

CEPAL

Review

Executive Secretary of ECLAC
Gert Rosenthal

Deputy Executive Secretary
Carlos Massad

Director of the Review
Aníbal Pinto

Technical Secretary
Eugenio Lahera



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Notes and explanation of symbols

The following symbols are used in tables in the *Review*:

Three dots (...) indicate that data are not available or are not separately reported.

A dash (—) indicates that the amount is nil or negligible.

A blank space in a table means that the item in question is not applicable.

A minus sign (-) indicates a deficit or decrease, unless otherwise specified.

A point (.) is used to indicate decimals.

A slash (/) indicates a crop year or fiscal year, e.g., 1970/1971.

Use of a hyphen (-) between years, e.g., 1971-1973, indicates reference to the complete number of calendar years involved, including the beginning and end years.

Reference to "tons" mean metric tons, and to "dollars", United States dollars, unless otherwise stated.

Unless otherwise stated, references to annual rates of growth or variation signify compound annual rates.

Individual figures and percentages in tables do not necessarily add up to corresponding totals, because of rounding.

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Components of an effective environmental policy

*María Inés Bustamante**
*Santiago Torres**

Governments now have very wide experience in promoting development and achieving better levels of income by means of macroeconomic and sectoral policies. Nevertheless, their experience is limited and they have not been very successful in guaranteeing the environmental sustainability of the projects they undertake and, thus helping to assure income sources.

In some countries of the region, explicitly environmental policies have been developed and even backed by specific laws. But these measures have not guaranteed the effectiveness of the proposals. In other countries, government proposals have so far been nothing more than purely symbolic rhetoric.

This weakness of the countries in treating the environmental problem is usually attributed to a lack of real political will on the government's part. While recognizing that this has been partly the cause of the problem, we believe it is necessary to look more deeply into other aspects which offer additional explanations and which may provide guidelines for action.

This article considers two questions which are fundamental to the issue, the legitimacy and the workability of environmental policy as keys to its effectiveness. It begins with an examination of the idea and of the very meaning of environmental policy from this point of view and goes on to analyse each one of these questions separately.

*The authors are staff members of the Joint ECLAC/UNEP Development and Environment Unit of the ECLAC Environment and Human Settlements Division.

Introduction

Since the 1960s, the deterioration in environmental quality has become one of the more important issues in present-day society. In fact, in recent years, sectors of the scientific community, non-governmental organizations and the mass communications media have been drawing public attention to countless threats to the ecosystems which sustain life and human activity on this planet.

Nevertheless, social reaction has varied widely among sectors. Reactions range from conservationist group activism to a rejection of the question's legitimacy by those who see it only as a ruse to deflect attention from the basic problems of poverty and inequality, both between nations and within societies.

It cannot be said that environmental degradation is a recent phenomenon. However, the unprecedented size of today's world population seeking space, food, raw materials and energy makes it urgently necessary to maximize the capacity of the environment to break down waste. At the same time, the scientific knowledge, technology, and material and financial resources available to mankind offer a tremendous capacity for making the environment artificial, for physically changing it, or even for intentionally destroying it.

Beyond the debate about the priority of the environmental question in the list of human problems, it must be recognized that the mobilization of public opinion on the subject results from important changes in the nature and size of the environmental problems which are degrading the present quality of life and seriously threatening that of future generations. If present tendencies associated with the expansion of human activity are not reversed, the alterations in ecological equilibrium which are already hampering the development process itself will reach dramatic levels. It is, therefore, essential to guarantee the environmental sustainability of all measures undertaken to improve living levels.

In spite of the broader existing awareness of the dangers resulting from environmental deterioration, it has not been easy to give legitimate and practical expression to this

concern to develop environmentally sustainable development formulas. Most countries encounter enormous difficulties in tackling these problems effectively and reversing present trends.

Economic theory itself, concerned with resource allocation, offers governments no patterns for analysing environmental advantages, especially public advantages, which, since they cannot be priced, do not enter into the market system or, where they can be valued, this value does not adequately reflect their importance to ecological equilibrium.

The disregard by economic theory and practice of the environmental sustainability of economic growth is reflected in the basic indicator of a country's performance, national income. Although environmental sustainability should be one of the main components in the definition of this indicator,¹ the methods used in its calculation allow no way of knowing how society is preserving or depleting its natural base. It cannot, therefore, serve as a guideline for making

rational decisions which minimize the costs of using this heritage.²

Until the question of environmental sustainability becomes a legitimate subject of political debate, it is unlikely that serious effort will be made to compile information and apply new accounting systems to the decision-making process. Until this happens and an environmental policy is neither developed nor put into effect, concern about the subject will remain in flux and environmental problems will continue unsolved.

