

long as there is a management policy which rationalizes the use of the resources both spatially and temporally. This pattern of exploitation and

the corresponding changes in the "availability of stock" are a key aspect of a policy that seeks to promote sustainable development.

Box III-6

ECONOMIC POLICIES THAT ENCOURAGE DEFORESTATION

The problems of deforestation in Latin America and the Caribbean are the subject of growing international attention, since the region has 57% of the tropical forests of the world and at the same time the highest rate of deforestation (1.3% per year) of the developing world. Attention has been centred in particular on Brazil, which has 30% of the world's tropical forests and where, according to different studies, the deforestation process affects between 1.7 and 8 million hectares per year. Although these figures cover a very wide range and the real magnitude of the problem is little known, there is sufficient evidence to state that in certain regions deforestation is taking place at a considerable rate.

There are many factors which play a part in deforestation in tropical areas, although it is not known exactly how many, and although the way some of them operate is as yet little understood. The expansion of small-scale agriculture, commercial lumbering and extensive livestock-raising are considered to be some of the main factors in question. In addition, there are others which are perhaps even more complex, such as poverty, inequitable land distribution, low agricultural productivity, and the incentives given by some economic policies to activities which harm the environment. The purpose of this note is to explore the last-named aspect.

Over the last 25 years, a development policy has been undertaken in the Amazon region whose execution has included big highway construction programmes to link the region with the north-west and south, the application of colonization schemes, and the provision of fiscal and credit incentives for agricultural and industrial development. Generally speaking, the evidence indicates that on the whole these policies have played an important part in the process of deforestation by encouraging activities which have contributed to the destruction of the tropical forests.

Fiscal incentives

The integration of the Amazon region with the rest of Brazil began in the mid-1960s with the completion of the highway linking Brasília with Belém, at the mouth of the Amazon. This highway, plus the attractive land prices, encouraged the inflow of immigrants. In order to attract private enterprise into the region—one of the objectives of what was termed "Operation Amazon"—there was an increase in expenditure on infrastructure, involving the construction of roads, airports and telecommunications, and a package of fiscal and credit incentives was designed.

One of the most attractive measures was the 1963 fiscal incentive for investment, which offered

corporations the possibility of obtaining up to 50% credit against their income taxes on condition that the resulting saving was invested in projects in the Amazon region, which must be approved by the Development Agency for the Amazon Region (SUDAM). Up to the end of 1985, nearly 1 000 projects had been approved, 631 of them for the livestock-raising sector. Of these livestock-raising projects, 75% were carried out in the Southern Pará and Northern Mato Grosso regions.

The development of livestock-raising in these two subregions has involved heavy costs. On the one hand, the expansion of livestock-raising seems to be the main cause of deforestation and environmental deterioration, while on the other hand the livestock-raising projects have not helped to generate jobs.

Furthermore, in spite of the heavy subsidies given by SUDAM to livestock-raising projects (some US\$700 million) only a few of these projects have produced encouraging results. In this respect, the evidence seems to indicate that the subsidies or the capital gains due to the appreciation in land values are the only factor that make livestock-raising activities profitable in this zone. It has also been noted that many of these projects were undertaken solely because of the availability of fiscal incentives. Finally, the studies all agree that in this region livestock-raising is not only not economically profitable but also appears to be the least viable alternative from the point of view of its impact on soil erosion.

Credit subsidies

Another factor which has apparently played an important part in the process of the deforestation of the Amazon region, especially outside the Southern Pará and Northern Mato Grosso regions, is the availability of subsidized rural credits. Just as in the case of the fiscal incentives, these credit subsidies affect the decisions of the economic agents by increasing the domestic rate of return on investment and ultimately serve to encourage the development of activities which would never be undertaken if the credits were offered at market prices.

The volume of subsidized credit for the northern part of the Brazilian Amazon region increased almost 10 times in real terms between 1974 and 1980. Most of this credit went to crop farming, but the livestock-raising sector was also favoured. Although the shortage of data on the size of ranches, output and productivity, as well as the diversion of agricultural credits to other uses, make it difficult to calculate the exact effects these measures have had on the behaviour of farmers and ranchers in the Amazon region, it is estimated that at all events they

facilitated the acquisition and subsequent deforestation of enormous areas of land.

