above trends are apparently consistent with the evolution of the regional per capita food production shown in table 8. From 1960 to 1982, the food index improved steadily. It fell three points in 1983; from then on, up to 1986, the per capita food production index maintains approximately the same level reached in 1980.

Tables 25 and 26, respectively, show the supply of calories and proteins per inhabitant and year for a group of countries in the region. The same tables include growth rates in the per capita supply in the periods between 1964-1966 and 1974-1976 and between 1974-1976 and 1981-1983.

The behaviour in the supply of the nutrients indicated differs significantly over time between one country and another. The supply of calories, with one single exception in which there was a decline, grew at annual rates lower than 1 per cent between 1964-1966 and 1974-1976. In the period from 1974-1976 to 1981-1983, in almost every case, there was a turnabout in the trend of each country, or significant acceleration or slowdown. The most frequent situation, in six cases out of ten, was a decline in growth rates.

Total protein supply between 1964-1966 and 1974-1976 fell in some cases and increased modestly in others. The rates for the period between 1974-1976 and 1981-1983 improved over the previous period in most of the cases shown, in six out of ten.

The following figures present the per capita supply of total calories and proteins in the ten countries, as a whole, included in tables 25 and 26.[14]

	Calories	Proteins (grams)
1964-1966	2 501	65.2
1969-1971	2 548	65.9
1974-1976	2 609	65.9
1981-1983	2 716	69.2

The annual accumulative growth rates for the periods examined were:[15]

	Calories	Proteins (grams)
1964-66 / 1974-76	0.43%	0.10
1974-76 / 1981-83	0.58%	0.69

The growth rate for the ten countries as a whole improved for both nutrients, and significantly in the case of total protein.

In the study of ten countries, conducted by United Nations Children's Fund (UNICEF), four of which were in Latin America and the Caribbean, the problem was examined at the low-income levels of the population. The panorama that arises there changes qualitatively in comparison to the panorama above. In some countries of the region, decreases in food consumption among low-income population groups were observed. Furthermore, it was concluded that in eight of the ten countries, including the four countries of the region that were included in the sample, there were indications that undernutrition had increased, although it was recognized that the duration, extension and causes of the deterioration varied substantially from one country to another. (3)

The state of nutrition worsened in the four countries of Latin America and the Caribbean included in the study under consideration. It was concluded that, although the gravity of this deterioration and its causes varied substantially from one country to another, the generalized increase in undernutrition clearly points towards a profound change in long-term trends, which go far beyond the effects caused by the single factor of the drought in Africa. (3)

Infant and/or child mortality trends, which had evolved very positively for two decades, presented certain changes in some of the countries studied and a clear slowdown in others. Deterioration in the state of child health was also confirmed by the higher incidence of infectious diseases such as typhus, hepatitis, tuberculosis, gastro-intestinal diseases, malaria, and so forth, verified in at least four of the ten countries examined, resulting from the general deterioration in the environmental living conditions and the paucity of preventive measures. (3)

Table 27 provides information on infant mortality in a group of ten countries in the region through mortality rates implicit in population projections. It presents annual averages for five-year periods. The table covers the years from 1950 to 1990.

There is improvement in all the cases presented with steadily declining rates throughout the period covered by the statistics. There are, however, important differences between countries, which will not be examined here.

The averages for the ten countries included in the table are:[16]

Year	Infant mortality rate
1960-1965	104.6
1965-1970	93.6
1970-1975	84.8
1975-1980	75.5
1980-1985	64.5
1985-1990	49.8

However, the five-year averages do not allow note to be taken of changes during the period; the crisis occurred between 1980 and 1985, but for a large number of important variables, 1980 was a peak year and 1984 was a year in which some recovery was observed for many variables. Thus, the average of the 1980-1985 five-year period represents very diverse situations.

Studies on the specific countries concluded that during the years following the crisis, there have been setbacks in infant and child mortality rates (0 to one and one to four years of age, respectively) in some countries and that, in others, past improvement rates have slowed down. In some cases these declines have been associated with cutbacks in certain basic health services.

In this regard, it should be noted that governmental child programmes have played an outstanding role in improving the situation of children, measured by different indicators. Consequently any cutback in such programmes should be expected to have adverse effects on the well-being of children in the lowest-income sectors, particularly in periods of economic depression.

In conclusion, the studies conducted by the UNICEF showed that the increasing economic imbalances and decreases in family income and government spending during the 1980s in the developing countries have led to pronounced setbacks in the levels achieved in child health, nutrition and education. The case studies show that there was deterioration in at least eight countries, four of which are located in the region. (3)

Signs of deterioration are much more evident in nutrition and education, where setbacks were obvious in eight of the ten countries analysed. Other more general but incomplete indications also show negative changes in the state of nutrition in at least 27 countries. The increase or slower decrease in infant and child mortality was less generalized. (3)

The extension and gravity of the deterioration in the well-being of children is much more evident in 1986 than it could have been in 1983, based on the data available for a previous evaluation by UNICEF. After six consecutive years of decline or stagnation, the capacity of many individuals, families and Governments to resist the crisis has weakened notably, while deficient nutrition, less access to health care and decreases in educational opportunities have accumulated to the point that their effects have become permanent. Thus, the physical and mental capacity of a large part of the future labour force has also been permanently damaged. Although there is some hope in many of the countries affected, it will be increasingly difficult and costly to repair the damage signified by retarded children and growing illiteracy, as well as accumulated deterioration in the material situation of hospitals, clinics and schools, and in environmental living conditions as a whole. Unless urgent and radical political changes take place, the prediction that "the worst is yet to come" is more true now than ever before.[17] (3)

III. EFFECTS OF THE CRISIS ON PROCESSES OF CHANGE AND ENVIRONMENTAL DETERIORATION

A. DEVELOPMENT STYLES AND PRINCIPAL PROCESSES OF CHANGE, AND ENVIRONMENTAL DETERIORATION IN LATIN AMERICA AND THE CARIBBEAN

1. Introductory considerations

Although this report focuses on the examination of certain outstanding deterioration processes in the region, the analysis falls within a broader perspective that recognizes the existence of a global process of social and ecological deterioration and believes that this global process can only be changed to the extent that there are significant changes in the prevailing development styles.

Conceptual coverage of what are considered environmental problems in the most diverse circles is increasingly broad; at the same time, there is a growing awareness that such problems can harm the possibilities of a country's economic development, which amounts to recognition of the increasingly close links between environmental deterioration and development style.[18]

In any case, it would seem that national trends regarding the deterioration of natural resources are similar in almost all the countries of the region, regardless of their past and present political orientations.

In general, particularly in the medium and long term, it is believed that environmental and economic objectives can be made perfectly compatible. Unfortunately, the agreement between both objectives is not always evident and decisions are often adopted with economic and/or social benefits in the short term which, in

the medium term, and even more so in the long term, encourage environmental deterioration.

To a great extent, the countries of the region depend on the short-term exploitation of natural resources that are becoming depleted and whose problems are exacerbated by rapid population growth. Frequently, the only solution for the rural population of the subcontinent has been to step up exploitation of the natural resources available, with serious environmental consequences.

It has been observed that economic expansion in recent years has been the result of progressively poor exploitation of natural resources. Throughout the region, to a greater or lesser degree, national resources are being degraded, compromising their future potential, and the supply is being reduced in quality and in quantity.

The situation of a large share of the population in precarious or highly unsatisfactory living conditions vis-a- vis natural resource potential in most of the countries of the region that is still sufficient to meet the needs of that population, but progressively faced with different deterioration processes, leads to the conclusion that qualitative changes in the prevailing development styles are needed.

Population phenomena have, however, grown worse, owing to the problems stemming from unsuitable economic policies. Among such policies, special note should be taken of the price policies of farm and forestry products and inputs, tax and subsidy policies, foreign trade policies and different sectoral policies, in addition to planning and public administration policies that have not confronted the problem.

Human activities and natural phenomena, both those that are routine and those that are exceptional, in view of their long periods of recurrence, trigger certain effects or processes that have an impact on the environment and either accelerate them or show them down. The impact is the net change in the quality of the environment, measured in relation to a standard or pattern

that may be represented by the original state of the environment or by a norm of environmental quality. When the effects of the activity or natural phenomenon lead to adverse impacts, it is said that there is environmental deterioration; it involves environmental deterioration processes.

Clear identification of activities and processes is not easy; certain activities produce multiple processes that can only be clearly distinguished when they have an impact on components of the environment of very diverse nature. Furthermore, within the dynamics of a deterioration process, numerous activities may be acting and interacting.

Finally, the effects generally take place in a chain reaction; there are initial, intermediate and final effects or processes; the processes may also have a positive impact which, since it takes place in a relatively simultaneous manner with the deterioration processes, may conceal or minimize the adverse effects of such processes.

In generic terms, environmental deterioration processes include depletion of non-renewable natural resources; the destruction and depletion of renewable natural resources; pollution of the air, water and land; destruction of ecosystems, scenery and unique geological formations; destruction of natural or man-made facilities for recreation and sports; destruction of the cultural heritage; and destruction of the physical economic and social infrastructure.

The following groups are representative of the most important deterioration processes in Latin America and the Caribbean:

- Deterioration processes stemming from agricultural activities.
- Deterioration processes associated with the exploitation of non-renewable natural resources.
- Deterioration processes of coastal and marine resources.
- Deterioration processes of the urban environment.

There are, of course, other important deterioration processes for which suitable information in the region was not available.

2. Processes of change and deterioration stemming from farming activities

In relation to farming activities, in a strict sense limited to activities associated with both annual and short seasonal crops, but also more so in a broad sense that also includes livestock and forestry, a set of practices that trigger a complex variety of processes is carried out. Certain practices can cause deterioration, since they are the origin of processes with adverse effects on the environment.

Three groups of practices that give rise to the principal deterioration processes may be identified: (10)

- Deforestation
- Unbalanced land use
- Excessive and unsuitable man-made intervention in the ecosystem.

a) Deforestation

Deforestation is also an effect, a deterioration process itself -the destruction and depletion of a natural resource- caused lumbering activities, the use of fuelwood and charcoal, and for purposes of cultivation and/or expansion of pastureland areas. Forest fires, many times intentional, are also an important cause of deforestation.

The final process to which deforestation processes can lead is desertification, a terminal process. There are, however, numerous intermediate effects.

The principal processes that deforestation activities and subsequent farming practices lead to are erosion and sedimentation of irrigation canals and infrastructure which, in

turn, creates conditions that encourage flooding or, together with poorly-planned infrastructure, conditions for transforming floods into disasters.

In addition to erosion and sedimentation processes, deforestation, through other intermediate processes, causes losses in soil fertility which, together with drying processes, result in less vegetation growth and the degradation of flora composition. Erosion and sedimentation, in turn, encourage flooding. These, together with fertility losses and degradation in the flora composition can lead to the takeover of underbrush. Drying, combined with degradation of the botanical composition, gives rise to desertification. (10)

The phenomenon, as a deterioration process, is associated with important impacts of two outstanding categories of natural systems, river basins and tropical forests, particularly in the Amazonian ecosystem.