Nevertheless, although efforts must be made to improve the information base for decision-making, it must not be forgotten that finding adequate indicators does not automatically solve the problems. This depends, rather, on the commitment of national governments to specific environmental goals. On the other hand, a large proportion of present environmental problems are so apparent that complex information is not necessary for recognizing them and delaying action until such information is compiled would result in unforgivable delay.

I

Environmental policy

1. *The idea and extent of environmental policy*

In the broader sense, a national environmental policy is the set of norms adopted by the government which in some way delimit and direct the actions of persons, companies, and public bodies themselves with respect to the use, management and conservation of natural resources and the activities of existing environmental services.

However, this broad definition must be made more specific by the consideration, very important for the purposes of this paper, of the existence, in all the countries, of what could be defined as an implicit environmental policy.

It is difficult to find components of economic policy which do not have significant environmental effects. This is particularly true of countries whose economies are based largely on the exploitation of natural resources, either renewable or non-renewable. In this sense, it can be stated in general terms that every economic policy implies an environmental policy.

The effectiveness of a "classical" environmental policy, regardless of the greater or lesser

²Some work has recently been done on the development of conceptual and methodological proposals for improving economic indicators. See, for example:

Roefie Hueting and Christian Leipert (1987): "Economic growth, national income and the blocked choices for the environment", Berlin, Internationales Institut für Umwelt und Gesellschaft, Wissenschaftszentrum Berlin (International Institute for the Environment and Society, Scientific Centre of Berlin), manuscript; and Jusuf J. Ahmad, Salah El Serafy and Ernst Lutz (eds.) (1989): "Environmental and resource accounting: an overview" *Environmental Accounting for Sustainable Development*, Washington, D.C., World Bank, June.

¹Herman E. Daly (1989): "Toward a measure of sustainable social net national product", *Environmental Accounting for Sustainable Development*, Yusuf J. Ahmad, Salah El Serafy, Ernst Lutz (eds.), Washington, D.C., World Bank, June.

professionalism of its executing agents, can be considerably weakened if the existence of this implicit policy is not recognized and even further if, as usually happens, its content contradicts the other. It should be noted, in this context, that usually the implied policy has effects both on the intensity of resource use and on the way these are managed. Thus, the result of this policy in most cases has been over-use; undervaluing and under-use or, simply, bad use of natural resources.

There are many examples of this. The vigorous export policy pursued in Chile led the country to fourth place in world fisheries, to become the world's largest exporter of fish meal with 54% of the world's supply of dried seaweed. Between 1974 and 1989 the catch increased at an average annual rate of 12.2%. The implied policy for the management and conservation of hydro-biological resources was, in this case, to make no restrictions whatsoever except those respecting the marketing of the product. This has meant, according to some preliminary estimates, that the potential catch capacity of the open-sea fishery is presently seven times greater than the maximum sustainable catch as estimated by the industry itself.³ It must be pointed out here that there has been no explicit policy for the protection and conservation of the hydro-biological resource base.

This point will be dealt with further in the discussion of the workability of environmental policy.

2. *The goals of environmental policy*

Developing a realistic environmental policy requires, as does any other policy, the appropriate definition of objectives and priorities. This is more complicated than it appears at first. On the one hand, our knowledge of nature and the extent of the environmental problems is far from complete. Neither is there agreement on their diagnosis. On the other hand, the priorities among them and the priority given to their solution are not easily subjected to objective criteria and scientific bases.

³The figures used in this example are taken mainly from a report on fisheries prepared by the technical team which drew up the government programme for the recently elected President of Chile.

The main problems which all societies must sooner or later face with respect to environmental policy can be summed up in the following list.

Global problems:

- Deterioration of the ozone layer.
- Climatic change.
- Ocean contamination.

Problems affecting mainly rural areas:

- a) Soils.
 - Erosion.
 - Desertification.
 - Salinization.
- b) Water resources.
 - Pollution of continental surface waters.
 - Pollution of groundwater.
 - Pollution of coastal regions.
 - Sedimentation.
 - Exhaustion of water resources.
 - Alteration in the hydrologic cycle.
- c) Flora and fauna.
 - Deforestation.
 - Loss of genetic diversity.
 - Depletion of fauna resources.
 - Depletion of flora resources.
 - Pollution of different habitats.

Problems affecting mainly urban areas:

- Congestion.
- Atmospheric pollution.
- Visual pollution.
- Acoustic pollution.
- Deterioration in infrastructure.
- Appearance of biological vectors (rats, mosquitoes, etc. because of water pollution or poor solid waste disposal).

