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THE PROMESA PROJECT

AND

ENVIRONMENTAL POLICY

IN EL SALVADOR

Prepared under Contract
PACA/CARE/USAID
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I. INTRODUCTION

A. PURPOSE

The main purpose of this paper is to integrate basic information into the formulation of guidelines for designing and implementing the policy component of the PROMESA Project. The PROMESA Project will facilitate efforts by the Government of El Salvador, GOES, as well as Salvadoran non-governmental organizations, NGOs, to generate greater understanding about the environmental problems of the country and to incorporate this understanding into the policy formulation process. The Project also seeks to improve the capacity of local organizations to identify solutions to urgent environmental problems and to improve management of the country's natural resources.

B. OBJECTIVES

This paper has several objectives:

1. To indicate the linkages and relationships between the overall policy framework in El Salvador and the components of the PROMESA project.

2. To build on the existing national processes in policy formulation, notably the activities of the GOES' *Secretaría Ejecutiva del Consejo Nacional del Medio Ambiente* (SEMA/CONAMA), in preparing a National Environmental Action Plan and a National Environmental Emergency Plan.

3. To present practical suggestions for policy reform based on the "El Salvador Natural Resources Policy Inventory" prepared in 1990 through USAID.

4. To propose a comprehensive process for improved policy formulation in El Salvador.

5. To recommend specific policy actions to undertake through the PROMESA project.

6. To identify points in which specific policy actions can overcome existing weaknesses and generate large benefits to the environment.

7. To begin the formulation of internal guidelines and criteria through which the PROMESA policy component will operate.

C. METHODOLOGY

The methodology for preparing this paper consisted primarily of review of existing documents on natural resources policy in El Salvador, supplemented by interviews with knowledgeable professionals in El Salvador. Preparation of the report entailed a team effort in which Salvadoran professionals and technical specialists from outside El Salvador participated together. External technical participation was provided through PACA (Proyecto Ambiental para Centro América), the consortium of NGOs which implement part of the USAID/ROCAP/RENARM Project for Central America.

This report is a background document on environmental policy, which will be made available to the design team of the PROMESA Project. In addition to the report itself, the Project design team will also have available the results of a workshop on national environmental policy held in El Salvador. Participants in this workshop will have had the opportunity to discuss this report and to provide comments and suggestions to the recommendations contained herein. These comments and suggestions will be incorporated into an annex of this document.

D. DEFINITION

Policy as contemplated in this paper is the art and science of conducting public or private affairs. This usually implies the setting of desired, <u>definite objectives</u> and the courses of action to be taken (i.e. the <u>strategies</u>) to attain those objectives. Policies also state the <u>means</u> required to achieve their objectives. The setting of objectives carries several additional implications. Wisdom, the selection from among alternatives, the consideration of the consequences of **not** taking a given course of action, and efficient use of available resources are but some of these implications. An extremely important consideration is the fact that effective policy-making implies that there is a **clear idea** of the situation to be changed or problem to be solved. Likewise, a very clear idea must be held of the new conditions that are sought as a result of implementing policy. As will be seen, the latter two considerations often represent the greatest obstacles to implementing environmental policies successfully.

It is also important to note that not only governments make policies. International organizations, banks, private offices and, in fact, all operational institutions and organizations make policies. Thus an additional requirement -- **harmony** -- becomes evident for effective policy-making and implementation.

<u>All disciplines</u> are involved in environmental policy making, as all activities affect and are affected by the environment. As such, environmental policies are of interest to farmers, industrialists, fishermen and businessmen alike.

Furthermore, the goals of environmental policies are not to detain or hinder progress and development. In fact many industries, businesses and even nations have collapsed due to lack of consideration for the environment. Rather, the goals of environmental policies seek sustained development, healthy environments (and thus populations), and new, environmentally compatible alternatives for economic growth and social well-being.

Perhaps one of the most fundamental aspects of environmental policies is that multi-variate, multi-disciplinary considerations are required to conceive and analyze them. The clear need for competent group leadership cannot be denied. But, above all, environmental policy-making requires teams of competent people from several, often distantly related, fields.

E. BACKGROUND

E.1 Policy Inventory through APAP II and other Policy Analyses

In 1990, through the USAID Agricultural Policy Analysis Project, an inventory of major natural resources policies in El Salvador was prepared (1). The inventory emphasized four major areas of policy: a) Sustainable agriculture; b) Forestry; c) Wildlands and biodiversity, and d) Watershed management.

Prior to the policy inventory the Environmental Profile of El Salvador (2) had pointed out critical environmental degradation in the country. This degradation included some of the highest degrees of deforestation, erosion, loss of biodiversity, and use of pesticides known so far in the American continent. The environmental profile cited the major causes of environmental deterioration as high population density and growth, the armed conflict, inadequate legislation, highly skewed land distribution and misuse of land, as well as very low levels of education. The Policy Inventory further suggested that this depletion and misuse of natural resources was, to a great degree, also due to inappropriate or nonexistent policies, such as the absence of a tourism strategy or the lack of incentives for proper and effective resource use. Inadequate or even nonexistent research, demonstration, and extension were also noted as a major causes.