In the first case, the purpose is to obtain fuelwood and/or produce charcoal and to make cultivation possible. The activities that trigger the series of processes which begin with the penetration of these ecosystems are programmed settlement and mining exploitation, basically petroleum, principally through the construction of road infrastructure. It begins with selective deforestation, extracting the most valuable timber species, and continues with the massive destruction of the rest of the forest to adapt the land for the establishment of pastures and crops.

Farming practices, in addition to being frequently conducted on poor land, that is unstable and unsuitable for agricultural purposes, in many cases, are not suitable for tropical agriculture, owing to the origin of the settlers. The original ecosystem is destroyed with losses of flora and fauna species and their diversity, and there are adverse effects on the native Indian communities.

The adverse impact of such penetration of tropical forests through expansion of the agricultural frontier is minimal in the perception of those who take decisions and in public opinion,

both because of the overvaluation of the positive impact that such processes may have and because of the low proportion of the areas affected in relation to this total ecosystem.

In contracts, the adverse impact of deforestation and subsequent farming practices in high-altitude river basins already leaves no room for doubt; the economic and social effects are exerting a strong impact stemming from damage to infrastructure works and from deterioration in the living conditions of large urban groups.

Both situations are linked to the problem of population growth. Activities that degrade slopes and high-altitude river basins have been favoured or intensified by excessive peasant population with small farms and/or without land, excessive production of their own vegetative growth or shifts from other areas. Groups of these peasants, faced with the perspective of progressive impoverishment, have moved towards urban centres and agricultural frontier areas.

This spontaneous movement towards frontier areas is sometimes encouraged through directed or semi-directed programmes in an effort to relieve pressure on the urban areas.

Annual average deforestation of broad-leaved and coniferous forests in the countries of the region located between the Tropics of Cancer and Capricorn, excluding Chile, Argentina and Uruguay, as well as 18 countries and small territories in the Caribbean whose forest areas are of low significance in terms of area and in the context of the region, is estimated in the following figures (in thousands of hectares):[19]

	1976-1980	1981-1985
Productive forests	3 049	3 166
Non-productive forests	1 070	1 173
Total deforestation	4 119	4 339

Other estimates up to 1980 raise the deforestation rate of the region as a whole to more the 7 million hectares, as listed below (in thousands of hectares):[20]

Dense broad-leaved forest	5 604
Dense coniferous forest	333
Open forest	1 105
Total deforestation	7 042

It should be noted that accumulated deforestation over the past 30 years up to 1988 in Latin America and the Caribbean amounted to 200 million hectares. (9)

It has been established that the most important cause of ecological change in Central America has been the loss of forests, both through population and economic pressures and through conversion to other land uses. What is alarming is not the present low proportion of forests in the seven countries of the subregion of Central America and Panama -less than 40 per cent of the territory- but rather the pace at which conversion is taking place. It has been estimated that two thirds of the area cleared since the Colonial period occurred after 1950; between 1970 and 1980 the forest cover fell from 49 per cent to 41 per cent.[21]

The positive effects that deforestation could have had -the generation of direct economic surpluses or the expansion of agricultural production- have not occurred, since they have been counteracted by the losses involved; a large part of the trees felled have been burnt <u>in situ</u> or have decomposed where they were cut. For one country alone, where forestry activities contribute significantly to the national product, losses through deforestation have been estimated at more the US $320 million annually.[22]

b) Imbalances in land use

There is imbalance when the actual use of land is not fitted to its potential. Underutilization and overutilization of land may occur; their adverse effects are not generally recognized in the short term.

Underutilization, although it prevents the development of certain deterioration processes, leads to indirect processes with adverse effects, basically associated with the underutilization of a productive resource: lower income, lower employment and lower supply of products in relation to potential. (10)

There are also direct negative effects such as deterioration of grassland through selective grazing; underutilization of the resource is linked to unsound management practices.

Overutilization is present when any of the following three principal agricultural exploitation situations occurs: overgrazing, single-crop cultivation and overcultivation, or cultivation exceeding the natural land capacity. (10)

Overgrazing plays a role in the degradation of the botanical composition, particularly if used for selective grazing for cattle; it also encourages the elimination of shade and of the cushioning capacity to mitigate the effects of wind and rain.

Single-crop cultivation works towards the physical and chemical deterioration of the soil and subsoil; the sustained extraction of nutrients from the soil, when not suitably replaced, produces losses in fertility. Overcultivation has an adverse effect on fertility and causes erosion. (10)

Imbalance in land use is generally associated with land ownership. Traditional large landed estates usually result in the underutilization of land, made worse by the fact that the best land and arable land is generally concentrated on the property of such estates.

The movement of peasant sectors towards marginal slopes and fragile lands, together with excessive subdivision of property, has contributed to the overutilization of land.

c) Excessive artificialization of the ecosystem

Artificialization of ecosystems originates in modernization of farming. It is linked to practices of mechanization, irrigation, fertilization, pest control and fitogenetic improvement. It has favoured notable increases in crop productivity. However, it may, and in fact has, led to the uncontrolled utilization of certain practices.

Indiscriminate use of pesticides reduces the stability of the ecosystem by eliminating natural controls and, paradoxically contributing to the increase of pests. This leads to the need to diversify the products used by increasing, not only the possibilities for control, but also their adverse effect on the ecosystem. Consequently, a vicious circle that requires increasingly greater diversification and doses is produced, with problems of toxicity, both for the human population that lives in the area and for the crops themselves. (10)

As regards the use of fertilizers, on many occasions, prompted by the advertising of commercial firms, farmers tend to use fertilizers in excess, which brings about chemical changes in the soil and even problems of toxicity for the plants, factors that in the long term result in lower crop yield. (10)

The use of seeds with high genetic potential may have negative effects by altering the chemicals in the soil, a consequence stemming from the treatments they receive and disinfection of the crop.

The excessive use of farm machinery can alter the structure of the soil and subsoil, making it more compact, which reduces yields in the long term.

The application of excessive irrigation water has led to elevated water table levels and, thereby, created problems of

waterlogging and excessive salinity with soil loss or reduction in its original potential.

d) Deterioration processes

The groups of activities previously defined have accelerated a number of long-standing processes. Reference has already been made to some of them in preceding paragraphs. These processes are:[23]

- Deforestation
- Erosion
- Sedimentation
- Alteration of river flows
- Salinization and alkalinization
- Laterization and depletion of soils
- Pollution
- Loss of flora and fauna
- Desertification

The most outstanding processes in this group are linked to agricultural soil loss.

e) Agricultural soil damage

It is generally agreed that erosion and the other individual processes cited above lead to agricultural soil loss, which is the most significant type of environmental deterioration in most of the countries of the region.

They are indications that soil loss far exceeds the incorporation of new land through clearing, irrigation, recovery of saline land, the recovery of flooded land or swamps and other actions taken to expand the agricultural frontier. (5)

The two predominant forms of erosion, water and wind erosion, have accelerated because of deforestation and agricultural practices that result in overutilization of land.

Information on soil degradation in the region as a whole was not available. There are, however, some estimates for some of the countries of the region.

In Central America and Panama, as a result of deforestation, expansion in livestock breeding and of farming on slopes and mountain areas, together with the absence of generalized management and conservation practices, the problem of degradation is reaching critical proportions in the entire subregion, except for Belize.

The amount of land seriously degraded, extremely limited in use or abandoned is presented below by country. (12)

El Salvador	1972	45%
Guatemala	1985	23-35%
Panama	1980	17%
Costa Rica	1981	17%
Honduras	1977	7%
Nicaragua	1985	5-10%
Belize	1985	1%

The proportion of soils affected by other degrees of erosion is obviously much higher. Throughout the subregion, the land on the Pacific watershed has been the most affected, owing to its highly erosive soils, more intense and concentrated patterns of rainfall, lack of vegetative cover, continual seasonal burning in areas with pasture lands, shorter and sharper slopes, and higher concentrations of population and livestock.

The most critical problem is in El Salvador where more than 50 per cent of the nation's land was probably seriously eroded in the mid-1980s. In the highlands of Guatemala, erosion is just as bad or worse; it has been estimated that 65 per cent of the country is highly susceptible to erosion. At the beginning of the 1980s, it was estimated that 25 per cent of the river basins that drain into the Pacific were already seriously eroded in Costa Rica. (12)

In Honduras, 66 per cent of the country's total area has forestry potential; 68 per cent is covered with forests and the remaining 38 per cent is subject to severe erosion that is seriously affecting the water cycle of the river basins. (4)

Already in 1950, there were alarming figures on the expansion of erosion in Mexico. On the basis of the agricultural, livestock and forestry census, it was estimated that more than 70 per cent of the country's territory was affected by moderate to accelerated erosion or was completely eroded. (5)

In certain Caribbean islands, water erosion is particularly serious, owing to the intensity of rainfall, in addition to strong winds, scarce native vegetation, widespread mountainous topography, many soils highly susceptible to erosion and deficient agricultural techniques. In Haiti, the most dramatic case, the subsoil is exposed in more than 50 per cent of the territory. In Trinidad and Tobago, significant erosion problems in certain areas have been reported. The problem is also critical in Saint Lucia, Monserrat and Jamaica. (5)

In the Dominican Republic, there are serious erosion problems in its Central Cordillera, caused by massive deforestation and subsequent farming practices on slopes, one of the most serious results of which is the high degree of silting-up in reservoirs. In areas under irrigation, over-application of water and unsuitable irrigation technology have caused serious salinity problems.

In 1977, it was estimated that 75 per cent of the land in Colombia was affected by some degree of erosion; but only 8.3 per cent of the agricultural land was affected by moderate to very severe erosion. However, other studies give more alarming figures: in 1963, it was established that slightly more than 30.1 per cent or slightly more than 418.000 hectares in the Bogota savannah showed serious erosion. (5) (10)

A study of erosion processes on a map with a scale of 1:1 000 000 was published in Ecuador in 1984. According to the

study, approximately 50 per cent of the territory had some signs of the problem. The Sierra is a site of active to very active erosion, widespread in many places. More localized erosion of a potential nature, but developing relatively rapidly at the present time, is affecting the enrire western part of the coast and, to a lesser degree, the large settlement centres in the Amazon region. Proportions of land affected in Ecuador are given below according to intensity of erosion: (15)

Very active erosion	1.3%
Active erosion	7.7%
Active and potential erosion	3.1%
Potential erosion	35.8%
Total	47.9%

In 1982 it was estimated that 23 per cent of the land in Peru was affected by medium to severe erosion; there was light erosion in 37 per cent of the territory and land with slight erosion but high susceptability in 40% of the country's territory. Light to serious salinization was affecting 40 per cent of the 775.000 hectares under cultivation in the coastal area. (16)

On the basis of 1986 data, it was estimated that in 18 of the 22 provinces in Argentina (80 per cent of the territory) 11 per cent of the area was affected by moderate to serious water erosion and 9 per cent, 21.4 million hectares, was affected by moderate to serious wind erosion. Moderate erosion of both types affected 9.8 per cent of the area, 22.4 million hectares, and severe erosion affected 10.5 per cent, equivalent to 24 million hectares. (2)

In 1958 moderate erosion had affected almost 4 million hectares in Chile, which was equivalent to 12.2 per cent of the agricultural area and 5.5 per cent of the total area of the country. The area with prevailing light erosion was 9.4 million

hectares, equivalent to 30.5 per cent of agricultural lands and 12.7 per cent of the total area of the nation. (10)

3. Processes of change and deterioration linked to the exploitation of non-renewable natural resources

Mining activities -exploration, exploitation, processing and transport- generate diverse environment deterioration processes of varying significance and diverse natures.