In 1987, the policy of subsidized credit was eliminated and it is estimated that this measure will have positive effects in the long run. Paradoxically, however, in the short term the lack of subsidized

credit has had some harmful results, since the lack of facilities for buying fertilizers, herbicides and other inputs has led many farmers to take up activities that are even more damaging to the forests, such as slash and burn agriculture.

* Based on Dennis J. Mahar, *Government Policies and Deforestation in Brazil's Amazon Region*, Washington, D.C., World Bank, 1989.

Furthermore, from the spatial perspective of development, macroeconomic policies are not neutral. On the contrary, they frequently lead to significant spatial modifications. This is the case, for example, of policies that modify patterns of employment and migration, or those that affect the location and degree of the urban or rural concentration of industries. This spatial dimension of sustainable development must be taken into account in the management and improvement of the environment. Note should be taken of the tremendous impact of road construction on the advance of the agricultural frontier and of how improvements in urban transport systems affect the growth of cities.

Finally, these policies have crowding-out effects on the activities of various sectors. These secondary impacts are related to the fact that priorities in the allocation of resources are set at the macroeconomic level in such a way that, in many cases, environment-related activities are displaced. For example, the priority of repayment of the external debt must be respected, thus necessitating a reduction in fiscal expenditures and consequent restrictions on budgetary allocations. Finally, those activities whose benefits are long-term, such as reinvestment in soils and forests, among others, are eliminated. In an institutional sense, this crowding out of certain activities most seriously affects those that require resources from the current account budget (for example, counterpart funds for the execution of externally funded projects). This is especially the case with environmental projects, which often contain a strong current-expenditure component.

On the other hand, they affect only slightly or not at all those activities that are financed exclusively from external sources.

The nature of a country's economic policy has a major impact on two key variables in the management of natural and environmental resources: the modification of time preferences and attitudes towards risk and uncertainty.

The first refers to the way in which economic and social agents take decisions regarding consumption or investment, or to the greater –or lesser– utilization of natural resources. The options will depend on the nature of economic policies and on the general state of the economy. Thus, in low-income population groups there is a greater propensity towards immediate consumption, an even higher than usual rate of exploitation of certain natural resources and frequently a neglect of investment in or conservation of these resources. In such cases, conservation policies must be incorporated into an overall poverty-fighting policy. At the same time, in the higher-income groups or countries whose consumption patterns are highly intensive in the use of polluting energy sources and the generation of waste, it is essential to design policies aimed at reorienting consumption patterns and development styles.

The second variable, relating to risks and uncertainties, and largely neglected by the authorities responsible for programming and executing development policies, is related to anticipated perceptions, attitudes and values *vis-à-vis* medium- and long-term benefits and

costs. The nature of the uncertainties will vary, depending on technological innovations, changes of preferences in consumption and investment and changes in national economic policy. For example, economic agents affected by changes in economic policy will evaluate the levels of uncertainty in such a way as to prefer to obtain immediate benefits rather than postponing them. Uncertainty is an economic force which affects decisions about conservation and attitudes towards saving or consumption. As a general rule, insofar as economic agents perceive greater risks, they will exploit natural resources up to the maximum limit permitted by their economic and commercial capacities. This situation has led to the severe depredation of available resources in those instances in which economic policies and the level of activity have proven to be unstable.

4.1 *External effects of policies*

Economic and social policies are designed and implemented so as to have specific effects on the course of development. However, these policies often produce effects totally unrelated to their original objectives. These external effects (externalities) are the result of imperfections in markets and market valuation systems; short-sightedness in decision-making (emphasis on the short term or on immediate activities), problems relating to the allocation of property rights and to the access and use of resources; or other factors inherent in the economic and social system, such as a design which failed to take into account the possible negative environmental impacts, or specific initial circumstances in the short-term or development phase which constitute structural obstacles to overcoming environment-related problems.

In several countries of the region, industrialization policies have produced a high level of unanticipated external environmental pollution. In such cases, the market for industrial products through supply, demand and price-setting tends to consider only the value of the use of the product, with neither the consumer

nor the producer paying for the costs of pollution. In the long run, this cost will be borne by the society as a whole.