The Policy Inventory also noted that many important macro-economic and sectoral policies in fact **favored** environmental degradation and misuse of natural resources. Among these were overvaluation of the local currency, little or unfavorable credit for natural resource-oriented projects,

the classification of natural areas as "idle lands", and the continuation of agrarian reform. The rumor of additional agrarian reform engendered a stampede of land parcelling and modification.

It is further implicitly evident from both works, in particular the Policy Inventory, that the almost total lack of interest in basic research and development in El Salvador has created an increasing dependency on imported technology (which is often obsolete or environmentally deleterious) as well as non-native raw materials and crops. This also seems to allow for land-extensive (rather than land-intensive) use strategies, under-utilization of valuable land, and significant loss of qualified personnel from both governmental institutions and higher centers of learning and research.

The policy inventory points out that low salaries, poor equipment, excessive percentage of budget allocated to personnel costs, (up to 90% in the Ministry of Agriculture) and other factors, seriously handicap government effectiveness. Lack of funds for operations, essentially keeps the government grounded within the confinement of its central offices or, at best, in major cities and towns.

Major recommendations of the policy inventory include:

1. initiation of appropriate research programs;

2. establishment of adequate incentives and credits;

3. improved environmental education; and

4. promulgation of policies such as standards, privatization, regulations, and taxes designed to produce favorable impacts on the environment.

One broad policy statement which has been formally proposed by NGOs is the ***Propuesta del Cerro Verde*** (3). This 19 page statement resulted from a two-day forum held by the Unidad Ecológica Salvadoreña at Cerro Verde on the 20th and 21st of April, 1990. The document produced (June 1990) lists a significant number of actions and recommendations concerning natural resource use and environmental management that clearly underline a major point: that sufficient information and vision exists to commence corrective actions <u>immediately</u>. However, also evidenced by this work is the need for a clearly defined policy containing a global strategy in which actions such as these can be coordinated, assuring efficient interdisciplinary and multisectorial participation. This in turn seems to further justify the need for a strong and effective coordinating and planning

agency. As pointed out below in the section of this chapter on "Recent Developments", such an agency does in fact seem to be emerging.

E.2 The PROMESA Project

The *Proyecto de Protección del Medio Ambiente Salvadoreño* or, PROMESA Project, has been conceived as a seven-year effort designed to assist the GOES as well as NGOs in improving the management of the country's natural resources and environment.

The PROMESA Project has four major components:

1. Policy Reform: Through this component, PROMESA will assist the GOES and strengthen selected NGOs in their capacity to identify and define environmental policy issues, to monitor the effectiveness of policy and improve the policy-making process, and to contribute to the formulation and development of adequate policies.

2. Institutional Strengthening: Through this component, PROMESA seeks to enhance the capabilities of both the public and private sector (in particular those of selected natural resource NGOs), by increasing their human and institutional capacity, so that they may participate more effectively in the policy formulation process, and implement natural resource management projects. To this end, training is a major aspect of this component.

3. Environmental Education: Through this component, PROMESA will support efforts that increase public awareness and knowledge about natural resources and environmental issues. This component will foster national discussion on environmental problems and possible solutions, by developing and disseminating environmental education materials for the formal and informal educational systems throughout the country.

4. Coastal Area Protection and Regeneration: This project component has been designed to demonstrate the utility of natural resources and environmental policy reform by providing support to field activities which address and solve priority environmental and natural resource problems in the coastal zone. The Project defines the coastal zone as the area between 700 m.a.s.l. on El Salvador's coastal slope and its 12-mile ocean limit. The Project proposes an integrated approach based on carefully measurable parameters including: basic human characteristics and needs, irrigation, watershed management, sustained mangrove use and fisheries. It

will operate on a comparative basis on up to four project sites.

The strength of PROMESA lies in its mid-term (i.e. 7 year) multidisciplinary, comparative approach. Continuous monitoring and documentation is vital to success, as is an on-going evaluation and adjustment strategy to correct for factors that can simply not be considered appropriately until work is underway. Strengthening of local organizations is a very important goal, if this project is to provide adequate models for sustained development; it is vital that local participating GOES institutions as well as NGOs be fully on their feet and capable of continuing without external support once this project has been completed.

E.3 Recent Developments

Up until mid-1990, the predictions presented verbally and in writing concerning environmental issues in El Salvador were grim.

Several environmental essays -- besides the previously mentioned USAID-sponsored Environmental Profile -- had been published (see, for example, Daugherty, 1969 (4); Hilty 1982 (5); and Chapin, 1990 (6)). These publications not only coincided in documenting devastation, but also in holding pessimistic views about how little was being done and how little seemed likely to be done given "other evident priorities".

However, 1991 witnessed several very significant events in El Salvador which are rapidly changing the perspective for local environmental affairs. These include:

1. The cease-fire and peace agreement between the parties in conflict in El Salvador. This is generating a rapidly growing desire -- if not euphoria -- for recovery, reconstruction and repair of damage, and a growing will to "do things the right way this time".