Problems resulting from natural disasters:

- Floods.
- Earthquakes and tidal waves.
- Volcanic eruptions.
- Hurricanes.
- Drought.

Although it is not exhaustive, the list gives a clear view of environmental concerns. The criterion by which these occurrences are classified as problems is that they have a negative effect on the quality of life for both present and future generations. This negative effect is not only direct, but can also be seen in the progressive lessening of the capacity of the resource base to

meet the growing demands for production and human consumption. This statement supposes an anthropocentric view of the relationship between man and the environment in which the environment is seen as a social heritage for the benefit of human welfare.

The functioning of land, water, atmospheric and biological ecosystems is systematic in character in the sense that it does not occur in separate compartments, but, on the contrary, all the ecosystems and their components are closely related to each other. Thus the list presented here allows for rapid identification of causal relationships or simultaneous appearance of many of the problems. For example, deforestation through the burning of forests results in a decrease in wildlife resources in the affected area, the exposure of river basins—which in turn results in sedimentation of dams and river beds—and, in addition, atmospheric pollution resulting from emissions of carbon dioxide and a reduction of photosynthesis and, its purification capacity. It is superfluous to say that, following this route, the terrestrial ecosystem itself will be affected over time by increased erosion and desertification.

The systematic nature of the environment significantly affects the application of environmental policy. Often, in order to solve a problem it will be necessary to first solve another which is the cause of the first. On the other hand, the solution of a specific problem could simultaneously produce other, undesirable effects. This happens, for example, in the case of measures to reduce water pollution by prohibiting the deposit of certain liquids and which only results in their conversion to the solid state, requiring equally unsuitable disposal or burning. This is called pollution migration. This fact was ignored in some of the early environmental legislation in the industrialized countries. This legislation was also mainly sectoral. In fact, it approached the problems of water, soil, and atmospheric pollution as separate and not interdependent problems. Now, several of these countries are adopting the systematic approach which, although more complicated, makes it possible to avoid many mistakes.

This systematic nature of the environment often makes it difficult to identify causal rela-

tionships since these appear in extremely complicated time and space patterns. An event can occur in a specific place and affect distant ecosystems. It is also possible for cause and effect to occur in the same place, but at different times. For this reason, the goal of environmental policy requires a large amount of specialized knowledge if it is to produce valid diagnoses and predictions. For example, some of the models drawn up in the developed countries for solving water pollution problems include climatic, topographical, and hydrological information and specialized dispersion models.⁴ Nevertheless, much remains to be done in this field and some of our environmental efforts should be directed to this task.

As well as the need for adequate diagnoses, the complexity of environmental problems makes it essential to set priorities in developing an environmental policy. In the first attempts at environmental management it is important to propose a number of clearly defined objectives. The practical experience acquired will permit a gradual strengthening in capacity for developing and carrying out programmes and projects. The attempt to accomplish an overall policy from the outset, i.e., to attack all fronts simultaneously, could generate expectations which cannot be met.

Because of the initial enthusiasm at the establishment of a number of ministerial agencies for dealing with the environment (departments, directorates, and environmental units in ministries of natural resources, energy and mines, industry, health, public works, agriculture, etc.), the Latin American countries forgot that complex policies must be applied gradually because of the lack of institutional experience and the many restrictions. In many cases, this hastiness led to a fragmentation of efforts and scarce resources among a multiplicity of work areas each with very different needs for planning, application, regulation, research, training, popularization, and community participation. Although the experience has been valuable, many of these initiatives have been frustrated by the dispersion of efforts.

⁴See, for example, Asit Biswas (ed.) (1981): *Models for Water Quality Management*, New York, McGraw Hill International Book Company.

Besides the important scientific studies for identifying environmental problems and evaluating their seriousness, the task of pinpointing the objectives of environmental policy, within a defined period of time, involves other considerations, equally complex but very different. Specifically, these are the social

interplay of the various interest groups, both environmental and non-environmental and the influence of this interplay on the choice of priorities and specific measures for environmental action. This brings up the question of the legitimacy of environmental policy.

II

The legitimacy of environmental policy

The social agents which have to be taken into account in environmental policy are as varied, if not more so, than in other areas of public activity. They are, among others, the public, industry, intermediate public organizations, the mass communications media, the non-environmental public administration, the judiciary, the financial authorities, the scientific community, environmental consulting firms and, of course, the agencies specifically in charge of environmental management.

In considering the legitimacy of environmental policy, we must consider mainly two basic questions. These are the perceptions of the different agents of the problems and their participation in the relevant decision-making process.