There is destruction of ecosystems and scenery, in addition to pollution, but the most significant processes are undoubtedly associated with the purpose of the activity itself, the extraction of resources, and with something that falls completely outside of the sphere of the activity itself, but is encouraged or activated by it, the penetration into forest ecosystems, generally tropical, that have not yet been exploited.

Depletion of resources has an adverse impact when the extraction rates are not in line with optimum social goals; there may be overexploitation, acceleration in the depletion of deposits, or underexploitation when the additional social benefits of stepping up production or initiating it are superior to its direct or indirect social costs.

4. Processes of change and deterioration in coastal and marine resources

Coastal resources, as well as the activities carried out in relation to them and their effects and impact, are multifaceted. Among the activities based on the exploitation of coastal resources with effects that may have an adverse environmental impact, reference should be made to all forms of fishing, coastal industrial activities, deforestation in mangroves for different purposes, tourism, extraction of construction material, the construction of resort facilities, and so forth. The adverse effects are linked to the depletion of fisheries resources, the

extinction of marine species, water pollution, the destruction of ecosystems that fulfil many functions in the biological cycles of diverse species, the destruction of beaches, and so forth.

Coastal resources can be harmed by the effects of activities that take place far from the coasts or by extraordinary natural phenomena.

Some examples are the previously mentioned agricultural and forestry activities that may trigger diverse processes with adverse effects as a result of washing down sediments or of polluting watercourses with agro-chemical residues, or urban-industrial activities that also cause pollution of watercourses. The latter include meteorological phenomena such as hurricanes or complex phenomena such as El Niño, which usually affects in Ecuador and Peru.

In most of Central America, industrial and artisan fishing are confronting two important problems that jeopardize their future. They are, in the first place, overfishing -particularly in coastal waters near seaward corral reefs, and along other portions of the continental shelf- and, in second place, the continual destruction and degradation of vital habitats, particularly coastal estuaries, mangroves, marshes, lagoons and herbaceous marshes, processes which, in the future, may reduce the potential sustainable catch of fish and other species. (12)

The case of mangroves is of special importance in some countries. In recent years they have been exploited at growing rates. Coastal development and expansion of shrimp activities have increased cutting to clear areas, to obtain fuelwood and posts, and to produce tannin. The growth of urban centres near the coast and, as stated before, even far from the coast, have increased pollution, as have farming activities through the use of pesticides that are subsequently washed down watercourses; silting-up is another deterioration process taking place.

As regards marine resources, in the North-East Atlantic and Central-Western Atlantic, as defined by FAO, all the principal deep-sea fish have been exploited with severe losses of some

species. In many areas, adult fish can no longer be caught. This is symptomatic of what has been occurring in other ocean regions; it is indicative of the growing pressure that the advanced countries have been exerting on the tropical and subtropical seas of the developing countries. In 1972, 94 per cent of the catch along the coasts was made by fleets from outside the region's. Thus, in 1975 and 1976, the advanced countries expanded their maritime jurisdiction, which, allegedly, would allow greater control of extraction. (5)

However, the above measures are not sufficient to ensure sound fishing practices. A dramatic case is that of anchovies in Peru. In 1980, it was estimated that the biomass represented by anchovies had fallen from 30 million tonnes to only 800 000 tonnes as a result of unsound fishing practices.[24]

The shipments of anchovy progressively fell from a maximum of 10.3 million tonnes in 1970 to 118 200 tonnes in 1983. (16)

5. Change and deterioration in the urban environment

There are basically two groups of outstanding environmental deterioration processes in urban areas: social deterioration and urban deterioration in a strict sense. The first group of processes is associated with what has been defined as the "internal environment" of urban areas and, the second group, as the "environment of the city". (13)

The internal environment of the cities is the home environment and its surroundings. The internal environment of the lowest-income groups of Third World countries is among the most regressive and unhealthy.

The basic cause, which triggers a series of events that are ultimately expressed in degradation and unhealthy conditions that are typical of the internal environment of cities is of a structural nature and is expressed in the poor distribution of wealth, in the inequality of opportunities, in the insensitivity

of those who possess and those who take decisions, and in indifference and social inertia.

To describe this group of processes in the terms that have been used in this document, it could be stated that the immediate cause is rural-urban migration resulting from the outlook that rural inhabitants have of their own environment, where working conditions are limited and where income is low, and their perception of the urban environment with better opportunities for work and personal development, and the movements within the city from urbanized areas or areas with more services and goods towards precarious marginal areas as a result of depression in urban economic activity.

One effect of the phenomena described is the spontaneous development or marginal urban areas with widespread unhealthy conditions, owing to the lack of infrastructure and basic services and the crowded conditions and lack of space, that is, the establishment of slums or shanty towns. The adverse environmental effects are presented by the higher incidence of contagious diseases such as tuberculosis, by the fact that many diseases become endemic, such as diarrhoea, dysentery, typhus, and so forth, and by the greater frequency of accidents at home, and so forth.

Another effect is the increase in the number of people in conditions of extreme poverty, unquestionably linked to the above considerations, with its additional adverse impact through undernutrition and cultural deprivation, both with results in the future intellectual development of those affected and in their possibilities for rising above the situation. The intensity of these effects, apart from the factors that cause them, will depend on the emphasis they are given in social programmes aimed at groups in marginalized conditions, programmes that can offset some of these adverse effects.

Urban deterioration processes as such, disregarding the problem of slums, are ultimately expressed in terms of their adverse environmental effects, air and water pollution. The

phenomenon, both industrial and stemming from large urban population growth, in the context of lack of effective planning and regulation systems, is the origin of the problem. The effects are represented by the abundant generation of wastes from production and consumption activities, and their practically uncontrolled disposal in the air and water.

B. THE RELATION BETWEEN THE CRISIS AND THE MAIN ENVIRONMENTAL CHANGE AND DETERIORATION PROCESSES

1. General considerations

a) Some limitations

In spite of the pertinence that may, in general terms, be attributed to the synthesis and conclusions in the paragraphs below, it should be noted, as in other studies, that the turbulence and uncertainty in which national and international economies have been immersed in recent year and favourable or adverse climatic conditions, together with other natural phenomena, introduce ambiguity and indecision in the regional analysis. (14)

These difficulties at the regional level also exist at the level of countries, owing to the influence and adjustment to a number of factors. The behaviour of certain deterioration processes is greatly influenced by factors unrelated to the crisis and it is not always possible to clearly establish causal relationships. This type of limitations has also arisen in examining the effects of the crisis on other areas, such as economic and social matters.

In particular, natural phenomena that occurred following the crisis, exacerbated or not by previous man-made changes in the environment, have had significant effects on diverse natural ecosystems, on urban sectors and on economic activities.

Other factors also made it difficult to examine the relation between adjustment policies and environmental deterioration processes. For example, in the agricultural sector, the long-term trends in the production of some items are greatly influenced by technological innovation processes and seem to have been practically unaffected by the adjustment.

Other products, including some for the basic domestic market, whose production processes were only marginally influenced by technological change, continued to decline normally, with little apparent influence from the adjustment. (14)

In this regard, rural communities that comprise small-scale and subsistence farming are usually isolated from exterior economic turmoil by being less integrated into the monetary economy, so in the short and medium term, the effects of economic changes are not internalized by them.

For certain products, specific development policies have brought about production performance that annuls or conceals the effects of the crisis. That is the case with some mining activities.

Finally, as indicated for the farm sector in previous sections, post-crisis production trends, in many cases, were altered by international price movements. This situation also occurred with mining products; because of its numerous effects on the economies and the magnitude of its drop in prices in 1986, oil products were the most outstanding.

b) The prevalence of deterioration and conditioning factors

All the types of environmental deterioration phenomena identified in Latin America and the Caribbean have been occurring since long before the crisis, as have, obviously, the causes that trigger them, man's activities and natural phenomena. Some of the most outstanding deterioration processes even date back to

the Colonial Period; such is the case with important processes as deforestation, erosion and depletion of mineral deposits.

What has changed is, on the one hand, the perception and ponderation of the adverse effects of the processes and, on the other, the genuine magnitude of such effects.

Two factors that should be taken into account insofar as they favour, induce or motivate actions that may generate deterioration processes or exarcerbate the adverse effects of such processes, are economic policies and population phenomena, respectively.

The population phenomena -defined by a high population growth rate and the resulting urban overpopulation, and high population density in rural areas that are marginal and/or endowed with natural resources that are clearly in the process of deterioration- is unrelated and previous to the crisis, both as a phenomenon and as an environmental deterioration factor.

The concept of economic policy being dealt with here is broad. Economic policy is defined as a process that generates decisions taken to agree on actions, also called measures or instruments, whose purpose is to influence and condition the behaviour of people, companies and governmental organizations themselves. It is a question of persuading these social entities to perform certain economic acts, or to abstain from doing so, or to perform them in a certain manner. (19)

Recognizing that environmental deterioration processes began long ago and, as is logical in view of the above definition, accepting that economic policies constitute an element in the context that favours, induces or motivates the causes of such processes, it may be concluded that environmental problems should be associated with prevailing development styles rather than with circumstantial situations, and that such styles furthermore lie at the roots of excessive indebtedness, which is a great activator of the crisis.

In any case, adjustment policies are economic policies, and as a result of the same definition, should be expected, in one

way or another, to have an influence on environmental deterioration processes.

It is proposed, however, that neither the crisis nor the adjustment policies that it caused, gave rise to activities that triggered new deterioration processes. It is believed that adjustment policies have made certain processes, mostly of a social nature, more acute, that they have favoured processes linked to control and regulation activities, and that they have created conditions that jeopardize certain natural resources.

From another standpoint, it is also true that the curtailment or slowdown of certain activities has, in turn, curtailed or slowed down some deterioration processes.

c) Economic policies and structural situations that influenced environmental processes

Different pre-crisis policies played an important role in deterioration processes; some of these policies were altered as a result of the crisis and consequently it could also be expected that their effects would have been modified. In many cases, however, the effects move in opposite directions, so it is not easy to foresee the final effects of the interacting pre-crisis and post-crisis policies.

Traditionally, the Governments have intervened strongly in farm product markets to modify price ratios among farm products and between such products and non-farm products. The interventions have been direct or through taxes, and have included price controls to maintain maximum and/or support prices, supply restrictions, subsidies, and so forth.

As was established at the beginning of this report, one element in the industrialization strategy was to maintain low food prices as a mechanism for keeping urban real wages at a reasonable level without raising industrial production costs. That objective was reached by setting ceiling prices, protecting non-farm industry and by placing taxes on farm production.

The effect was to push down the profitability of agricultural activities and, thereby, the expected investment returns on property development or conservation. Incentives for projects such as levelling land and building terraces, drainage systems, irrigation works and other improvements were lost. The lack of investments in conservation made physical soil deterioration processes more acute with adverse effects on productivity, which ultimately encouraged the expansion of rural poverty.