2. A rapidly growing social awareness of the need to respond to environmental issues and the responsibility to do so, achieved mainly by active campaigning of NGOs and educational and documentary programs and articles in the local media.

3. The establishment of a high-level government agency in charge of environmental affairs, the ***Consejo Nacional del Medio Ambiente***, **CONAMA**, and its executive arm, the ***Secretaría Ejecutiva del Medio Ambiente***, **SEMA**. CONAMA

is comprised by 14 Ministers of the executive branch who, through SEMA, periodically come together for continuous action and planning. SEMA is rapidly maturing and growing in credibility. SEMA is also emerging as a facilitator in the discussion about environmental problems in the country, by organizing activities and events that bring together high-level decision-makers in government and NGO representatives.

4. The growing interest of international organizations in environmental issues in El Salvador and in promoting environmentally sound development projects. This has also sparked a significant openness in many Salvadoran governmental offices, previously quite unwilling to consider environmentally oriented projects seriously.

5. A notable growth of several environmental NGOs in maturity and effectiveness as well as a desire to participate in specific corrective actions and projects.

These factors have combined to produce a setting of optimism and a desire to address environmental issues which is without parallel in Salvadoran history.

F. MACRO-ECONOMIC AND MACRO-ECOLOGIC FRAMEWORK

El Salvador is now actively striving for economic and social development. At this particular post-war time, the country seems to be entering a distinctive phase of policy review and policy formulation. In this phase, in which there is both an urgent need to generate capital for development and to carry out major social development projects (which, of course, require capital), policies that encourage equilibrium -- that avoid political extremes -- are being sought. Thus, it is considered just as undesirable to increase the gap between the wealthy and the poor, as it is to stifle private sector initiative and investment -- fundamental to generation of capital.

Strong international as well as local pressure and measures are being enforced to reduce the size and role of the government. Unfortunately, little is being done towards making the State more efficient; rather, emphasis is on decreasing size.

The way in which economic measures are combined to obtain these results, though mostly traditional, are complex. Interest rates, taxes, tax exemptions, credits and other measures are managed to stimulate and guide national development. However, these manipulations must avoid causing either inflation (which increases the cost of living), or monetary devaluation or over-valuation (which reduce purchasing capacity or export competitiveness) or, worse still, an economic recession that can

lead to massive unemployment, hunger and renewed political unrest and violence.

The problems do not stop here. Local production and generation of capital must not simply satisfy local needs; additional production is needed to obtain foreign currency with which to purchase many needed items not produced locally, such as: machinery, medicines and several raw materials. This obvious point has a serious implication that, unfortunately, is not often viewed with objectivity. Exportation of goods to obtain foreign exchange implies the ability to compete at an international level. Protective tariffs are too often used to obscure this fact. Worse, a country as small as El Salvador suffers an additional handicap, especially when considering its major agricultural exports such as coffee, cotton and sugar: it simply cannot affect the world supply in a way which affects the world price. Thus, it has virtually no real control over the price of these goods. Among the few good alternatives to this situation are the production of high-quality goods or different goods altogether. Unfortunately, both of these alternatives require research, time and money that so far El Salvador has shown very little interest in investing.

But other realities are adding weight to the situation: the population of El Salvador, with its concurrent needs, is growing at the rapid rate of 3.1 per cent, while the natural resource base is showing clear signs of deterioration and decline. Thus, environmental concerns emerge as a third critical factor that planners and politicians must incorporate together with economic growth and social welfare, into coherent national development strategies.

Widespread natural resource misuse and environmental neglect started impeding development in El Salvador in the nineteen fifties. It seems to have been during this period that the accumulated effects of population density, overexploitation of natural resources, and industrial wastes started to emerge indirectly in national economic statistics. Several symptoms were evident in this situation:

1. A decline in agricultural productivity per unit area, due to nutrient depletion and erosion. This is particularly evident in El Salvador in corn and cotton. Farmers interviewed in the field, report reductions in yield of up to 50% or more in many areas. (This reality has often been considerably obscured by increased use of expensive inputs such as chemical fertilizers).

2. Agriculture is further hit by a strong increase in the diversity of insect pests. Many of these pests show an increasing resistance to all but the most expensive (and often hazardous) of pesticides.

3. Wastes appear in more forms and greater quantities. They also start appearing at greater distances from their sources.

4. Officials in the Ministry of health report that environmental diseases, such as dysinteries and respiratory ailments, have become increasingly widespread and cause an increasingly higher percentage of deaths. These statements are based on observations made at the Hospital Rosales in San Salvador.

5. Field research conducted in 1984 with low-income rural families produced evidence of environmental stress. Natural resources that are vital for the satisfaction of basic human needs (especially for the lower-income sector of the population) reach alarmingly low levels in quality, quantity and availability. These include water, firewood, medicinal plants and wildlife as a source of protein. (See also Sections III.D and III.E in this report.)

6. "Natural" catastrophes -- such as landslides and floods -- have become more frequent and of greater severity.

7. Native species of plants and animals, together with the few remaining natural areas so much needed for recreation, tourism, environmental buffering and reserves for raw material, disappear at an increasing rate without even being known by a majority of the population.