1. *Social perception and conflict of interest*

The various social agents live in different ecosystems and microsystems, belong to different socioeconomic levels, have different levels and qualities of education and training and, because of their specific economic activities, have correspondingly different interests. Therefore, the importance they allocate to environmental questions in the overall framework of their needs is considerably varied. In the same way, the relative importance to each group of a specific environmental problem and the urgency with which they demand its solution can also be very different. The value assigned by the different groups to a specific problem does not necessarily correspond to an objective, scientific measurement of the problem.

These differences in perception are also influenced both by the degree to which the various agents are exposed to the mass communications media—which today broadcast more information on environmental questions than ever before—and to the ability of each agent to understand and interpret this information.

However, not only are there differences in the manner in which the different social groups perceive the environmental problems which must be faced, but another source of conflict in the formulation of environmental policy is the fact that the desire to achieve specific objectives is not always combined with a willingness to assume the corresponding costs. This has generally made it very difficult to persuade the various groups to absorb external environmental diseconomies and to generate a genuine willingness to pay for a healthy environment.⁵

This difficulty results partly from the lack of a clear delimitation between those who cause and those who suffer from environmental degradation. Often, the generator of a specific problem is at the same time its victim. Car drivers are the best example. In other situations, the perpetrator of environmental damage may not be directly affected by his own detrimental actions, but by those of others. For example, when an industrial plant pollutes a river, damaging down-stream settlements, it may suffer in turn

⁵ Richard C. Bishop, Thomas A. Heberlein, and Mary Jo Kealy (1983): "Contingent valuation of environmental assets: comparisons with a simulated market", *Natural Resources Journal*, vol. 23, No. 3, July.

the environmental impact of others. These may undermine its own installations as a result of periodic floods resulting from deforestation of the upper basin.

If environmental policy is to be legitimate, then the agencies in charge of its formulation and implementation must have a very clear idea of which groups are involved, the extent to which their perceptions are in agreement with the available scientific information, their specific way of thinking, and the way in which they interact and defend their interests. Only then can the government have a clear view of which activities and measures will be effective in the management process.

2. Public participation

The recognition and acceptance of the existence of different perceptions and of conflicts of interest is a very important step. The environmental authority must have a legitimate social basis, not only when it is elected or appointed, but throughout the entire design, application and regulation of the policy. Nevertheless, this recognition, however necessary, is not sufficient for an environmental policy to be legitimate. For this, it must, *inter alia*, be transparent from the beginning and participation, negotiation and arbitration norms must be incorporated in the various stages of the process.

The means of community participation must depend on the political and institutional traditions of the individual country.⁶ Participation at the national and, most likely, at the state or regional level, will have to operate indirectly through representatives elected by the various groups. Possibly at the local or community level public participation could be more direct at various stages of environmental management. In fact, in the experience of some Latin American countries, the municipalities are proving particularly suitable for participatory environmental management. The municipality is the direct

recipient of public demands for environmental quality and is also capable of planning, executing and regulating.

Obviously, each of these participation units will need to define specific procedures for public meetings, participation in the decision-making process, when participation is appropriate, information systems, etc. This is of basic importance if participation is to contribute to effective management rather than become an obstacle to it.

In some developed countries, such as the Federal Republic of Germany, experiments are being made with a specific technique of community participation, the so-called public hearings, which some Latin American environmentalists would like to apply in the region. The hearings have been convened especially in order to publicize environmental studies related to investment projects whose possible effects are of concern to a specific community and also in order to discuss alternative locations for activities or infrastructure. It is clearly a promising idea, but its procedures and areas of applicability must be clearly defined.

Although not so well defined as the public hearings, some Latin American experiences of participatory processes have achieved interesting results. For example, the pollution control programme carried out in the city of Cubatao, Brazil was successful.⁷ This was partly because the government and the representatives of various sectors of the community agreed on the regulation strategy to be used. The negotiated and participatory nature of the actual design of the programme led to a high degree of transparency at all stages of the programme and helped the various interest groups to achieve the common goal of transforming the city into a place where people could live and work.

This experience seems to suggest that, if environmental policy is to work, the task of protecting, conserving, and improving the environment has to be shared among all social groups. These include the authorities (executive, legislative, and judicial) which make up the state

⁶See Santiago Torres and Federico Arena (1985): "Medio ambiente y región: ámbitos claves para la gestión democrática de un desarrollo nacional sostenible", *Ambiente y desarrollo*, vol. 1, No. 3, Santiago, Chile, Centro de Investigación y Planificación del Medio Ambiente (CIPMA), October.

⁷See J.P. Galvao Filho (1987): "Controle da poluição, filosofia e conceito", *Ambiente. Revista CETESB de tecnologia*, vol. 1, No. 2.

apparatus and the individuals, companies, and the intermediate organizations which operate in the society.