Many direct subsidies encouraged poor management of resources and had no environmental or economic benefits. In general, these subsidies include the instruments of compensatory policies for the farm sector referred to at the beginning of this document.

Tax exemptions and tariffs were implemented, lines of credit at reduced interest rates were established, local manufacturers were encouraged to produce inputs, and so forth. Exchange policy, which generally led to the overvaluation of local currencies, promoted the import of inputs.

For example, all the measures indicated favoured indiscriminate use of pesticides. In nine developing countries of Asia, Africa and Latin America, subsidies amounted to between 15 and 90 per cent of the list price. In the case of Honduras, the amount of the subsidy reached US$ 3.00 per capita. (12).

There are serious situations of environmental deterioration related to irrigation programmes, basically as a result of subsidized on water rights that lead to excessive application of water. Such situations include water shortages downstream from the system, the demand for greater investments for regulation and accumulation, salinization of lands and waters, waterlogging, and so forth. In this manner, the net benefits of irrigation projects are significantly reduced.

Another farm production element that has frequently been subsidized is mechanization. Tractors and equipment are generally imported with undervalued foreign exhange, financed

with subsidized credit and used in a context of minimum or no domestic taxation.

The result is excessive dependence on mechanization and the formation of unsuitable crop structures. The labour force is displaced, which has an effect on the problem of rural marginality, and, as a consequence of excessive mechanization and/or poor use of equipment, there is soil deterioration and unnecessary destruction of forests in the case of forestry operations.

The granting of permits to exploit public resources for production purposes, as in the case of forests, coastal areas, marine and inland waters, or deposits, frequently takes place under contractual terms that favour exploitation systems that cause deterioration. Tax systems afforded great profits to concession holders and provided no major incentive, in the case of renewable resources, for management and achieving sustainable yields with long-term perspectives. Profits were the result of diverse subsidies and tax exemptions, including low cost concessions, free access to highways and port facilities, reduced or zero export duties for processed goods, subsidized credit, export financing, and so forth, usually with minimum supervision and control.

Governmental planning and decision-making, furthermore, both through action and omission, were generally unfavourable to sound environmental management before the crisis and may be expected to continue being so. There is persistent contradiction between official discourse disposed towards sound environmental management and Government action, particularly in sensitive areas linked to economic growth, in taking decisions that encourage environmental deterioration in the medium and long term.

The lack of determination to incorporate environmental considerations into decision-making originates in the perception of public authorities and executives that such considerations oppose, to some degree, economic development; furthermore, at the level of such authorities and executives, mechanisms to

incorporate the environmental dimension into public management and decision-making are not clear and they encounter difficulties and lack of physical data for incorporating environmental factors into economic analysis.

In the case of liberal economics, in which the market plays a fundamental role in the allocation of resources, situations arise that favour deterioration processes, resulting from imperfection in markets, external factors linked to many activities and situations stemming from the extremely unequal distribution of income and wealth. In these cases, the Governments have committed sins of omission by not intervening in the markets through measures of diverse nature to prevent pollution, overexploitation of renewable resources, depletion of unrenewable resources, slums, and so forth.

Finally, there are a number of structural situations that have encouraged activities that generally give rise to processes with adverse environmental effects. Political decisions are continually being taken in relation to these situations.

Within this category are extremes of farm landholding systems -latifundios and minifundios, extremely large and extremely small landed estates- which are associated with processes of underutilization and overutilization of land. Also included are situations of unregulated public property and/or ambiguous rights to many resources -water, forests, deposits- which give rise to overexploitation and depletion processes. Finally, this category also includes the case of public goods such as parks, sceneries, unique ecosystems and formations, biological diversity, and so forth, which do not imply physical consumption and may be publicly or privately owned, but may undergo deterioration or destruction.

2. Specific considerations

As a summary, a synoptic chart was prepared relating the adjustement policies, their general purposes, the policy

instruments and the immediate actions that took place, with the processes of environmental deterioration and their possible adverse effects. This chart is attached to this document as annex 1.

a) Effects of expenditure reduction policies

These policies, which are basically aimed at reducing aggregate demand, are expressed through a set of fiscal and monetary measures. Fiscal measures, through reduced current expenditures, increased taxes -which are generally demonetized- and cutbacks in public investment -which is attributed with encouraging private investment- have adverse multiplying effects on aggregate demand, whose reduction, in turn, encourages declining production. Monetary measures through cutbacks in domestic credit and money supply, bring about reductions in investment and adverse effects on the aggregate demand and, in the long term, on capital formation. In summary, expenditure reduction policies affect GDP growth in the short term and possibly in the medium term as well.

Budget cuts and consequent cutbacks in Government spending affected institutional expenditure items for goals that were of low economic priority in the perception of national authorities.

In this regard, the items most affected were those linked to the social component of public spending, those linked to supervision activities in general and those aimed at production support programmes, particularly in the farm sector. Direct public investment, in addition to resources for programmes to finance private production activities, were substantially lowered, especially at the outset of the adjustment period. Gross investment coefficients, measured in percentages of GDP, fell steadily.[25]

The environmental effects of the adjustment are numerous and working in opposite directions, which makes the identification of ties with the deterioration processes of associated natural

resources even more ambiguous. The effects of these policies on social and urban problems, however, are quite well-defined.

It should be noted that the most important effects of aggregate demand restriction policies, from the standpoint of natural resources, take place in protected ecosystems, in ecosystems that maintain or will maintain infrastructure projects, and in waste assimilation systems.

In protected ecosystems, basically the entire national park systems, reserves, nature sanctuaries, and so forth, there was greater illegal extraction of flora and fauna species of some commercial value, owing to lack of supervision, a consequence, in turn, of reduced supervision expenditures. This is a short-term effect, which, in fact, had already been occurring.

Cutbacks in current expenditure allotments for controlling sectoral investment -energy generation, irrigation, road construction, mining exploitation, and so forth- limited the sectors' capacity to conduct or contract for environmental impact studies, and their capacity to negotiate and follow up on pre-investment and implementation studies for projects with environmental impact, or to supervise the implementation of projects to minimize adverse environmental effects. Generally, the importance of these activities was minimized vis-a-vis other institutional needs. The environmental impact of these omissions will occur in the medium to long term.

Similar occurences may have taken place in environmental sanitation controls. Cutbacks in the budget expenditures of institutions reflected less control of industrial wastes and, even less capacity of the environmental sanitation service agencies to fulfil their responsibilities, which resulted in higher levels of pollution. The adverse effects are basically short-term.

Now and in the near future, cutbacks in public investment are, and will be, affecting the implementation of conservation projects linked to hydroelectric power generation and/or irrigation works and projects to protect existing infrastructure

being affected by deterioration processes in other systems -the washing down of sediments and silting-up of reservoirs- or by extreme meteorological phenomena. The adverse impact of these omissions are of utmost significant and take place in the medium term as well as in the short term.

It was previously stated that the impact of aggregate demand reduction policies give rise to adverse effects on the social, and particularly the urban environment, which are much more defined. Urban industrial activities are the most depressed by adjustment policies, as may be seen in table 2, which shows that industrial sector GDP fell, in absolute terms, for three consecutive years, from 1981 to 1983. Beginning in 1982, GDP of the tertiary sectors fell sharply, worsening the situation. Per capita GDP fell from 1981 to 1983 and subsequently grew at a minimum rate that was insufficient for it to recover its 1980 level. Furthermore, urban unemployment rose in many countries or improved at a slower rate. Real wages fell significantly by greater proportions than per capita GDP. Food supply declined and, as a result of inflation accelerated by adjustment policies, food prices have climbed. Finally, there is evidence of deterioration in child health, nutrition and education.

All of the foregoing factors led to reduced income for most people, which may have been accompanied by poorer income distribution. Therefore, it seems fair to conclude that, on the whole, the adjustment programmes in force tend to increase overall poverty; in other words, the number of people -and children- who live below the poverty level. (3)

Although migration from the countryside to the city, to which an outstanding role in triggering urban deterioration processes was attributed, may have been reversed or curtailed by relative improvement in the rural environment in comparison to the urban environment as a result of adjustment, internal movements within the city from areas with better urban conditions towards slums played a more important role, precisely because of

urban-industrial recession and the increase in individuals in conditions of extreme poverty.

In the urban environment, the increase in poverty had an adverse impact on the internal environment of the lowest-income inhabitants of the city, which favoured the formation of slums, together with all the deterioration processes to which reference has already been made : higher incidence of different diseases, undernutrition, cultural deprivation, and so forth.

Furthermore, the effect of an increase in poverty in the rural environment, vis-a-vis the reduced attraction of migrating to the city, could encourage deterioration processes through "slash and burn" agricultural practices on slopes and in areas along the agricultural frontier.

b) Effects of expenditure reallocation policies

Expenditure reallocation policies seek to transfer resources from the sector of non-tradeable goods to tradeble goods. It is a question of improving the balance of payments by cutting back on imports and increasing exports and/or import substitutions.

The tool preferably used for such purposes was the exchange rate; efforts were made to increase the real value of foreign exchange through devaluation of local currencies. Devaluation, untimately, causes a change in the price ratios between tradeable and non-tradeable goods to the benefit of the former. This, while lowering imports because of their higher cost or substitution by local production, favours increased exports.

Other instruments used for that purpose were interventions in foreign trade, ususally to complement the exchange rate, and the fixing of prices to contain inflation, in addition to different measures to stimulate the mobility of factors among sectors.

Although spending, together with imports, can be reduced very rapidly, expanding the production of exportable goods or

import substitutes cannot take place at the same rate. The mobility of factors is not perfect and there are certain technical restrictions that limit or delay the necessarily slow reallocation, which is even more difficult the lower the non-used capacity for producing such goods.

Most of the region's exports, approximately 80 per cent, are primary products. Placing additional amounts of primary products on traditional markets abroad is difficult. Consequently, most of export expansion has to be based on non-traditional goods which, despite progress made in the 1970s, amounted to only 4 per cent of GDP at the outset of the crisis, all within a context in which exports were of little significance in the region's economies -16 per cent of GDP compared to 40 per cent in Korea and Taiwan, at the other extreme-. (17)

As previously underlined in this document, the region was, in fact, able to reduce its external imbalance, but more through drastic reduction in imports than through expanded exports.

In summary, from the standpoint of natural resources, the incentive to produce tradeable goods is expected to lead to intensification in their exploitation. From an a urban and social standpoint, the effect was a significant increase in the cost of living as a result of devaluation and the weakness of inflation control policies.

However, margins for immediate expansion in the production of exportable goods that depend on the exploitation of natural resources, without the mobilization or reallocation of other factors of production, were narrow. In activities with underutilized factors or activities that depended on ecosystems with little previous intervention, the conditions for expansion existed without significant prior reallocation of production factors.

Restrictions also arose in external markets for traditional goods that require exploitation of natural resources, many of which were subject to quotas. Finally, export incentives were,

in many cases, offset by the discouraging fall in international prices.

Thus, in general terms, in the period since the beginning of the crisis, excessive pressure to intensify the exploitation of natural resources has not taken place. However, certain reallocation of production factors towards such intensification, which has not yet become completely evident, may have been occurring; in the near future substantial increases can be expected in the extraction or exploitation of resources, basically for non-traditional products.