There are many other examples that have increased awareness about this situation among planners and decision-makers, who are now realizing that sustained development and growth require serious consideration of the natural resource base and the environment.

As indicated earlier, analysis of environmental issues is complex and interdisciplinary in nature. In order to simplify this analysis and the formulation of environmental policy, topics can be grouped into a few "macro" categories:

a. Natural Resource degradation, restoration and management. This may include issues such as deforestation / reforestation, erosion / soil conservation, water management, and management of wildlife and protected areas.

b. Pollution. This may include pesticides, industrial wastes, solid waste disposal, noise, etc.

c. Conservation and management of the sea (ocean) and marine resources, and

d. Energy. (hydroelectricity, solar, biogas, nuclear, petroleum, etc).

Each one of these areas is vast and adequate policy formulation requires professional disciplines that share much in affinity and complementarity.

It is suggested that, to ensure efficiency and appropriate development of methodology, the policy component of the PROMESA project limit itself to one of these four areas (i.e. the first one) -- that of natural resource degradation, restoration and management.

It is impossible to deny the great importance of the other areas. However, this if anything points out the need to address the other three categories with specific projects of their own, with appropriate professional teams and institutions.

It will be equally impossible to avoid entering the other three categories when carrying out natural resource management. The sea will be encountered in mangrove estuaries; pollution will be encountered when contemplating sediments in streams as a result of erosion; energy cannot be separated from firewood -- the most important local use of wood and the most important source of energy in El Salvador. However, these contacts should be regarded as peripheral encounters necessary to keep relationships in perspective. Clearly marked boundaries between categories do not exist. Nor is there need to create rigid boundaries artificially.

II. THE POLICY FORMULATION PROCESS IN EL SALVADOR

This chapter presents an overview of the existing policy-making process in El Salvador. It sets the stage for the discussion which appears below in Chapter IV on how the Promesa Project can become involved in this process.

A. THE EXECUTIVE BRANCH

A.1 Structure

In El Salvador, a nationally elected President heads a government composed of 14 Ministries and 8 formal Commissions. The bulk of administrative-executive responsibility is held by the Ministries which, in various combinations, comprise four major Councils: General, Economic, Political and Social. Figure 1 in the Appendix sets out the basic organizational structure of the executive branch.

Of major importance in environment and natural resources management are:

a. the *Ministerio de Agricultura y Ganadería*, MAG, in particular through its *Subdirección de Recursos Naturales, until recently Centro de Recursos Naturales*, CENREN; and

b. the *Consejo Nacional del Medio Ambiente*, CONAMA, established in January of 1991, with its *Secretaría Ejecutiva del Medio Ambiente*, SEMA, established in June of 1991.

The establishment of SEMA represents a major opportunity for coordination and effective integration of the many organizations involved in environmental planning in El Salvador.

Figure 2 in the Appendix portrays the organization of MAG just prior to the reorganization which occurred in February, 1992. Figure 3 outlines the structure of CONAMA and SEMA.

A.2 Revenues and Expenditures

Government revenues in El Salvador follow a pattern that seems to be common to many nations of Central America, if not to Latin America in general. Sources of income to the government fall into two categories: ordinary and extraordinary.

<u>Ordinary</u> or regular (tax) sources of income in turn fall

into two categories:

a. Fiscal (income and patrimonial taxes) and
b. Extra-fiscal

Extraordinary sources of income also fall into two categories:

a. External (i.e. credits and donations) and
b. Internal (e.g. State-owned enterprises)

The following table shows the most recent statistics for El Salvador's national budget:*

CATEGORY	1990	1991
Gross domestic product	41,057	47,725
Consolidated national budget	5,198	5,978
Ordinary budget	4,256	4,985
Tributary income to ordinary budget	3,330	4,106
Extraordinary budget	942	993

*Unpublished data obtained from the Ministry of Finance (Hacienda) and the Central Reserve Bank. Figures are in actual, unadjusted colones for the year shown.

In what seems to be a broad international trend, the current government is clearly trying to reduce government size and government-run enterprises. The latter are being transferred as much as possible to the private sector, with the government concentrating more on normative and social activities, plus other activities which cannot be carried out by the private sector.

In general, the last two decades have seen a marked trend toward increased dependence on external (extraordinary) financial sources to carry out governmental activities. The internal budget is increasingly absorbed by purely administrative functions. As noted above on page 4, up to

90% of MAG's budget is used to cover salaries. This excessive investment in non-operational expenses has caused much concer to international financial institutions. In fact several future loans have been conditioned on reduction of government bureaucracy as well as tightening of other government expenditures.

Most agencies and programs which have lost external sources of funds have experienced a period of stagnation and even incipient disintegration. CENREN is such an institution. It has become essentially grounded and non-operational due to excessive financial constraints for even basic and routine operations. This in turn has led to extensive departure of personnel, particularly at higher technical staff levels. In 1984 all the agencies of CENREN combined employed over 1,000 full-time staff. Today the number is much smaller. For example, the Forest Service, which once (1981) included 14 staff members with university level training in forest sciences, now has only two university-trained people.