Finally, the following points should also be taken into account in order to encourage participation in environmental management:

i) For participatory environmental management to be at all workable, not only the community itself but also and especially the technical and political staff responsible for such manage-

ment must have a certain degree of education and training.

ii) The achievement of effective participation requires an accessible information system so that all groups involved have an adequate knowledge of the matters on which they are expected to have an opinion or make a decision.

iii) In proposing the need to institutionalize participation, we assume it has been decided to decentralize State management to a large extent.

III

The workability of environmental policy

An obvious prerequisite of all policies is that they can be effectively translated into norms and activities for achieving the proposed goals. Nevertheless, as mentioned at the beginning, one of the possible explanations for the meagre success of environmental policies tried in the region is precisely their unworkability.

There are five relevant questions which should be analysed: the need for a multisectoral and spatial approach to environmental policy; the use of political economy tools in environmental management; the careful choice of specifically environmental tools for carrying out the policy; the special role of Environmental Impact Evaluations in its definition; and the need to establish clear means of financing to guarantee its execution.

1. The multisectoral and spatial approach to environmental policy

Given the systematic nature of the environment and the variety of social groups involved, we must adopt a multisectoral approach if the environmental policy is to be workable. This condition implies two specific questions. On the one hand, we must ensure the compatibility of sectoral policies within the overall environmental policy on the basis of the interrelationships and limitations of the relevant biogeophysical systems; we must also ensure the compatibility required by socioeconomic, productive and technological interdependence. At the same time, the search

for intersectoral compatibility must guarantee the uniformity of the basic criteria of environmental protection, conservation, and improvement; it must also delineate the joint responsibility of the various groups and institutions in the execution and regulation of environmental policy.

On the other hand, we must ensure that the goals, programmes and tools of the overall environmental policy are clearly and explicitly expressed in the development policies of each sector. In practice, there is no environmental problem or proposal which does not involve agents from various sectors of economic activity, either as manipulators of the environment, consumers of environmental services, or victims of specific problems. This need is seen in the case of a river which is used to irrigate agricultural land, supplies drinking water to neighbouring human settlements, receives domestic and industrial effluents from them, offers aesthetic and recreational services, provides the water input for specific industrial activities, allows the generation of hydroelectricity, sustains the hydro-biological species exploited by fishing, and is at the same time a transportation route.

An environmental policy really intended to protect the water resource effectively must, in this case, include clear directives for the agricultural users, the sanitation subsector, industries, tourism, energy suppliers, fisheries, and the transport industry. The responsibility for the specific design, execution and regulation of these specific expressions of overall

environmental policy should fall on the appropriate institution for each sector. The task of co-ordinating and integrating all these separate activities should be assumed by the agency in charge of overall environmental policy, with due regard for its transsectoral nature.

Another matter directly related to the practical effectiveness of environmental policy is the explicit definition of the spatial or territorial limitations. If a policy is proposed without reference to the spatial disposition of human settlements and of productive activity it cannot be effective. There are, therefore, two basic points which must be made. On the one hand, from the overall point of view, the guidelines for the use, management, and exploitation of natural resources and environmental services must be included in a national regional development policy. This means recognizing the tremendous differences between the various regions of a country in natural resource wealth and in environmental conditions. We must therefore recognize that our policies for resource management and utilization must take into account the idiosyncracies of each region.

On the other hand, intra-regionally and locally, environmental factors affecting development programmes and projects, which in this context constitute environmental policy, must be expressed in clearly spatial terms.

To return to the case of the river, an environmental policy which expresses only purely generic or non-spatial norms or guidelines for the use of the river (or, more specifically, of its capacity to break down organic waste) gives no real indication to industry so that it can conform to the policies or put it into practice. In fact, from the spatial angle, the same capacity of a river to break down waste is very different when viewed from immediately above an urban centre or area of special aesthetic or recreational interest than when it is viewed from below such a centre or area.

2. The use of political economy tools

The existence of an implicit environmental policy as part of the national economic policy imposes two basic requirements if it is to be effective.

First, the environmental policy should ensure that in designing the overall economic policies, particularly the sectoral policies, their medium-term and long-term effect on the environment is evaluated. In other words, the environmental implications of economic policies should be explicit, so that if their negative effects are sufficient to militate against their main goals, they can be changed. This explicitness will allow compensatory measures to be appropriately identified and applied and this will prevent or lessen unexpected and undesirable effects of the various productive activities.