Even if the markedly recessive adjustment model that has prevailed in the region evolves towards an expansive adjustment model, its objective will also have to be balance in external accounts, although in a context of growth that implies a necessarily longer period of adjustment, precisely because changes in the production structure are required. Thus, just as the incentive for exports was a fundamental component of adjustment policies in the first stage of the crisis, all factors indicate that export incentives will also be a basic component of alternative adjustment policies and of policies that could be adopted in the near future.

The policies that are adopted will therefore necessarily encourage greater exploitation of natural resources. If policies that favour rational exploitation are not implemented in a parallel manner, there is an obvious risk of accelerating current deterioration processes or of initiating new deterioration processes.

As a concrete effect on agricultural crops, in spite of the recessive effects of the adjustment and the downward trend in the international prices of the principal products exported from the region, although at rates notably lower than before the crisis, specific effects in the 1980-1986 period include expansion in the cultivated area and in the volume production of the basic tradeable grains studied: soybeans, rice, maize, sorghum and wheat.

There has also been growth in sugarcane production and area cultivated, while the respective variables in cotton fell; coffee has remained almost at a standstill. However, in the initial stage in the application of the adjustment policies, 1980-1986, in terms of volume production, with the exception of cotton, growth was greater. The behaviour of roots and tubers was just the opposite; the 1980-1983 growth rates were negative, but they have recovered since 1983. At first sight, technological change does not seem to have been significant in the subsector as a whole, probably because of the high cost of technical inputs as a result of the devaluation.

From an environmental standpoint, the situation concerning the above-mentioned crops could be synthesized through the hypothesis that the ultimately deteriorating effects of adjustement on agricultural resources and on ecosystems on areas of expanding agriculture, were partially offset by the opposite effects of adjustment policies themselves -the growing costs of imported inputs, reduced domestic demand- and the fall in international prices.

Nevertheless, since all factors indicate that policies aimed at external markets will prevail in the future -within a context of still limited understanding of the environment notion with effects of restricted or unfavourable resource allocation from its viewpoint- it should be expected, at least in the medium term, a growing pressure on natural resources associated with, or commited to, that such policies will be intensified with a possible adverse impact on farm land -through excessive artificialization and overutilization- and on ecosystems of expanding areas of the agricultural frontier -through deforestation-.

The figures concerning the forestry subsector, from the view of this considerations, are not conclusive. Although growth in the production of timber -which is representative of the intensity of forest exploitation, since it incorporates all uses, including fuelwood and industrial uses- was only slightly more

than 9 per cent in the period from 1979-1981 to 1983-1985, wood pulp production grew 28 per cent which could be the result of incentives to expand exports. Other products, however, grew at lower rates, and exports -which expanded notably in volume terms over the same period-, in terms of american dollar value, fell from 1,603 millions in 1980 to 1,401 millions in 1985, a 12.6 per cent. Implicit forestry export prices declined between the three-year periods indicated above.

There is no clear evidence of deterioration processes in the forest cover as a consequence of adjustement policies according to historical extraction levels compared to the rates observed up to 1983-1985; however, the regional aggregate may conceal distinct national conditions. Nevertheless, export price conditions were apparently unfavourable.

Between 1980 and 1985, fuelwood and charcoal production grew 12.6 per cent -the historical rate- but exports fall sharply. Population pressure on fuelwood and charcoal is almost unperceivable in the production figures and growth rates of both items; between 1980 and 1985, population growth in Latin America and the Caribbean was estimated at 11.6 per cent, less than the growth rate indicated for fuelwood and charcoal between the same years.

If the social conditions caused or worsened by the adjustement programmes persist, pressure on the resource can be expected, both as fuelwood and as an obstacle for farming expansion.

Marine fishing in the subcontinent has increased substantially since 1983, at a rate of more than 16 per cent annually, although with important differences between fishing areas. Fish meal production in 1983 began to grow at an annual rate of 27.8 per cent. Valuated exports have also been growing but at a lower annual rate of 5.3 per cent.

Past experiences demonstrate the risks of overexploiting coastal and marine resources. Cases as those of the Central-Western marine area -as defined by FAO- where pressure on the

resources has caused catches to fall, and of anchovies in which high rates of extraction reduced catches to the minimun, should particularly be taken into account. Everything seems to indicate that incentives for the subsector's production in all its forms -marine fishing, continental fishing and aquaculture- will persevere -with an active participation of great capacity fleets from outside the Region- and there is no clear evidence that measures are being taken to protect the resources involved.

Background data on the energy and mining subsectors do not provide sufficient information in order to judge their recent behaviour in relation to the crisis. However, as tradeable goods and important source of foreign exchange, it is expected that great pressure will be placed on them.

Notes

1. This report was prepared on the basis of documents that are listed in chapter IV. The specific source is indicated by the reference number at the end of the pertinent paragraph when the text is transcribed or when significant opinions expressed in the text, or figures and calculations from that source, are reproduced.

2. Total and per capita amounts in dollars at 1980 prices taken from the 1987 ECLAC Statistical Yearbook (GDP and total population according to tables 101 and 95, respectively). (1).

3. The income elasticity coefficients for demand illustrate the intensity of changes in the quantity demand resulting from changes in income (spending). Since the coefficients are lower thant the unit, the changes in the quantity demand will be proportionally less than the decline in the income.

4. Estimate of the Joint United Nations Food and Agriculture Organization (FAO)/ECLAC Agriculture Division. Reference of Nicolo Gligo in "Agricultura y medio ambiente en América Latina". Gligo notes that there are numerous estimates of the arable land in the region ranging from 429 to 736 million hectares. He favours the FAO/ECLAC estimate, since it is the one to which there would be fewest objections. (10)

5. Implicit prices are calculated by dividing the value of exports by the physical volume of exports, according to the information from the FAO Forestry Data Bank, presented in tables 3 to 7 of annex V of Agricultural development potential - FAO. (9).

6. These figures were prepared on the basis of information presented in tables 10 and 11 of annex V to Agricultural and rural development potential - FAO, 1988. (9).

7. Latin American Energy Organization (OLADE), cited by Dourejeanni. (5).

8. Economic Commission for Latin America and the Caribbean (ECLAC), cited by Dourojeanni. (5).

9. From table 64 of the 1987 ECLAC Statistical Yearbook.

10. Per capita amounts deduced from the 1987 ECLAC Statistical Yearbook (table 101). (1).

11. Per capita figures deducted from the 1987 ECLAC Statistical Yearbook (tables 101 and 95, respectively). (1).

12. Weighted averages based on the total population of each country according to the 1987 ECLAC Statistical Yearbook (table 95). (1).

13. Simple averages of the variations between extreme years in a group of countries, not necessarily the same countries in each sector. Prepared by the Joint ECLAC/FAO Agriculture Division on the basis of PREALC data. (14).

14. Weighted averages by the total population of each country in the intermediate year of the triennium. Total population according to the 1987 ECLAC Statistical Yearbook (table 95). (1).

15. Deduced from tables 25 and 26.

16. Weighted averages by total population according to the 1987 ECLAC Statistical Yearbook (table 30). (1).

17. The last three paragraphs partially reproduce the conclusions of the analysis "Decline in the economy and in human well-being in the first half of the 1980s", prepared by Giovanni A. Cornia and incorporated into the compilation of the book identified under number (3) on the references list.

18. Osvaldo Sunkel postulates the following definitions of A. Pinto and J. Gracierena, respectively, on the concept of development: the manner in which, within a given system, human and material resources are organized and allocated to solve the questions of what, for whom and how to prepare goods and services or ... the specific and dynamic means adopted by a system whithin a given sphere and at a given moment in history. (20).

19. FAO/UNEP estimates, 1981, reproduced by Dourejeanni. (5).

20. FAO estimates in Agricultural development potential ... Annex V (table 10), 1988. (9).

21. FAO/UNEP estimates, 1981, reproduced by Dourojeanni.

22. Observations extracted from the executive report of the study by H. Jeffrey Leonard, listed as number (12) in the references.

23. In the source, deforestation and desertification are dealt with separately. Deforestation is examined as an initial process and desertification as a terminal process. (10).

24. Figures of E. de Soler (1981), cited by Dourojeanni. (5).

25. In 1980, the gross investement coefficient was 23.7 per cent; it dropped to 15.7 per cent in 1986 (table 52 of the 1987 ECLAC Statistical Yearbook). (1).

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Annex 1

SINOPSIS OF POSSIBLE EFFECTS OF ADJUSTEMENT POLICIES ON ENVIRONMENTAL DETERIORATION PROCESSES

SYNOPSIS OF POSSIBLE EFFECTS OF ADJUSTEMENT POLICIES ON ENVIRONMENTAL DETERIORATION PROCESSES. Page 1/2.

Adjustement policies	General purposes	Policy instruments	Immediate actions	Deterioration processes	Impacts and/or new processes Short/medium term	Medium/long term
* Policies aimed to reducing aggregate demand.	* Reduce the fiscal deficit. * Improve the trade balance.	* Contraction of current expenditure and capital budget.	* Reduction or elimination of supervision activities.	* Invasion of protected areas for illegal extraction of valuable species.	* Depredation and risk of losses of ecologically valuable species.	* Conversion of protected areas to crops and grazing.
				* Inadequate disposal of industrial wastes.	* Urban pollution.	* Pollution of farm, aquaculture and recreational areas.
			* Postponement, reduction or elimination of investements in new projects, and in the repair and maintenance of existing facilities.	* Deterioration of municipal and sanitation services and infrastructure		
				* Absence or deterioration of projects to protect and/or correct sedimentation, processes, destruc - of water courses..	* Incidencia exagerada de fenómenos naturales extraordinarios.	* Deterioration of physical infra - structure by sil - ting-up of dams, equipment damage, etc..
			* Reduction or elimination of activities on environmental impact evaluation and mitigation studies.	* Project implementation disregarding prevention or minimization of negative environmental impacts.	* Destruction of valuable ecosystems, unique formations and sceneries, etc., during project works.	* Multiple deterioration processes.
			* Reduction and/or elimination of special social programmes.	* More restricted access of poor sectors to health and education.	* Higher incidence of diseases, under-nutrition, and infant mortality.	* Cultural depriva - tion.
		* Reduction of in - internal credit. * Limitation of money supply expansion.	* Reduction of private sector' investements and operations: depression of urban - industrial activities.	* Idem. * Inter-urban migrations and slum expansion. * Fall in wages, unemployment and sub -employment increase, food supply decrease with higher prices ... causing greater urban poverty and limiting rural migration prospects.	* Increased pressure on slope and agricultural frontier areas for fuelwood and cultivation.	* Settlements in inappropriate areas.