B. THE NATIONAL LEGISLATIVE ASSEMBLY

The *Asamblea Nacional Legislativa*, National Legislative Assembly, currently has 84 members or parliamentarians, chosen through public election. The Assembly meets regularly during ordinary or extraordinary sessions. Likewise, special sessions -- usually called to consider one exclusive topic -- are occasionally held. In fact, in June 1991, a special session was held to consider the environmental crisis in El Salvador.

Recently, a *Parlamento Centroamericano*, Central American Parliament, PARLACEN, was formed, composed of parliamentarians from three Central American countries (Guatemala, Honduras and El Salvador). Eventually, all seven Central American nations are expected to join. As environmental affairs seem to be of strong common interest, PARLACEN may well become an important forum for discussion of significant environmental policy issues and alternatives. PARLACEN is still in the early stages of its organization, so it is premature to speculate on the precise role it will play.

Perhaps of greater direct interest in the context of this paper, is the fact that the Assembly conducts its deliberations through several *comisiones* or committees. Each committee handles a specific policy area which usually coincides with a subject under direct administration of one of the Ministries or other executive agencies. The Assembly currently has twelve committees:

1. Legislación y Puntos Constitucionales
2. Relaciones Exteriores y Justicia

3. Cultura y Asistencia Social
4. Trabajo y Previsión Social
5. Interior y Obras Públicas
6. Economía y Agricultura
7. Hacienda y Especial de Presupuesto
8. Defensa y Seguridad Pública
9. Gracia y Excusas
10. Bienestar Público
11. Política
12. Salud y Medio Ambiente

The *Comisión de Salud y de Medio Ambiente* is the newest committee, having been established in February of 1992. This new committee will most certainly facilitate consideration of many environmental issues that so far have met with little progress and interest in the Assembly. This committee will also represent the best door on which to knock when informally approaching the Assembly for hearings or presentation of environmental initiatives.

C. THE JUDICIAL BRANCH

The Judicial branch of the Salvadoran government is represented by the Supreme Court plus numerous courts. The Supreme Court is formed by 14 magistrates who are elected by the Assembly. These 14 magistrates in turn elect the President of the Supreme Court from their midst.

Poorly understood by most, the main functions of the judicial branch are to interpret and adjudicate rights and responsibilities under the constitution and the civil, penal, and administrative laws, decrees, and regulations of El Salvador. See Figure 5 in the Appendix for an organigram of the judicial branch.

The courts have had some participation in hearings concerning misuse of pesticides, cutting of trees, misuse of streams and a few other issues. However, in general, participation in environmental issues has so far been minor and skewed against low-income individuals, who cannot afford lawyers to defend them against charges of having committed minor offenses.

A very positive new development occurred in March of 1992. The *Fiscalía General de la República* established an environmental office. This office employs two prosecutors detailed full-time to the investigation and prosecution of environmental offenses.

D. LAWS AND REGULATIONS

The Natural Resource Policy Inventory of El Salvador grouped and

analyzed policies by types of natural resources. That inventory and the corresponding policy analysis, made evident that the preventive and corrective measures set forth in laws and regulations, are neither complementary nor mutually reinforcing. In fact, existing policies are sometimes contradictory or even conflictive. These conflicts and contradictions hint strongly of weak interinstitutional relationships, so they will briefly be contemplated in this section. Some of these situations may represent good opportunities for assistance through institutional strengthening by the PROMESA project.

At first glance, the legal framework of El Salvador follows a simple, logical sequence. First, there is a primary law, the *Carta Magna* or Political Constitution, which states the guiding principles and indicates general coverage of law in El Salvador. Next come a series of codes and secondary laws which govern specific subjects covered in the constitution. These include, for example, the civil code, the forestry law, etc. Finally, there are sets of regulations and decrees ("tertiary laws") which provide the mechanisms to implement the codes and secondary laws.

However, though there is a considerable tradition in the enactment of laws and regulations in El Salvador, a surprising amount of confusion faces the non-professional who makes an effort to penetrate the legal system.

First of all, the Constitution is cumbersomely large. Of the 274 articles which comprise it, many would best be placed in secondary laws. These articles refer to highly specific items, such as qualifications for occupying certain government positions or the detailed functions of these positions. This makes the general, broad nature of the constitution very difficult to keep in perspective, not to say to implement. In fact, the nation's natural resources and their conservation were not contemplated by the Salvadoran Constitution until the version of 1983.

Because of its length and specificity, the Salvadoran Constitution, unlike the short, "agile" one of Costa Rica, is rigid and difficult to apply to changing conservation issues.

The tendency to place details at too high a level in the legislative framework also occurs in codes and laws. For instance, the Forestry Law, at a level just below the Constitution, contains several articles which more properly correspond to the level of bylaws or regulations. Indeed, these articles were enacted to compensate for the absence of such regulations. As a result, the forestry law has many loop-holes that even amateur lawyers can easily discover, thereby facilitating evasion of the law. Also, because of the greater difficulty involved in modifying a law as compared to modifying a regulation, several items in the forestry law -- such as fines and procedures -- have become obsolete or even non-functional.