In the second place, environmental policy should use economic policy tools much more frequently than previously and for multiple purposes. At the same time, the specifically environmental tools discussed below should be improved. Indirect incentives and disincentives should be used, especially fiscal measures. The incentives include subsidies or tax exemptions for encouraging specific processes, the adoption of technologies, the fixing of locations, the use of specific inputs, and other particularly beneficial measures or measures minimizing specific deleterious environmental effects, but which do not prohibit the activity to which they are applied. The disincentives include the charging of special taxes, of special land taxes, increased public service rates, etc. Although success is more difficult than with incentives, the purpose of disincentives is not to suppress activity, but, rather, to make some locations more attractive or to encourage technological or exploitation alternatives which are environmentally less unfavourable.

Another decisive role can be played by credit regulations, following the same criteria. In this event, encouragement or discouragement is reflected in interest rates, grace and payment periods, the demand for guarantees and co-signers, the provision of technical assistance, etc.

Economic policy tools are used because the reaction to them can be predicted. The purpose of these tools is to provoke a reaction which leads to an approximation of the desirable level of environmental quality. This is then expressed in standard terms of specific environmental quality indicators.

The example of fishery resources mentioned above can be used to illustrate the way proposed here for ensuring the practical application of environmental policy. Faced with this situation, it is inevitable that the application of any policy dealing with the exhaustion of a species through over-exploitation must also include measures to solve the problem of over-investment in the area. Otherwise, the policy will be virtually unworkable. One possibility is to create credit lines or fiscal incentives for the development of deep-sea fishing so as to facilitate the conversion of the superfluous part of the fishery fleet to this type of fishing.⁸ This would simultaneously meet the goal of maintaining or increasing sectoral exports.

3. Specific tools of environmental policy

As has been pointed out, the workability of environmental policy largely depends on the availability and use of a suitable set of tools. While recognizing the existence and importance of many educational and consciousness-raising tools, and also recognizing the role of fiscal expenditure as a direct action tool, we shall analyse here only those tools related to the directing and guiding of the behaviour of social and economic groups. We refer specifically to tools for prevention, encouragement, discouragement, and punishment.

The purpose of these tools is to direct behaviour, indicating explicitly what should or should not be done with respect to a resource or environmental situation. Failure to obey the rules would normally be penalized. The following are some, although not an exhaustive list, of the tools which in some form or another have been applied to some degree in the region.

i) The first group of tools is designed to prohibit or restrict the use of a specific resource or environmental system. In the latter case, the tools are seriously limited in that they do not imply the establishment of specific and adequate forms of using the resource or ecosystem within the limitations imposed.

⁸It must be added that the policy must simultaneously examine the need to improve basic knowledge of the state of available resources, so that in the very short term regulations ensuring sustainable exploitation are established, before the problem in these fisheries is repeated.

This group of tools includes quotas (for fishing, extraction, export, etc.), rights and concessions (by tender or free grant) over specific resources or ecosystems, seasonal restrictions on extraction or use (permanent or temporary prohibition affecting a specific resource or species), and exclusion from use or exploitation or limitations on it (usually associated with a specific ecosystem, such as, for example, the establishing of a natural park or forestry reserve).

ii) The second group of tools has a wider range of application than the first group. Their purpose is to exercise greater qualitative control over activities involving environmental change by imposing specific management techniques for the use or exploitation of specific resources or environmental systems which are directly or indirectly related to these activities. These tools include: zoning regulations which, although based on various criteria, clearly emphasize the protection or preservation of specific environmental conditions; installation and operation permits for specific activities, requiring the observance of a more or less broad set of environmental guidelines; and operating permits for specific resources or environmental systems, subject to previous approval of plans relating to their management.

The tools included in the two groups are not mutually exclusive. In fact, they can be combined. For example, the establishment of the regulating plans characteristic of urban areas, where zoning is associated with the granting of permits to start certain activities, lends itself to such a combination. Another example is the granting of permits to establish industries in a specific place. Industrialists must keep the volume of effluents or residual flows within specific maximum limits. These permits can be linked to existing zoning regulations or independent of them. Another example of the combined application of the two types of tools is fishing permits. They require the use of specified tools and limit the catch to specific groups defined by the age or size of the species. Also within this category are permits for exploiting the native forest which require a specific form of forest management.

As has been already pointed out, almost all these tools have been applied in the region. Nevertheless, in most cases their application has been for goals defined only sectorally. Their

appropriate integration or compatibility within an explicit environmental policy has been ignored.