Adjustement policies	General purposes	Policy instruments	Immediate actions	Deterioration processes	Impacts and/or new processes Short/medium term	Medium/long term
* Policies aimed at modifying relative prices of goods reallocating spending.	* Improve balance of payments to better the position of tradeable goods. * Expand supply of tradeable goods.	* Exchange and trade policy instruments. * Incentives to mobilize production factors.	* National currency devaluation. * Increased import duties. * Various sectoral incentives.	* Increase in the general price index, particularly food prices.	(Inflation is associated with the other social processes indicated in the first part of this synopsis, contributing to the same impacts.)	
				* Intensification of non-traditional export crops.	* Displacement of basic items of the low-income sectors diet.	* Excesive artificialization and overuse of soils producing erosion and pesticide pollution.
				* Expansion of the agricultural frontier for crops and livestock farming. * Pressure on forest for lumber disregarding ecological capablities.	* Deterioration of fragile ecosystems and risk of losing valuable species.	* Economical and cultural pressure on native groups. * Impoverishment of settlers. * Distruction risk of fragile ecosystems.
				* Idem.	* Deforestation of river basins.	* Idem. * Acceleration of erosion and sedimenatation in river basins.
				* Aquaculture expansion in areas with other uses (biological reserves, mangroves, farming, etc..	* Deterioration and risk of coastal ecosystems destruction.	* Interrumption of hydrobiological cycles and loss of resources.
				* Intensification in catches of diverse marine resources, even ignoring close seasons.	* Reduction of resource availability through overexploitation.	* Depletion of marine resources.
				* Expansion of mining exploitation areas or installation of new works ignoring environmental impacts.	* Destruction of valuable ecosystems and formations. * Pollution.	* Depletion of mineral deposits. * Incentives for spontaneous settlin in areas of expanding activities.

Annex 2

TABLES 1 - 27

TABLE 1.
LATIN AMERICA AND THE CARIBBEAN: GROSS DOMESTIC PRODUCT.
ACTIVITY SHARE AND TOTAL. 1970 - 1986.

Activity *	1970	1975	1980	1981	1982	1983	1984	1985	1986
Agriculture, fishing, etc.	11.8	10.7	9.8	10.2	10.3	10.6	10.6	10.7	10.1
Mining	7.9	5.7	5.1	5.1	5.0	5.1	5.1	5.0	5.0
Manufacturing	22.4	23.5	23.7	22.3	22.0	21.6	22.0	22.2	22.7
Electricity, gas and water	5.4	6.0	6.3	6.3	5.9	5.2	4.9	5.0	5.1
Construction	1.0	1.3	1.5	1.5	1.7	1.8	1.9	1.9	2.0
Trade	5.4	5.5	6.2	6.3	6.4	6.4	6.3	6.3	6.3
Transport and communications	18.2	18.6	18.8	18.8	18.5	18.0	18.0	17.8	17.6
Personal services and others	27.8	28.7	28.6	29.6	30.2	31.3	31.2	31.1	31.2
TOTAL (%)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
TOTAL (US$ millones) **	417,405.1	549,180.7	717,075.0	721,830.7	713,499.8	694,475.4	719,424.7	743,838.2	772,109.2

* Percentaje share

** GDP after adjustment for banking services and import rights.
Percentages calculated on GDP subtotal before adjustment.

Source: 1987 ECLAC Statistic Yearbook (table 101). (1)

TABLE 2.
LATIN AMERICA AND THE CARIBBEAN: GROSS DOMESTIC PRODUCT.
GROWTH RATES BY ACTIVITY AND TOTAL. 1970 - 1986.
(In percentage.)

Activity	1970/75	1975/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1980/86
Agriculture, fishing, etc.	3.5	3.6	4.7	(0.5)	0.5	3.4	4.6	(2.5)	1.6
Mining	(1.2)	3.1	0.2	(2.3)	(1.8)	4.5	1.4	3.7	0.9
Manufacturing	6.7	5.6	(5.4)	(2.4)	(4.0)	5.2	4.1	6.3	0.5
Electricity, gas and water	7.8	6.3	0.9	(6.1)	(14.0)	(2.4)	3.6	6.2	(2.2)
Construction	9.8	9.1	4.4	6.1	5.5	8.1	6.8	7.0	6.3
Trade	6.0	7.9	3.4	(0.0)	(2.2)	2.6	3.1	2.8	1.6
Transport and Communications	6.1	5.5	1.0	(2.3)	(5.3)	3.5	2.4	2.2	0.2
Personal services and others	6.3	5.3	0.8	0.3	0.2	0.6	0.6	0.8	4.0
Total GDP	5.6	5.5	0.7	(1.2)	(2.7)	3.6	3.4	3.8	1.2

( ) = negative figure
* Annual accumulative growth rates.

Source: 1987 ECLAC Statistical Yearbook (table 101). (1)

TABLE 3.
LATIN AMERICA AND THE CARIBBEAN: PER CAPITA GROSS DOMESTIC PRODUCT
GROWTH RATES BY ACTIVITY AND TOTAL. 1970 - 1986.
(In percentage.)

Activity	1970/75	1975/80	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1980/86
Agriculture, fishing, etc.	0.6	1.6	2.4	(2.7)	(1.7)	1.1	2.4	(4.6)	(0.6)
Mining	(3.9)	1.1	(2.0)	(4.4)	(4.0)	2.3	(0.7)	1.5	(1.3)
Manufacturing	3.7	3.5	(7.5)	(4.5)	(6.1)	2.9	1.9	4.0	(1.6)
Electricity, gas and water	4.7	4.2	(1.3)	(8.2)	(15.9)	(4.6)	1.4	3.9	(4.3)
Construction	6.7	7.0	2.1	3.8	3.2	5.7	4.6	4.7	4.0
Trade	3.0	5.8	1.1	(2.2)	(4.4)	0.4	1.0	0.6	(0.6)
Transport and Communications	3.1	3.5	(1.3)	(4.5)	(7.4)	1.2	0.3	0.0	(2.0)
Personal services and others	3.3	3.3	1.7	(1.0)	(1.2)	0.8	0.8	1.6	0.5
Total GDP	2.7	3.5	(1.6)	(3.3)	(4.8)	1.3	1.2	1.6	(1.0)

( ) = negative figure
* Annual accumulative growth rates.

Source: 1987 ECLAC Statistical Yearbook (table 101 for GDP, and table 95 for Population). (1)

TABLE 4.
LATIN AMERICAN AND CARIBBEAN EXPORTS. 1960-1985.
(In percentages of the FOB value of total exports.)

Year	Agricultural Products	Primary Products	Manufacture Products
1960	50.7	96.4	3.6
1970	44.3	87.7	12.3
1980	29.3	82.9	17.1
1981	26.9	82.4	17.6
1982	25.2	82.9	17.1
1983	27.0	79.1	20.9
1984	26.9	76.8	23.2
1985	26.7	s/i	s/i

s/i : No information of the regional aggregate.
In any case, partial data indicate that the percentage share of primary products is even lower than in 1984.

Source: 1987 ECLAC Statistical Yearbook (tables 58, 75 and 76). (1)

TABLE 5.
TERMS OF TRADE IN LATIN AMERICA AND THE CARIBBEAN.
1981-1986.
RATES OF VARIATION IN EACH PERIOD.(%)

Period	Oil Exporters	Oil Importers
1981-1982	(10.3)	(8.3)
1982-1983	5.0	(0.1)
1983-1984	2.0	9.4
1984-1985	(3.4)	(6.6)
1985-1986	(32.2)	12.8
1981-1986	(36.9)	(6.0)

( ) = negative figure.

Source: ECLAC, 1987, cited by Sebastian Edwards. (6)

TABLE 6.
INDEXES OF EFFECTIVE REAL EXCHANGE RATE. 1980-1986.
SELECTED COUNTRIES IN LATIN AMERICA.

Year	Argentina	Bolivia	Brazil	Chile	Mexico	Peru	Venezuela
1980	100.00	100.00	100.00	100.00	100.00	100.00	100.00
1981	99.11	79.75	84.06	85.52	87.97	85.77	89.00
1982	177.98	58.21	77.60	92.00	112.34	81.15	80.66
1983	188.62	71.15	91.10	115.91	132.97	85.59	75.51
1984	139.35	28.42	102.65	118.12	114.66	87.91	105.67
1985	173.78	9.50	103.85	145.52	106.22	101.91	104.81
1986	203.71	103.93	111.68	162.39	135.61	84.98	100.81

* Base year 1980 = 100
An increase in the index indicates real devaluation; a decrease, the opposite.

Source: Sebastian Edwards. (6)

TABLE 7.
AGRICULTURAL AND IRRIGATED AREA. 1961 - 1985.
Latin America and the Caribbean.
(Thousands of hectares.)

Category	1961-1965 area	1980 area	1961/65-1980 growth %	1985 area	1980-1985 growth %	Annual growth rate 1961/65-1980 % ***	Annual growth rate 1980-1985 %
Annual crops *	92,509	140,812	52.2	148,155	5.2	2.5	1.0
Permanent crops	24,395	29,843	22.3	30,194	1.2	1.2	0.2
and pastures **	493,935	548,779	11.1	551,108	0.4	0.6	0.1
Agricultural area	610,839	719,434	17.8	729,457	1.4	1.0	0.3
Irrigated land	8,403	14,154	68.4	14,707	3.9	3.1	0.8

* Annual and short cycle crops.
** Pastures : natural or ranges and cultivated.
*** 17 years were taken into consideration.

Source: 1987 ECLAC Statistical Yearbook (table 279).(1)

TABLE 8.
QUANTUM INDEXES OF PRODUCTION. 1960 - 1986. *
LATIN AMERICA AND THE CARIBBEAN.

Year	Agricultural Production	Crop Production	Livestock Production	Total Food Production	Per capita Food Production
1960	55	---	---	53	90
1965	64	---	---	63	91
1970	74	76	73	74	94
1975	85	85	85	85	95
1980	99	98	100	99	100
1981	104	105	104	104	101
1982	105	106	104	107	102
1983	105	105	104	106	99
1984	109	112	103	110	100
1985	113	117	107	113	101
1986	111	113	110	113	99

* Base 100: 1979-1981...for the 1975-1986 period. The 1960-1975 indexes, calculated from other bases in the source, are adjusted to this base.

Source: 1987 ECLAC Statistical Yearbook (tables 274 to 278). (1)

TABLE 9.
LATINA AMERICA AND THE CARIBBEAN: AREA OF SELECTED CROPS. 1960 - 1986.
(Thousands of hectares.)

Crop	1960	1965	1970	1975	1980	1981	1982	1983	1984	1985	1986
Soybeans	187	518	1,556	6,792	11,544	11,325	11,364	11,569	13,255	14,632	13,638
Beans	4,692	6,269	6,231	7,078	7,292	8,352	8,710	7,272	8,290	8,375	8,710
Rice	4,238	6,134	6,643	7,347	8,221	8,232	8,218	7,094	7,573	7,069	7,585
Maize	18,949	24,056	25,842	24,830	25,022	27,462	25,654	25,199	26,401	26,900	27,189
Sorghum	1,276	1,673	3,677	4,233	3,916	5,018	4,975	5,205	5,215	4,949	4,366
Wheat	7,467	7,942	7,959	10,500	9,972	9,816	12,148	10,794	9,745	10,398	11,245
Subtotal of basic grains	36,809	46,592	51,908	60,780	65,967	70,205	71,069	67,133	70,479	72,323	72,733
Cassava	s/i	2,247	2,574	2,699	2,694	2,754	2,779	2,696	2,443	2,513	2,716
Potatoes	1,055	1,077	1,098	1,031	1,069	1,087	1,084	942	1,021	1,039	993
Subtotal of roots and tubers	1,055	3,324	3,672	3,730	3,763	3,841	3,863	3,638	3,464	3,552	3,709
Cotton	3,929	4,586	5,939	5,650	5,621	5,129	4,979	4,324	4,861	5,426	4,610
Sugar cane	s/i	4,554	5,091	5,222	6,283	6,295	6,660	6,860	7,254	7,524	7,673
Coffee	s/i	6,186	5,079	5,047	5,708	5,943	5,339	5,700	5,809	5,747	5,510
Subtotal of agro-industrial crops	3,929	15,326	16,109	15,919	17,612	17,367	16,978	16,884	17,924	18,697	17,793
Total	41,793	65,242	71,689	80,429	87,342	91,413	91,910	87,655	91,867	94,572	94,235

s/i : no information.