Too often, fines or sentences are so trivial that infractors merely view them as additional minor tariffs which must be paid in the process of breaking the law (e.g. cutting a tree illegally). Therefore, not only has the law become ineffective in preventing violations, its implementation has become a burden to the State.

Another problem with some laws and regulations is that they have been enacted without an adequate information base. As a result, many actions contemplated in laws and regulations are under-estimated, over-estimated, or not taken into account at all.

E. THE ROLE OF NON-GOVERNMENTAL ORGANIZATIONS

The first strong conservation-oriented NGO in El Salvador was probably the group *Amigos de la Tierra* (Friends of the Earth). Founded in 1946, it was very active until about 1983. *Amigos de la Tierra* stressed good land management and reforestation practices. It carried out several successful demonstration projects and other promotional activities such as conservation prizes and agricultural fairs. However, perhaps its greatest contributions were its consistent and continuous warnings and denunciations of the rampant environmental destruction in El Salvador. This lobbying often proved highly effective in encouraging positive actions and restraining negative ones.

Since their inception, a major role of the few existing NGOs in El Salvador has been to detect and denounce environmental problems and abuse. But during the last decade the NGO community in El Salvador has experienced two interesting transformations:

1. since 1986 conservation-oriented NGOs have blossomed from many sources. Agronomists, high-school and university students, architects, local communities, and social service-oriented organizations strive for better natural resource management and improved environmental conditions. Furthermore, their interests have been as wide-ranging as the environmental problems in the country. Recycling, protection of wildlife and natural areas, alternative energy sources, pollution, environmental education, reforestation, appropriate soil management are but a few of the many interests among NGOs.

2. NGOs are now also becoming more involved in project planning and implementation. This has led to certain specialization among Salvadoran NGOs in areas such as : environmental education, wildlands management, and sustainable development.

Renewed international interest in the environmental problems of El Salvador, has spurred a flow of outside funding that is not

only reaching government agencies but also several NGOs. The World Bank, through its recently formed Global Environment Facility, The Inter-American development Bank, UNDP, FAO, and several bilateral aid agencies have all expressed interest in financing environmental activities. At this turning point, it is important for NGOs to clearly define their goals and long-term objectives, in order to avoid the pitfall of developing their programmatic agenda based mainly on the interests of potential donors.

The table below shows the interests of a few of El Salvador's most prominent environmental NGOs. Please refer to the report on environmental education prepared for the PROMESA Project by Russell Davenport, et al., for additional references to NGOs

SALVADORAN NGOS INTERESTED IN THE ENVIRONMENT

NGO		Areas of Interest
AMAR	Amigos del Arbol	Protection of mangroves and associated fauna
Audubon El Salvador		Protection of Salvadoran birds
CESTA	Centro de Estudios Salvadoreños de Tecnología Apropiada	Appropriate technology; urban development
FESA 20-30	Fundación Ecológica Salvadoreña Activo 20-30	National parks; conservation of protected areas
FUREMAR	Fundación Ecológica para la Conservación de los Recursos Limnológicos y del Mar	Protection of marine, coastal, and aquatic resources
FUTECMA	Fundación Tecleña para la Conservación del Medio Ambiente	Development of the city of Santa Tecla and surroundings
MES	Movimiento Ecológico Salvadoreño	Control of deforestation; reforestation; soil conservation
UNES	Unidad Ecológica Salvadoreña	Environmental policy; community participation; public awareness

III. ENVIRONMENTAL AND NATURAL RESOURCES PROBLEMS IN THE CONTEXT OF CURRENT POLICY

This Chapter discusses the existing situation in El Salvador with regard to nine important natural resource categories. It points out areas where existing policies -- or the lack of them -- limit adequate management and use of natural resources, thus creating environmental problems.

The need for efficiency and precision would seem to require maintaining the policy component of the PROMESA project within the boundaries of the area of natural resource management as much as possible. As previously mentioned, other major aspects of the environmental arena, such as pollution, energy, and marine ecology are vast and important enough to require specific analysis and projects of their own. More detailed policy recommendations are provided in the final chapter of this report.

A. LAND USE

In El Salvador, current land use responds mainly to whims of owners and demographic pressures. In some cases the results are patterns of use that could be considered excellent anywhere in the world. Too often, however, overall results are negative both for the owner as well as the neighbors -- sometimes even for the entire country. Unstable upper watersheds are deforested, increasing landslides and reducing water supply; excessive pesticide and fertilizer applications reduce soil productivity; general erosion leads to critical reduction of crops. There are few effective guidelines to correct this situation, and essentially no incentives to do so.

Serious attempts have been made in El Salvador to establish a pattern of land use that is appropriate for each type of land. The system that has been most closely followed is the "Land Use Capability Classification" developed by the U.S. Soil Conservation Service. This system was adopted in the early 1970's by the *Servicio de Conservación de Suelos* in the Ministry of Agriculture. El Salvador is but one of many countries which have striven to adapt this system to their land management. In this classification system soils have been divided into 8 broadly defined classes. These classes are numbered from best to worst according to their suitability for intensive, continuous agricultural use. Class I soils are the best soils (being flat, fertile and with excellent drainage) and Class VIII are the worst (steep, eroded, swampy etc.).