As mentioned previously, a number of external effects are due to insufficient control over property rights and the use of resources. In areas where regulatory systems do not exist, or are poorly defined, economic agents will be motivated to derive the potential income from those resources as quickly as possible. In Latin America and the Caribbean, this is usually the case in the fishing and forestry sectors.

In other cases, the cost of regulating the application of pollution standards or monitoring individual economic agents may be greater than the expected benefit. The consequence of this situation is that economic agents contaminate and degrade resources in the absence of efficient and sound economic mechanisms for regulating their exploitation.

These externalities have led to the formulation of large-scale economic development policies. Two of them are relevant to the region: State intervention and the privatization of resources. The first has been criticized, *inter alia*, for its inefficiency and prohibitive management costs; and the second, which was used in attempting to resolve the problem of efficiency, was the object of bitter criticism owing to its short-sighted approach to the functioning of the market. In both cases there are merits and limitations.²

Another type of externality is related to the effects of the policy adopted by some countries on the environmental variables of others. For example, fluctuations in international exchange and interest rates affect resource allocation and economic behaviour throughout the world, not just in the major industrial countries. A similar phenomenon occurs as a result of other policies, such as those pertaining to agricultural subsidies, trade restrictions, energy generation and use and the disposal of toxic wastes, and even as a consequence of educational and cultural policies which encourage certain consumption patterns and development styles that are highly polluting

and wasteful of natural resources throughout the planet. This type of externality turns the issue of the developing countries' progress into a problem that affects not only these countries but also the entire international community.

Where significant externalities exist, there will be more than enough reason to incorporate them into the agenda for government action in support of development. The region has a plethora of illustrative examples, including deforestation, erosion, desertification, salinization, mismanagement of highly productive land, urban pollution (see box III-7), deterioration of water quality, excessive solid and liquid wastes, destruction of biological diversity, deterioration of river basins, depletion of coastal resources, poverty and squalor, and destruction of natural and cultural capital in indigenous areas.

If policies for managing natural and environmental resources are not implemented, it will be very difficult to alleviate the negative impact of externalities and constitutes one of the major problems facing the region. Formulating such policies is therefore one of the major challenges of this decade.

4.2 Structural adjustment and environment

In the past, structural adjustment programmes have rarely included environmental considerations. Stabilization policies, moreover, necessarily place emphasis on short-term problems where changes in relative prices tend to be detrimental to environmental considerations. This is particularly true where programmes enhance the valuation of current benefits, and reduce that of future costs. In the 1980s, the region adopted short-term programmes which were accompanied by recessionary trends. In the early phase, from 1982 to 1983, there was an urgent need to generate trade surpluses in order to finance the net outward transfer of resources. Subsequently, it became necessary to control the inflationary upsurges which were exacerbated by the attempt to transfer enough resources domestically to make debt payments and by the devaluations brought about by the adjustment process.

In practice these short-term approaches were reflected in policies whose effects were quickly felt, such as attempts to reduce investment expenditure and to conserve the national heritage. It was thus more acceptable to consume natural assets at a faster rate than to devote resources to their conservation and growth. Recessionary policies, such as those resulting from fiscal adjustment, had a negative impact on long-term programmes, such as environmental programmes. Consequently, in the stabilizing phase of adjustment, it is difficult to introduce environmental programmes unless these are accompanied by changes in production patterns and contribute to faster growth.

In the case of long-term programmes, however, it is essential to incorporate the environmental dimension into development. Examples of long-term reform include the following: trade liberalization; fiscal reform which leads to control of public expenditure and more tax revenue; rationalization of the State apparatus, including its role in the areas of regulation and distribution; increased savings and national investment, including progressive liberalization of capital markets; and policies for changing production patterns which promote greater efficiency in the use of resources, including natural resources. All of these reforms may have a significant impact on the sustainability of development. Trade incentives alter comparative advantages, increasing the profitability of both traditional and non-traditional exports. To the extent that these advantages are based on non-renewable resources, it will become increasingly important to correctly record in their cost accounts the "amortization" funds corresponding to non-renewable resources. This involves a higher gross rate of reinvestment, in both absolute and intertemporal terms, and suggests that a tax should be imposed on the production of non-renewable resources, which could be applied to exports of such resources in the short term.