Source: 1987 ECLAC Statistical Yearbook. (1)

TABLE 10.
LATIN AMERICA AND THE CARIBBEAN: PRODUCTION OF SELECTED CROPS. 1960 - 1986.
(Thousands of tonnes.)

Crop	1960	1965	1970	1975	1980	1981	1982	1983	1984	1985	1986
Soybeans	233	669	1,928	11,410	20,041	20,397	18,748	20,455	24,000	26,616	22,080
Beans	2,770	3,714	3,752	4,085	3,670	4,771	4,871	3,773	4,580	4,468	4,343
Rice	s/i	10,896	11,842	14,036	16,439	15,635	17,543	14,757	16,965	17,168	17,476
Maize	22,422	31,023	38,095	38,273	45,240	55,369	47,927	47,324	51,010	55,198	52,819
Sorghum	s/i	2,369	7,533	10,310	9,384	15,816	14,630	14,904	14,113	14,866	12,685
Wheat	8,013	10,959	11,510	14,972	14,875	15,202	22,728	20,110	21,481	20,127	21,581
Subtotal of basic grains	33,438	59,630	74,660	93,086	109,649	127,190	126,447	121,323	132,149	138,443	130,984
Cassava	s/i	29,388	34,718	32,092	30,193	31,209	30,491	28,018	27,595	29,610	32,095
Potatoes	s/i	8,506	9,539	9,262	10,360	11,846	11,752	10,089	12,143	11,330	11,498
Subtotal of roots and tubers	----	37,894	44,257	41,354	40,553	43,055	42,243	38,107	39,738	40,940	43,593
Cotton	3,486	4,892	4,563	4,609	4,863	4,670	4,109	3,880	5,136	5,641	4,483
Sugar cane	s/i	235,789	277,959	281,975	356,122	359,046	399,585	423,944	440,166	456,995	456,798
Coffee	3,239	3,599	2,180	2,840	2,950	4,058	3,123	3,776	3,383	3,885	3,005

s/i : no information.

Source: 1987 ECLAC Statistical Yearbook. (1)

TABLE 11.
LATIN AMERICA AND THE CARIBBEAN: PRODUCTIVITY OF SELECTED CROPS. 1960 - 1986.
(Thousand of tonnes.)

Crop	1960	1965	1970	1975	1980	1981	1982	1983	1984	1985	1986
Soybeans	1.24	1.29	1.23	1.67	1.73	1.80	1.64	1.76	1.81	1.81	1.61
Beans	0.59	0.59	0.60	0.57	0.50	0.57	0.55	0.51	0.55	0.53	0.49
Rice	----	1.77	1.78	1.91	1.99	1.89	2.13	2.08	2.24	2.42	2.30
Maize	1.18	1.28	1.47	1.54	1.80	2.01	1.86	1.87	1.93	2.05	1.94
Sorghum	----	1.41	2.04	2.43	2.39	3.15	2.94	2.86	2.70	3.00	2.90
Wheat	1.07	1.37	1.44	1.42	1.49	1.54	1.87	1.86	2.20	1.93	1.91
Average basic grains	0.91	1.28	1.44	1.51	1.65	1.81	1.80	1.82	1.89	1.94	1.84
Cassava	----	13.07	13.75	11.89	11.20	11.33	10.97	10.39	11.29	11.78	11.81
Potatoes	----	7.89	8.68	8.98	9.69	10.89	10.84	10.71	11.89	10.90	11.57
Average roots and tubers	----	11.40	12.05	11.09	10.78	11.21	10.94	10.47	11.47	11.53	11.75
Cotton	0.88	1.06	0.76	0.81	0.86	0.91	0.82	0.89	1.05	1.03	0.97
Sugar cane	----	51.77	54.59	53.99	56.68	57.03	59.99	62.09	60.67	60.73	59.53
Coffee	----	0.58	0.42	0.56	0.51	0.68	0.58	0.66	0.58	0.67	0.54

Source: 1987 ECLAC Statistical Yearbook. (1)

TABLE 12.
LATIN AMERICA AND THE CARIBBEAN: ANNUAL GROWTH RATES OF SELECTED CROPS. 1960 - AREA, PRODUCTION AND PRODUCTIVITY.

(Annual accumulative rates, %.)

Category	1965/70	1970/80	1965/80	1980/83	1983/86	1980/86
Basic grains:						
- Area	2.2	2.4	2.3	0.6	2.7	1.6
- Production	4.6	3.9	4.1	3.4	2.6	3.0
- Productivity	2.5	1.3	1.7	3.3	0.5	1.9
Roots and tubers:						
- Area	2.0	0.2	0.8	(1.1)	0.6	(0.2)
- Production	3.2	(0.9)	0.5	(2.1)	4.6	1.2
- Productivity	1.1	(1.1)	(0.4)	(0.9)	3.9	1.5
Cotton:						
- Area	5.3	(0.5)	1.4	(8.4)	2.2	(3.3)
- Production	(1.4)	0.6	(0.0)	(7.3)	4.9	(1.3)
- Productivity	(6.4)	1.2	(1.4)	1.1	2.9	2.0
Sugar cane:						
- Area	2.3	2.1	2.2	3.0	3.8	3.4
- Production	3.3	2.5	2.8	6.0	2.5	4.2
- Productivity	1.1	0.4	0.6	3.1	(1.4)	0.8
Coffee:						
- Area	(3.9)	1.2	(0.5)	(0.0)	(1.1)	(0.6)
- Production	(9.5)	3.1	(1.3)	8.6	(7.3)	0.3
- Productivity	(6.3)	2.0	(0.9)	9.0	(6.5)	1.0
Agro-industrial crops:						
- Area	1.0	0.9	0.9	(1.4)	1.8	0.2
Total selected crops:						
- Area	1.6	0.8	1.1	0.1	1.9	1.0

Source: Tables 9, 10 and 11 of this report.

TABLE 13.
FOREST PRODUCTION IN LATIN AMERICA AND THE CARIBBEAN. 1961 - 1985.

Period	Roundwood (millons m3)	Sawnwood (millons m3)	Panels (thousands of tonnes)	Pulp (thousands of tonnes)	Paper and Paperboard (thousands of tonnes)
1961/63	191	12	600	761	1,892
1969/71	232	16	1,625	1,658	3,614
1979/81	328	25	4,158	4,381	7,402
1983/85	358	27	4,553	5,611	8,589
Accumulated annual growth rates (percentages)					
1961/63-1979/81	3.0	4.2	11.4	10.2	7.9
1979/81-1983/85	2.2	1.9	2.3	6.4	3.8

Source: Agricultural development potential - Annex V (tables 3 to 7), FAO. 1988. (9)

TABLE 14.
LATIN AMERICA AND THE CARIBBEAN: FORESTRY EXPORTS. 1961 - 1985.

Period	Roundwood	Sawnwood	Panels	Pulp	Paper and Paperboard	Value
	(millons m3)	(millons m3)	(thousands of tonnes)	(thousands of tonnes)	(thousands of tonnes)	(millons of $US)
1961/63	30	1,431	61	30	31	79
1969/71	146	2,173	181	145	121	225
1979/81	1,227	2,670	572	1,227	415	1,444
1983/85	1,470	2,915	629	1,450	789	1,476
Accumulated annual growth rates (percentages)						
1961/63-1979/81	22.9	3.5	13.2	22.9	15.5	17.5
1979/81-1983/85	4.6	2.2	2.4	4.3	17.4	0.5

Source: Agricultural development potential - Annex V (tables 3 to 7), FAO. 1988. (9)

TABLE 15.
FORESTRY EXPORTS AND IMPORTS.
LATIN AMERICAN AND THE CARIBBEAN. 1961 - 1985.
(Millions of dollars.)

Year	Exports	Imports
1961	99	346
1962	88	307
1963	85	294
1964	111	354
1965	134	398
1966	150	442
1967	144	438
1968	180	526
1969	217	577
1970	222	661
1971	240	659
1972	297	692
1973	402	812
1974	537	1411
1975	470	1169
1976	465	1276
1977	575	1483
1978	701	1492
1979	1166	1765
1980	1603	2630
1981	1573	2723
1982	1302	2695
1983	1381	2119
1984	1649	1983
1985	1401	1974
Percentage increases:		
1961-1970	124	91
1970-1980	622	298
1980-1985	(13)	(25)

Source: Agricultural development potential - Annex V (table 8), FAO. 1988. (9)

TABLE 16.
PRODUCTION AND TRADE OF FUELWOOD AND CHARCOAL IN LATIN AMERICA AND THE CARIBBEAN.
1974 - 1985.

Year	Production	Exports		Imports	
	volume	volume	value	volume	value
	(thousands m3)	(thousands m3)	(thousands $US)	(thousands m3)	(thousands $US)
1974	202,861	5	67	27	826
1975	208,018	13	1,282	9	409
1976	213,142	21	1,201	6	472
1977	218,050	106	1,657	12	724
1978	223,529	152	1,843	4	252
1979	230,752	214	3,715	4	251
1980	235,775	167	2,242	5	299
1981	240,822	71	1,792	7	874
1982	242,287	23	611	5	343
1983	254,457	57	1,525	3	321
1984	260,175	10	232	4	174
1985	265,430	7	266	6	222
Percentage increases:					
1974-1980	16.2	3,240.0	3,246.3	(81.5)	(63.8)
1980-1985	12.6	(95.8)	(88.1)	20.0	(25.8)
Annual accumulated growth rates (%):					
1974-1980	2.5	79.5	79.5	(24.5)	(15.6)
1980-1985	2.4	(47.0)	(34.7)	3.7	(5.8)

Source: Yearbook of forestry products 1974-1985. FAO. (8)

TABLE 17.
MARINE FISHING: CATCHES BY FISHING REGIONS. 1970 - 1986.
LATIN AMERICA AND THE CARIBBEAN.
(Thousands of tonnes.)