Although this classification system incorporates several very valuable considerations, its direct application to El Salvador has brought to the surface some of its limitations. These

include:

1. A local reluctance to follow this classification system and a low ability to ensure its implementation.

2. The protective criteria established under the system, when interpreted literally, severely handicap certain activities.

   For example, reforestation and "natural park recreation" are both indicated as exclusive uses for soil classes that are "not appropriate for productive uses", in particular for classes VII and VIII. Because of this, reforestation is still viewed in El Salvador as mainly a protective activity, to be carried out mostly on poor steep soils. Yet there may well be good reason to pose reforestation as an economically viable alternative to uses currently practiced on some class I and II soils. For example, coastal soils in these classes are frequently planted in cotton using methods (e.g. excessive use of chemical fertilizers and pesticides) which have already been discarded in several other nations. It is well known that this severe misuse of soil rapidly reduces its fertility and increases dependence on expensive inputs. However, it is not likely that reforestation will be taken seriously as an "environmentally sensitive alternative" for these soils until: a) forestry is viewed under more economically oriented considerations; and b) trials are made with appropriate tree species to determine annual growth and yield per hectare.

   It should also be noted that highly valuable and unique natural ecosystems may occur on class I and II soils. Their protection and management as protected areas may be more than justified, notwithstanding their high ranking for agriculture according to the soil classification system.

3. Some kinds of soil conservation techniques fall outside the basic patterns established in the system. For example, In El Salvador, terraces on class VI soils when carefully made, maintained, and irrigated have actually increased soil quality. This, in turn, has led to sustained high yields equivalent to those of class II soils . . . or even better.

4. Perhaps the most significant limitation of the system is that it attempts to set guidelines for agriculture based solely on soil parameters.

In comparing the current system with the Holdridge system of classification of natural vegetation types based on climatic and

bioclimatic parameters (biotemperature, precipitation and evapotranspiration) it becomes clear that a hybrid system is called for. For example, in El Salvador the only places with adequate climates for certain crops, such as potatoes and many flowers, are the moist highlands. These lands are almost all classified as unsuitable for agriculture because they are too steep. But with terracing or other conservation practices they become more suitable than any other lands in the country for producing the crops mentioned above. Similarly, high precipitation, high relative humidity, and steep slopes combine to make certain lands extremely important for watershed management (i.e.: water production and watershed stabilization) and very difficult to use in a sustainable manner for any other purposes.

Two examples further illustrate the need to revise the existing classification system. In 1985 Costa Rica developed a hybrid system, in which 10 land classes were matched in a matrix to 11 life zones characteristic of the country. General recommendations on potential land-use provided with the aid of this new system, show greater accuracy and applicability than a solely land-based system. Even more recently, a soil-climate-crop-phenology and pest population program was developed for cotton production in Texas. Farmers participating in this program obtained higher yields than other local farmers, by being able to use data on soil types together with bioclimatic variables in integrated planning of their agricultural activities.

Methods of appropriate land use in rural settings are closely linked to soil characteristics. But climate and topography are also important factors in determining land use capability. Improved soil and topographic criteria similar to those in the current eight-class system of land uses should be combined with bio-climatic criteria (such as those from the Holdridge system of life zone ecology), to develop a comprehensive land use classification system for El Salvador. This improved classification system would greatly enhance the government's ability to develop appropriate policies, especially in agriculture and forestry.

B. SOIL CONSERVATION

Soil management in El Salvador is, in general, poor to nonexistent. No policies exist to induce a farmer or other land user, to take care of his soil, much less to use it efficiently. In viewing the high population densities which prevail in some other agriculturally-based regions of the world (e.g. parts of Taiwan, Holland and Israel) it would seem that a great part of the "land" problem in El Salvador is not "land scarcity" or "poor soils". Rather it would seem to be strongly a matter of soil

mismanagement. Unfortunately, at this moment land tenure is a highly politicized issue in El Salvador and, therefore, it is difficult to bring this point to the discussion table. However, there is no doubt whatsoever that more appropriate land use strategies and techniques would lead to much higher and sustained yields.

Analysis of soil conservation programs in El Salvador reveals that they are viewed much more as protective measures than productive ones. A quick look at the small amount of literature available, shows that in 90% or more of soil conservation projects the measurement of increased yields has rarely been an objective. Thus, quantitative data, that could serve both to encourage farmers to implement conservation measures and to induce banks to condition and even reinforce loans on such measures, is sadly lacking.

Cultivation of certain crops, such as cotton on the coastal plain and corn on hilly slopes, has led to severe soil damage and loss. However, even the cultivation of coffee, much-famed as environmentally benign, has caused its share of damage. Planting coffee above 1,800 m.a.s.l. almost invariably leads to unnecessary loss of beautiful and valuable forests. At the same time, high, and often cold, winds usually minimize productivity to the point of financial collapse after the first one or two crops. Likewise, lowland coffee plantations (i.e. below 600 m.a.s.l.) also often lead to unnecessary and undesirable deforestation. In general poor quality and low yields characterize these "lowland" plantations because the coffee plant is not well adapted to continuous high temperatures. This discussion illustrates the point made above: in assessing land use capacity climate is an important factor to take into consideration.