Aside from encouraging behaviour which leads to contradictory results, minimizes or even defeats the intended aim, the lack of co-ordination among the environmental tools themselves, and between the environment and economic policy tools, has meant, in many instances, that the measures have turned out to be completely inoperable. What happened in the Fonseca Gulf, in the south of Honduras, is a typical example. There, the felling of mangrove trees was prohibited. But the authorities failed to adopt complementary measures offering viable alternatives to the local Hondurans who use these trees as domestic or industrial fuel and depend on them to a large extent for their work and sustenance. Clandestine exploitation of the resource continued after the prohibition.⁹

4. Environmental Impact Statements as core policy components

The Environmental Impact Statement procedure was developed in recent years to support environmental management. The idea and its content originated in the United States as part of the 1969 environmental policy law. The Environmental Impact Statement procedure is a means to predict the environmental consequences of a specific initiative, plan, programme, or project in order to improve the quality of debate on its acceptance.

Environmental Impact Statement procedures have been applied mainly to specific projects: the construction of big infrastructural works and large-scale industrial plants which involve the use of products, processes or inputs considered high environmental risks. Undoubtedly, however, the idea of the Environmental Impact Statement, its methods and procedures, offers a powerful tool for effectively carrying out environmental policy. The procedure can be used to evaluate a wide range of social initiatives with significant environmental repercussions.

They range from bills, macroeconomic policy measures, sectoral development plans, both regional and local, to the actual application of the specific measures proposed. The Environmental Impact Statement can also provide background information of basic significance in the design and specification of the environmental policy tools outlined above.

In this context, it is interesting to note that the United States legislation allows for a wide range of applicability of the Environmental Impact Statement which, although not always put into practice, covers individual projects and bills, plan and policy approval, and other strategic activities. The Latin American countries which have legislated in the area, however, have preferred to follow the European Community example, limiting the application of Environmental Impact Statements exclusively to specific projects.

The identification of the environmental effects of an initiative on the basis of information provided by an Environmental Impact Statement can lead to the proposing of protection and compensation measures, to the replacement of the original proposal by other alternatives, or even to its abandonment. It can lead to a reformulation of the process design for specific projects, a change in plant size, or the relocation of the project. Environmental Impact Statements are, therefore, essentially a preventive tool for environmental policy and at the same time a valuable tool for following up and regulating works undertaken.

However promising the idea, its effective application has met with innumerable difficulties. Few countries have used it as a regular tool for environmental management. Nevertheless, as already pointed out, it could become a basically significant component in the elaboration of environmental policy. In order to appreciate this potential, we will return briefly to the protagonists and the nature of their role in the implementation of an Environmental Impact Statement procedure.¹⁰

⁹See ECLAC (1989): *Estrategia para el desarrollo sostenido de la región sur de Honduras* (I.C/R.742), Santiago, Chile, March.

¹⁰Practical examples relating to this theme can be found in ECLAC (1989): *Informe del seminario sobre las evaluaciones del impacto ambiental como instrumento de gestión del medio ambiente. Situación y perspectivas en América Latina y el Caribe* (I.C/L.519), Santiago, Chile, October.

In the traditional procedure, the promoter or initiator of a project appears on one side seeking authorization to carry it out. This could be a private, native, foreign, or even government body. In most cases his main goal is to obtain the necessary permit. So he normally tries to emphasize the benefits and conceal the disadvantages of his project. Large companies operating in the heart of communities are relatively sensitive to the environmental question. They are anxious to prevent environmental deterioration to the extent that public opinion could blame it for the effect caused and start actions or bring political pressures which could harm its image.

On the other side is the environmental authority. Its job is to commission the Environmental Impact Statement, study its results, publish them and see that its recommendations are incorporated in the relevant decisions. The effectiveness of this authority throughout the entire Environmental Impact Statement procedure is strongly conditioned by the existence of an efficient institutional framework which allows him to do his job. It is also decisive that the requirement to carry out an Environmental Impact Statement procedure must be backed by law and its application governed by explicit regulations outlining the correct procedure.

In addition to these two agents, there is the body which makes the relevant studies. It usually consists of one or more specialized consulting companies. Its role in the procedure and in the results of an Environmental Impact Statement will vary according to circumstances and the status of the other two agents. The influence of a relatively incompetent environmental authority may not necessarily be beneficial in defining the study terms of reference. On the other hand, if the agent promoting the initiative is particularly powerful, the objectivity of the study may be affected by the desire of the consulting company to win new contracts.

Another important agent in the preparation of an Environmental Impact Statement is the community itself. Some of the more advanced Statements define precisely which community representatives should participate, when and on what subjects participation is required, as well as the relative weights to be given to opinions and recommendations. As has been pointed out,

effective community participation is, undoubtedly, one of the decisive factors not only for effectively putting environmental policy into practice, but also for assuring its legitimacy.