Finally, it should be noted that international prices do not always reflect the true opportunity cost of natural resources or the cost of the services provided by the environment. The reason for this lies in the externalities. This should lead planning

Box III-7
AIR POLLUTION IN SANTIAGO, CHILE

The Metropolitan Region of Santiago, Chile, is rapidly becoming one of the most highly polluted urban areas in the world. The degree of air and water pollution in this area may be taken as a warning of the harmful effects which certain deregulatory practices and the application of inappropriate regulations may have.

The Metropolitan Region has a population of 5.1 million inhabitants, representing 40% of the country's population while occupying only 2% of the continental territory of the country. Its population density is 334 inhabitants per square kilometre, in contrast with the average of only 17 inhabitants per square kilometre for the country as a whole.

The topography and climate of the area favour the accumulation of polluting particles and gases over the city, particularly during the winter months. Another problem is that recently there has been a dramatic increase in the emission of polluting gases from stationary and mobile sources. During the past few years, the levels of concentration of toxic elements in the atmosphere have far surpassed international health standards. In 1988, 300 000 additional cases of bronchopulmonary diseases were recorded by the medical-care centres of Santiago (53 000 cases of bronchopneumonia; 40 000 of obstructive bronchitis; 110 000 cases of flu, colds, pharyngitis and similar diseases) caused primarily by atmospheric pollution.

To illustrate the severity of this problem, it may be noted that in the past three years the number of private automobiles in Santiago increased by 10% each year to reach a total of nearly 450 000 units in March 1990. The number of public mass transport vehicles doubled between 1980 and 1988, rising from 6 000 to 12 000 vehicles, as a result primarily of the transport deregulation policy adopted by the authorities at that time. Under this policy, owners were free to set fares, enter the public transport sector, determine their routes and decide on the number of vehicles to be assigned to each line and on the frequency of the runs. This led to a state of affairs characterized by an enormous concentration of the flow of public vehicles on the most profitable routes from the point of view of private enterprise, with an extraordinarily low rate of passengers per vehicle and a slow traffic flow, which increased the emission of polluting agents. This situation became worse when permission to import used parts (including engines) was granted by government decree, since much of the increase in the total number of motor vehicles, especially those used for public mass transport, was based on the use of old, highly polluting engines.

A study carried out in 1985 noted that 71% of the respirable particles in the air came from vehicles with diesel engines (nearly all of which are found in the public mass transport sector).* In

measurements made during the winter of 1989, it was found that the indexes of carbon monoxide were three times as high as the international environmental standard, while those of respirable particles were over nine times higher than that standard.

In view of the severity of the problem, the argument in favour of complete deregulation began to lose force. Thus, towards the end of the term of the preceding administration some restrictions were introduced in a half-hearted manner, which turned out to be inadequate and ineffective, as shown by the fact that instead of disappearing, the problem continued to grow worse.

In March 1990, the new democratic Government designed a plan to eliminate pollution through the application of the following three instruments:

a) A master plan relating to medium- and long-term policies and action, including an environmental education information programme; the establishment of mandatory emissions standards, covering the short, medium and long terms, for each branch of activity, and of arrangements for monitoring compliance with them; an epidemiological vigilance programme; the modernization of the public mass transport system and the discouragement of the use of private automobiles; measures aimed at managing traffic in such a way that the road infrastructure can be used more efficiently; and regulation of the use of roads by vehicles engaged in mass transport.

b) A package of immediate and short-term measures designed to remind sectors which emit polluting substances to begin to take action to reduce those emissions as provided for in the long-term policy. Measures in this package include the creation of municipal public information offices; the registration and licensing of passenger services (lines) engaged in public mass transport; the prohibition of the installation of used engines and parts in public mass transport vehicles; the setting of emissions standards for imported vehicles; the rationalization of the parking of motor vehicles in downtown Santiago; the establishment of regulations relating to fuel quality and the monitoring of compliance with them; action to ensure that the metro is used to its best advantage; and the initiation, after a study has been carried out, of a programme aimed at the reduction of emissions by stationary industrial sources.

c) An emergency plan to be implemented when the air-quality indexes (gases and particles) reach a certain point. The plan provides for a number of stages of action as, for example, the immediate removal from circulation of 2 600 buses, the placing of restrictions on vehicular traffic and on the operation of large stationary sources of polluting substances and the reduction of the level of activity

of some sectors in order to decrease the demand for transport.