Year	South-East Pacific	South-West Pacific	Central-West Pacific	Central-West Atlantic	Regional Total
1970/74 *	7,939	846	989	1,495	11,269
1975/79 *	5,314	1,092	1,699	1,626	9,731
1980	6,231	1,186	2,423	1,807	11,647
1981	6,835	1,180	2,468	1,907	12,390
1982	7,918	1,419	2,350	2,181	13,868
1983	6,278	1,561	1,558	2,271	11,668
1984	8,547	1,450	2,093	2,606	14,696
1985	9,627	1,569	2,652	2,255	16,103
1986	11,952	1,710	2,618	2,110	18,390
Percentage increases:					
1970/74-1980*	(21.5)	40.2	145.0	20.9	3.4
1980-1983	0.8	31.6	(35.7)	25.7	0.2
1983-1986	90.4	9.5	68.0	(7.1)	57.6
Annual accumulative growth rates (%):					
1970/74-1980*	(3.2)	4.6	12.7	2.6	0.4
1980-1983	0.3	9.6	(13.7)	7.9	0.1
1983-1986	23.9	3.1	18.9	(2.4)	16.4

* Averages. For the calculation of these rates, the middle point of the range was taken

Source: Agricultural and rural development potential - Annex V (tables 8 to 11), FAO. 1988. (9)

TABLE 18.
FISH MEAL PRODUCTION.
LATIN AMERICA AND THE CARIBBEAN. 1976 - 1986.

(Thousands of tonnes.)

Year	Production
1976	1,312
1977	969
1978	1,282
1979	1,447
1980	1,350
1981	1,490
1982	1,757
1983	1,260
1984	1,879
1985	2,270
1986	2,629
Percentage increases:	
1976-1980	2.9
1980-1983	(6.7)
1983-1986	108.7
Annual accumulative growth rates (%):	
1976-1980	0.7
1980-1983	(2.3)
1983-1986	27.8

Source: Agricultural and rural development potential - Annex V (table 14). FAO. 1988. (9)

TABLE 19.
MARINE FISHING: CATCH DISTRIBUTION.
LATIN AMERICA AND THE CARIBBEAN. 1970 - 1984.

(Percentages of total catch).

Year	Human Consumption	Other purposes *
1970/74 **	22.2	77.8
1975/79 **	36.6	63.4
1980	43.2	56.8
1981	40.6	59.4
1982	35.5	64.5
1983	40.3	59.7
1984	35.9	64.1

* Mainly fish meal.
** Annual averages.

Source: Agricultural and rural development potential - Annex V (table 15). FAO. 1988. (9)

TABLE 20.
FOREIGN TRADE OF THE FISHING SUBSECTOR.
LATIN AMERICA AND THE CARIBBEAN. 1962 - 1986.

(Millions of dollars annually.)

Period *	Exports	Imports
1962-1966	276.04	66.80
1967-1971	449.21	109.82
1972-1976	670.95	171.42
1977-1981	1,702.84	348.24
1982-1986	2,205.20	287.88
Percentage increases:		
1972/76-1977/81	153.8	103.2
1977/81-1982/86	29.5	(17.3)
Annual accumulative growth rates (%): **		
1972/76-1977/81	20.5	15.2
1977/81-1982/86	5.3	(3.7)

* Annual averages.
** The middle year of each period is taken.

Source: Agricultural and rural development potential - Annex V (table 2, appendix). FAO. 1988. (9)

TABLE 21.
QUANTUM INDEXES OF MINING PRODUCTION. 1960 - 1985.
LATIN AMERICA AND THE CARIBBEAN.

Year	Including oil-producing countries	Excluding oil-producing countries
1960	62.8	49.6
1965	76.6	56.9
1970	87.8	69.3
1975	78.6	84.2
1979	94.7	93.8
1980	101.6	103.7
1981	103.7	102.5
1982	108.4	107.0
1983	112.6	108.0
1984	112.3	116.2
1985	113.6	123.9

Base: annual average for the period 1979-1981=100

Source: 1987 ECLAC Statistical Yearbook (table 305). (1)

TABLE 22.
PER CAPITA CONSUMPTION OF ELECTRIC ENERGY AND HYDROCARBONS. 1960 - 1985.
LATIN AMERICA AND THE CARIBBEAN.

Year	Electric Energy		Hydrocarbons	
	Consumption	Growth	Consumption	Growth
	(Kilowatt/hour)	(annual percentage)	Kilograms of petroleum equivalent	(annual percentage)
1960	321	8.0	319	6.8
1970	536	9.5	471	5.8
1980	1,027	9.0	646	11.8
1981	1,044	3.6	625	(1.0)
1982	1,087	6.1	633	3.6
1983	1,116	5.0	607	(1.9)
1984	1,168	7.0	607	2.4
1985	1,205	5.4	598	0.6

Source: 1987 ECLAC Statistical Yearbook (tables 60 to 63). (1)

TABLE 23.
URBAN UNEMPLOYMENT IN SELECTED COUNTRIES. 1970 - 1986.
LATIN AMERICA AND THE CARIBBEAN.
(Average annual rates.)

Country	1970	1975	1980	1981	1982	1983	1984	1985	1986
Argentina	4.9	3.7	2.6	4.7	5.3	4.7	4.6	5.3	4.6
Brazil	6.5	---	6.2	7.9	6.3	6.7	7.1	5.3	3.6
Colombia	10.6	11	9.7	8.3	9.3	11.7	13.4	14.1	13.8
Costa Rica	3.5	---	6	9.1	9.9	8.5	6.6	6.7	6.7
Chile	4.1	15	11.7	9	20	19	18.5	17	13.1
Ecuador	4.2	---	5.7	6	6.3	6.7	10.5	10.4	12
Mexico	7	7.2	4.5	4.2	4.2	6.8	6	4.8	4.3
Panama	10.3	8.6	10.4	10.7	10.1	11.7	12.4	15.6	12.1
Uruguay	7.5	---	7.4	6.7	11.9	15.5	14	13.1	10.7
Venezuela	7.8	8.3	6.6	6.8	7.8	10.5	14.3	14.3	11.3

Source: 1987 ECLAC Statistical Yearbook (table 22). (1)

TABLE 24.
VARIATIONS IN THE CONSUMER PRICE INDEX IN SELECTED COUNTRIES. 1970 - 1986.
LATIN AMERICA AND THE CARIBBEAN.
(Average annual rates.)

Country	Coverage	1970-1980		1980		1983 or 1984 *		1986	
		General	Food	General	Food	General	Food	General	Food
Argentina	Capital	118.5	119.3	100.8	95.1	626.7	638.9	90.1	98.1
Brazil	Sao Pablo	34.2	36.4	78	83.3	172.4	183.3	129.9	138.5
Colombia	Country	--	--	26.6	28.7	19.7	20.6	19.1	19.6
Costa Rica	Capital	10.8	11.8	18.1	21.8	32.6	40.8	11.8	11.8
Chile	Capital	130.2	134.4	35.1	36.1	27.3	25.8	19.5	23.9
Ecuador	Capital	12.6	14.3	13	10.9	48.4	77.9	23	23.2
Mexico	Capital	16.5	16.5	26.3	25	101.9	91.1	86.2	85.6
Panama	Capital	7.1	7.8	13.8	12.6	2.1	2.3	1.0 **	0.2 **
Uruguay	Capital	62.7	61.7	63.5	57.9	55.3	68.8	76.4	91.7
Venezuela	Capital	8.4	12.1	21.5	33.1	12.2	17.2	8.9	12.3

* Between 1983 and 1984 the highest annual rates of the period occur. The highest rate is the one indicated. The rate of Colombia, Costa Rica, Chile, Ecuador, Mexico and Panama are for 1983. Those of the remaining countries are for 1984.

** Rate for 1984. The source does not provide information on the general level in 1986.

Source: 1987 ECLAC Statistics Yearbook (table 70). (1)

TABLE 25.
CALORIES AVAILABLE IN SELECTED COUNTRIES. 1964 - 1986.
LATIN AMERICA AND THE CARIBBEAN.

(Calories per day, per capita, three-year averages.)
(Annual accumulative growth rates in percentages.)

Country	Minimun needs	THREE-YEAR PERIODS 1964 1966	1969 1971	1974 1976	1981 1983	RATES 1964/66 1974/76	1974/76 1981/83
Argentina	2,650	3,148	3,236	3,324	3,195	0.55	(0.56)
Brazil	2,390	2,389	2,450	2,497	2,564	0.44	0.38
Colombia	2,320	2,186	2,166	2,332	2,543	0.65	1.25
Costa Rica	2,240	2,326	2,379	2,563	2,548	0.98	(0.08)
Chile	2,440	2,635	2,664	2,601	2,662	(0.13)	0.33
Ecuador	2,290	1,906	1,936	2,037	2,052	0.67	0.10
Mexico	2,330	2,586	2,642	2,717	2,966	0.50	1.26
Panama	2,310	2,275	2,448	2,405	2,305	0.56	(0.60)
Uruguay	2,670	2,820	2,982	2,954	2,706	0.47	(1.24)
Venezuela	2,470	2,331	2,336	2,358	2,664	0.12	1.76

( ) = negative figure.

Source: 1987 ECLAC Statistical Yearbook (table 28). (1)

TABLE 26.
CALORIES AVAILABLE IN SELECTED COUNTRIES. 1964 - 1986.
LATIN AMERICA AND THE CARIBBEAN.

(Grams of protein per day, per capita, three-year averages.)
(Annual accumulative growth rates in percentages.)

Country	THREE-YEAR PERIODS				RATES	
	1964	1969	1974	1981	1964/66	1974/76
	1966	1971	1976	1983	1974/76	1981/83
Argentina	100.1	102.6	105.2	103.4	0.50	(0.25)
Brazil	60.1	60.9	59.8	60.6	(0.05)	0.19
Colombia	50.7	49.6	49.8	56.4	(0.18)	1.79
Costa Rica	55.3	56.4	59.9	60.4	0.80	0.12
Chile	70.3	69.9	70.3	73.1	0.00	0.56
Ecuador	50	48.8	47.8	46.9	(0.45)	(0.27)
Mexico	64.6	66.3	67.2	76.2	0.40	1.81
Panama	57.6	57.7	62.8	60.6	0.87	(0.51)
Uruguay	84	87.4	88.3	83.5	0.50	(0.80)
Venezuela	60.4	61.3	63.2	73	0.45	2.08

( ) = negative figure

Source: 1987 Statistical Yearbook (table 29).(1)

TABLE 27.
INFANT MORTALITY IN SELECTED COUNTRIES. 1950 - 1985.
LATIN AMERICA AND THE CARIBBEAN.
(Average annual rates per thousand live births.) */**

Country	1950 1955	1955 1960	1960 1965	1965 1970	1970 1975	1975 1980	1980 1985	1985 1990
Argentina	65.9	60.4	59.7	57.4	49.0	40.5	36.0	32.2
Brazil	134.7	121.9	109.4	100.1	90.5	78.8	70.7	63.2
Colombia	123.3	102.2	84.5	74.2	66.9	59.4	53.3	48.6
Costa Rica	93.8	87.7	81.3	67.7	52.6	36.5	23.3	19.4
Chile	126.2	118.3	109.4	90.1	69.9	46.6	23.7	18.1
Ecuador	139.5	129.4	119.2	107.1	95.0	82.4	69.6	63.4
Mexico	113.9	97.7	86.3	78.5	70.9	59.0	49.9	42.6
Panama	93.0	74.9	62.7	51.6	42.8	31.6	25.7	22.7
Uruguay	57.4	53.0	47.9	47.1	46.3	41.7	37.6	34.0
Venezuela	106.4	89.0	72.8	59.5	48.6	43.3	38.7	35.9

* Children aged - to 1 year.
** Rates implicit in population projections.

Source: 1987 ECLAC Statistical Yearbook (table 30). (1)