Lastly, in view of environmental developments in Latin America, the organizations which finance development projects cannot be ignored, since they exercise a decisive influence. Special mention must be made of the World Bank, the Inter-American Development Bank and the Central American Bank for Economic Integration. These institutions have a decisive influence in the preparation of an Environmental Impact Statement since, in analysing and later approving of projects presented to them, they require such a Statement.

Nevertheless, the fact that Environmental Impact Statements are made only for projects is a restraint on the freedom of environmental management. The building of large hydroelectric generating stations illustrates this statement. Very probably in this case, society undervalues a series of other sources (solar, wind, tidal energy). An evaluation of the environmental effect of energy policy as a whole, covering all these sources and not only hydroelectric ones, would have led to a recognition of the environmental advantages and disadvantages of each one of them, and would probably have shown the desirability of seeking energy development in other directions.

The above shows the need to prepare Environmental Impact Statements in series, from the level of overall and sectoral policy to the level of specific projects. This involves the gradual compilation of the relevant information, reducing the load on the final stages (at the project level) when there is less time to collect and analyse it. An Environmental Impact Statement cannot be justified in the case of very small individual projects. However, the application in series of Environmental Impact Statements at the programme level is clearly useful when these projects taken together make up a significant activity, for example, in housing or settlement programmes.¹¹

¹¹ Norman Lee (1982): "The future development of environmental impact assessment", *Journal of Environmental Management*, No. 14, London, Academic Press Inc.

Clearly, not every project or initiative needs an in-depth environmental study. Such studies are, generally, very expensive and it must not be forgotten that the ultimate justification of the procedure is the avoidance of environmental damage which results in a reduction in human welfare or growth capacity. It does not make sense if the cost of the Environmental Impact Statement is much higher than the benefits resulting from its application, or it delays decision-making. For this reason, Environmental Impact Statements are preceded by a preliminary survey of environmental impact which in turn determines the need for more in-depth study where environmental repercussions are anticipated.

In spite of its limitations, the Environmental Impact Statement is a particularly interesting way to tackle the job of co-ordinating and achieving the goals of environmental policy. Its strength lies basically in the prevention and control of potential environmental effects of human activity. To be effective, the procedure must meet certain requirements. It must be timely and involve high-quality information and methods of analysis. It must have legal and institutional backing, community participation and, finally, a good dose of realism in its application.

5. Means of financing environmental policy

The last important point for ensuring the workability and effectiveness of environmental policy is the need to provide it with suitable means of financing. In fact, in the experience of most Latin American countries the lack of these means has clearly threatened the possibility of carrying out environmental management to ensure sustainable development.

Although much could be said on this matter,¹² we will mention only a few general criteria

which may provide guidelines for conceiving and implementing *ad hoc* means of financing.

If we accept that many environmental services which help to providing us with a certain quality of life are derived from a heritage or capital good which depreciates over time, then the possibility of maintaining these services depends on our ability to prevent this depreciation or to replace the damage.¹³ In either case, we must allocate resources. A society should perform in the same way as any productive concern, partly assuring its survival by almost automatically forming a depreciation reserve apart from its income.

On the other hand, the environment is, in most cases, part of the public heritage. This is true of genetic diversity, of most water ways and bodies of water, the shoreline, the atmosphere, and large tracks of national territory, as well as of innumerable ecosystems which man harnesses. With differences resulting from the particular legislation of each country, mineral deposits, water resources and natural forests are part of the national heritage. They are subject to the granting of concessions or use and exploitation rights, but they are not private property.

From the economic point of view, many of these assets have been considered traditionally as free. Their use, therefore, has not been limited in any way. Undoubtedly, modern society, because of its technological capacity and the size of the population, exerts pressures which will not allow these practices to continue. Society itself, through State action, should redress and compensate itself for the use and abuse of this heritage by establishing means to assure that part of the income generated is allocated to its care and maintenance.

Only to the extent to which —on the basis of these and other criteria— a guaranteed and adequate fund is created, will the environmental administration of a country find itself in a situation where it can undertake the job of putting an effective policy into practice for environmentally sustainable development.

¹²For a proposal on means of financing, referring to Chile, but much more widely applicable, see Osvaldo Sunkel (1989): "El desarrollo sustentable: del marco conceptual a una propuesta operacional", *Chile piensa a Chile. Tercer Encuentro Científico sobre el Medio Ambiente. Ponencias centrales*, Centro de Investigación y Planificación del Medio Ambiente (CIPMA), vol. 1, Concepción, Chile.

¹³See Santiago Torres and David Pearce (1979): "Welfare economics and environmental problems", *International Journal of Environmental Studies*, vol. 13, London.