The efficiency of all these measures remains to be seen. They represent a combination of the

application of direct regulations, the use of market mechanisms, and citizen participation and action. The situation which emerges in winter 1991 will be the proving ground of their effectiveness.

* See Comisión Especial de Descontaminación de la Región Metropolitana, Programa de descontaminación ambiental del Área Metropolitana de Santiago, Santiago, Chile, April 1990 (table entitled "Caracterización físico-química material particulado").

and development offices to re-examine the traditional coefficients of comparative advantages, nominal protection and effective protection. This is an area which should be the subject of specialized studies aimed at producing concrete empirical evidence to rigorously justify changes in each case.

5. Sectoral and microeconomic policy

5.1 Links between sectoral and environmental policies

Evaluation of the impact of policies on the sustainability of development is an essential activity within the design and execution of development projects and programmes. Traditional economic *ex ante* appraisal is therefore inadequate. An examination must be undertaken, *inter alia*, of why environmental policies have not had the expected results in the region. One of the principal reasons has to do with the origins of these policies, which were generally designed in developed countries and therefore respond to the situations encountered there. In many cases, therefore, the cost of their implementation in the countries of the region is very high in terms of effectiveness and equity. This is the case, for example, of those policies which assume the existence of efficient markets in areas related to land, or to property rights. It is also true where specific behaviour is expected from certain economic agents who, on account of

their low income levels, are excluded from the operation of the market.³ The effectiveness of these policies is even further reduced when they are applied in areas in which the costs of implementation are higher than the anticipated benefits.

Another reason for the failure to accept environmental policies is related to the organizational foundations of regional development. This is the case, for example, of community organizations in rural areas or of the physical and economic spaces occupied by industrialization and urbanization processes.

Environment-related interventions have also been poorly received at the macroeconomic level. This is partly explained by the evaluation techniques used: investments, policy changes and institutional reforms are difficult to evaluate on traditional economic bases. Although in most cases the costs are known, it is difficult to identify the benefits. This is as a result of a tendency to refrain from attaching an economic value to the goods and services provided by the environment and natural resources. Economic appraisal is also significant in the area of bilateral and multilateral financing. Projects that do not demonstrably have a suitable economic rate of return are not financed by investment and development banks. Very few environmental programmes have thus been financed in recent decades.

This brings us to a key question for the formulation and execution of economic and

environmental policies: what are the main criteria for appraising proposals that seek to clean up the environment and enhance the effectiveness of natural resource management? These criteria should no doubt be multidimensional, covering technical, economic, institutional, political and social aspects.

It should also be recalled here that environmental changes have economic consequences, while economic fluctuations have an impact on the environment. It is this interrelationship which should guide the evaluation of policies. Examples include the progressive scarcity of natural resources and of goods and services provided by the environment; natural resources exploited as if they were consumer goods and not investments, thus leading to their depletion and depredation; toxic wastes deposited in human settlements, affecting people's health, among other things.

The deterioration of environmental systems has a concrete economic cost. At the same time, their conservation and improvement bring considerable benefits in terms of the greater availability of resources –greater biodiversity– which means more options for development.⁴ Generally speaking, it may be said that the most universal manifestation of the policies to be evaluated consists of the change in the productivity of economic and ecological systems. In the case of the economy, this change occurs through modifications to the cost functions or alterations in the structures of factor demand.

It is difficult to design environmental policies which affect only natural capital. But the sustainability of development requires that a dynamic balance be achieved between the various forms of capital that participate in efforts aimed at economic and social development. For this reason, it is necessary to consider as positive not only those policies aimed at directly enhancing natural capital, but also those which can improve the environment and the socioeconomic situation. The evaluation of these policies requires an estimation of the cost and potential benefits not only of improving environmental quality but also of the other economic and social activities affected by the policies under evaluation.

The acceptance of this principle also requires that consideration be given to the economic cost of implementing such policies. An investment or policy which minimizes costs is important, since countries of the region suffer from a great scarcity of financial and fiscal resources. This criterion, which will become increasingly important as the region's environment continues to deteriorate, is also crucial because environmental deterioration in the developed countries is making increasingly strict environmental standards necessary there. Stricter standards mean that policies must be more efficient, and an important element of this efficiency is the cost of applying them.

In order for the minimum cost criterion to be effective, however, there is a need for clearly defined environmental standards. There can be no policy of sustainable development without a more detailed knowledge of the acceptable limits of exploitation of ecosystems. The establishment of these standards is essential to development and is even more important in those cases where direct intervention is selected. However, *one of the main problems in the region is the lack of sufficient information to establish adequate environmental standards*. Incentives for scientific and technological research in all relevant fields are needed if this situation is to be improved.

Finally, in choosing policy-selection criteria, note should be taken of the pronounced differences –and in some cases dichotomies– between economic “*allocation*” and “*incidence*”. Experience shows that in most cases the impact of environmental policies on the allocation of resources is limited to those economic agents which are not greatly affected by the environmental changes that these policies seek to correct. One example is the case of an industry which pollutes a given location in which the agents taking the decisions concerning the location do not live, and hence do not directly suffer the consequences of their own decisions.

5.2 *Measuring the environmental impact of projects*

The systematic application of methods of economic appraisal in selecting and evaluating policies related to the environment has generally

left much to be desired in the countries of the region. This is of even greater concern if account is taken of the significant progress made in the conceptualization of this subject. In reviewing the progress made, one recognizes a series of important aspects related to the planning and execution of investment projects, institutional reforms and economic and environmental policies.

In the initial phase environmental impacts were evaluated as a residual aspect of development. Subsequently, World Bank loans required the prior undertaking of Environmental Impact Assessments (EIA). These assessments, however, were undertaken virtually at the end of the project cycle and therefore played a minimal role in the reformulation of investment projects. As the effectiveness of (EIAs) diminished, the need arose to evaluate the economic prices—shadow prices—that were used to determine the allocation of resources before the project or policy was fully elaborated. As a result of this situation, many economists proposed a modification of the traditional concept of “opportunity cost”. Today the modified concept is used to evaluate the trade-offs between development, equity and the environment. In its original form, this concept included only the notion of marginal production costs, evaluated through the use of economic prices.

Four additional elements were added to this initial conceptualization of operational costs, namely, spatial and intertemporal externalities, irreversibilities, natural disasters, and biological diversity. Considerable progress has been made in all of these areas. A good many manuals exist that illustrate how to incorporate spatial externalities into the evaluation process. These external factors include environmental impacts on upper river basins, from such activities as logging and, in lower river basins, sedimentation in hydroelectric dams.

Regarding intertemporal externalities, progress has been somewhat slower owing to the nature of the problem, which is related to questions of intergenerational allocation. Part of the complication lies in the nature of decisions, such as the need to deal with very long-term

problems; another difficulty is the implicit (or explicit) questioning of the central objectives of traditional economic evaluation, which requires the development of analytic approaches other than cost/benefit analyses.

Some progress has been achieved with respect to irreversibilities and natural disasters, despite the lack of information and the limitations imposed by probabilistic models of evaluation. In most cases, the evaluation of disasters imposes a discipline on the demarcation of complex probabilistic events, such as responding to the question: “What is the likelihood of a flood or earthquake”? Nevertheless, considerable progress has been made in integrating hydrological and climatic models with economic models.

Lastly, biodiversity imposes a framework of analysis which is rarely incorporated into economic evaluation. Despite the considerable progress made in areas related to individual species within this diversity, models for the evaluation of biological diversity as a whole are very recent.

However, it is not enough to incorporate the above elements, since the success of environmental projects also depends on the macroeconomic context. Thus, certain projects that have received an excellent appraisal tend to fail during their execution phase because of a lack of well-designed policies.

This situation has led to two major changes in approaches to economic evaluation: firstly, there has been some interest in introducing the environmental dimensions of development at the macroeconomic level, and, secondly, the need to formulate environmental and national resource strategies at the country level has been identified. As a first step, it has been recognized that natural resources must form an integral part of national accounts, and although this is a new approach, a number of countries of the region have already shown some interest in it. The second change is related to the need to incorporate the dimensions of sustainable development into economic management programmes, including structural adjustment, medium- and long-term investment and public spending programmes.

The most significant conclusion that may be drawn from the above is that it can no longer be argued that there is a shortage of economic evaluation methods for environmental projects. If there is insufficient knowledge of these methods in the region, the next step will be to offer training in how to use them in public administration.

6. Problems of co-ordination of public policies

Since actions to promote sustainability must go beyond sectoral frontiers, it is important to improve efficiency in the co-ordination of policies. In the area of public administration, a rational approach would be to i) reduce the substantial costs inherent in isolated decision-making processes in sectors that are heavily interdependent, and ii) restructure the traditional co-ordination systems used by governments to implement their economic and environmental policies.

The design and implementation of public policies without taking into account the interaction among them in certain areas does not lead to optimal results. In practice, however, various spheres of government decision-making operate as if interdependencies did not exist. For example, the public sector responsible for macroeconomic balances, particularly with regard to finances, is restricted by legal regulations governing the period of applicability of budgetary policy. By limiting themselves to such a restrictive time horizon as the fiscal year, economic decision-makers tend to ignore the tax system and public spending and investment patterns that are associated with the use and availability of natural resources over the medium and long term. Moreover, by adopting the traditional assumption that the supply of freely available natural resources (air, rivers, lakes and seas) is infinitely elastic, the Government loses sight of the notion of scarcity. This means that the budgetary practice of establishing fiscal incentives, subsidies and tax policy overlooks the distinction between renewable and non-renewable resources.

Other reasons for the lack of co-ordination are i) the thematic variety and technical complexity of the specific problems of each area, and ii) the lack of information available to specialists in respect of basic problems, theoretical frameworks and methodological approaches in the contiguous area. Fortunately, this situation is beginning to change, albeit slowly and imperfectly, owing to the perception on the part of leading groups that benefits can be derived from greater integration between the socioeconomic and environmental spheres.

Despite the establishment of co-ordination between these two spheres of public action, obstacles may nevertheless arise and should be provided for. Firstly, government sectors responsible for the fiscal/economic and environmental spheres may have different views as to the priority that should be attached to what are perceived as competing objectives. Secondly, there may be differences in relation to the instruments considered most suitable for achieving specific objectives of environmental policy. Frequently, the teams responsible for the preservation of the environment tend to attach greater importance to the setting of standards and regulatory measures than to the alternatives favoured by the fiscal and economic sectors, such as taxes, subsidies, rates of use, prices, and public tariffs. Thirdly, it should be recognized that, in general, the degree of influence exercised by economic and fiscal teams is greater than that of those involved in making environmental policy. Fourthly, there is the crucial question of the relative weight which the political authorities really attach to fiscal/economic and environmental matters. It is well known that these authorities tend to show little regard for the future by adopting very high implicit rates of exploitation in view of the brevity of their mandates and the demand by voters for immediate results. In such circumstances it should come as no surprise that the political leadership –of federal, provincial and municipal governments– focuses its efforts on achieving concrete short-term results in the economic and fiscal spheres.

Notes

¹ ECLAC, *Elements for an effective environmental policy* (LC/L.581(Sem.56/5)), 24 August 1990.

² See ECLAC, *Changing production patterns with social equity*, *op. cit.*, pp. 56-59 and 149-153.

³ This has been recognized in the case of agriculture. See ECLAC, *Desarrollo agrícola y participación campesina* (LC/G.1551-P), Santiago, Chile, December 1988. United Nations publication, Sales No. S.89.II.G.11.

⁴ See ECLAC, *La región frente a la negociación de la biodiversidad* (LC/L.610), Santiago, Chile, February 1991.