In a world so richly endowed with large countries which compete in the production of coffee, cotton, and sugar cane, it would seem logical that a small country like El Salvador would seek the road of quality and efficiency to garner necessary earnings. Wise use of soil would certainly seem fundamental to attaining this goal. This points toward the need for strong extension efforts promoting adequate soil conservation techniques coupled with fiscal incentives for land owners who implement them.

In general, soil biota are totally ignored, making soil management a purely physical-chemical activity. Thus valuable tools of nutrient fixation, conversion and retention are sacrificed and considerable fortunes are spent, often unnecessarily, on increasingly expensive chemical inputs such as fertilizers.

The issue that a significant amount of El Salvador's best agricultural soil is being used for urban and industrial

development, though often mentioned, has not been documented in any quantitative way. Thus the relative loss in agricultural productivity attributable to these uses cannot be cited or quantified. There seems to be much confusion and conflict over this issue. The most expensive urban plan in Central American history, made for San Salvador in the early sixties (METROPLAN 80) was entirely ignored and even considered taboo when urban development reached areas which the plan had designated as "vital for watershed protection" or of an otherwise restricted nature. Even a major landslide that killed perhaps as many as 1,000 people in northwestern San Salvador failed to bring about study, investigation, and regulation of urban expansion. Many of the houses wiped out by the landslide had been constructed on a filled-in ravine. Besides being a natural drainage canal for the San Salvador volcano, under national law this ravine was considered public land, not available for private residential use. The same land had been set aside under METROPLAN 80 as unsuitable for residential use. Neither the plan nor the law were followed.

In soil management several requirements for better information readily stand out. Soil fertility, as determined by existing organic matter as well as clay structure, must be measured and quantified in economic as well as edaphic terms. Strangely, very little has been done in El salvador to study clay particle composition and its relationship to nutrient trapping or availability. Soil drainage should be measured locally to determine its response to slope and erosion as well as its effects on different crops. The physical structure of soils has also received little attention in this country; soil mechanics and maintenance are still a mystery to farmer and extentionist alike. Biological aspects of soil may represent the greatest vacuum in local soil knowledge. Given the very important role of soil biota in maintaining and even increasing soil fertility (and hence crop productivity), it is probably safe to say, that vast amounts of money have been spent needlessly on exotic chemical fertilizers. Worse, over-use of fertilizer has led to soil deterioration and water contamination, notably in the coastal plain.

C. WATER MANAGEMENT

Water management is even more complicated than soil management in El Salvador. Responsibility for water administration is shared among several institutions which prefer centralized water distribution projects -- however costly and inefficient -- to local water production and management. Government agencies dealing with various aspects of water management include:

ANDA, *Admininistración Nacional de Acueductos y Alcantarillado;*

Dirección de Riego y Drenaje, MAG; and
CEL, *Comisión Ejecutiva del Río Lempa*

Urban tap water, rural tap water, irrigation, and hydro-electricity are each administered by a different agency. On the other hand, fish and aquatic life have no institution legally vying to protect their already very precarious existence. Worse, no one is in charge of ensuring that a water supply will continue to exist!

Water springs are "national" property, whether the State does anything to preserve the existing springs or not. Under current land-use regulations, even the most productive watersheds covered with forest, may qualify as "idle lands". Understandably terrified landowners often hasten the end of watershed productivity by converting the long-established natural vegetation to precarious pastures in order to "provide good evidence that the land is being used".

Not surprisingly, water availability is not only rapidly dwindling, it is becoming the number-one resource demanded by a geometrically-growing urban and rural population. The interviews of low-income rural families carried out in 1984 revealed that, in some communities, average time required today to obtain the same amount of water obtainable fifteen years ago, has increased by more than 400% because of greater distances involved in finding adequate water sources.

Furthermore, the high cost of providing utilities (both water and electricity) to low-density dispersed populations is still a major dilemma in El Salvador. Perhaps a great part of this problem is due to a noticeable tendency towards large-scale centralized solutions, as is the case of large-scale hydroelectric dams.

There is a clear need in El Salvador to provide incentives for more small-scale projects for water supply and electricity generation in rural areas, using appropriate technologies. For example, small-scale hydro projects, coupled with solar and wind energy systems, can not only provide electricity and heat, but also mechanical energy for water-pumping out of village-wells.

But here the quantitative problem mixes with the problem of water quality. Water required for basic needs (i.e. drinking and washing) is becoming increasingly difficult to obtain in usable form. This is particularly difficult in many rural areas, where the problem must be solved by the individuals themselves.

Urban and industrial pollution of water is high and widespread. Agricultural pesticides and fertilizers, as well as rural agro-industries also contribute to pollution. According to the Environmental Profile of El Salvador, this results in the contamination of over 70% of Salvadoran surface and ground water.

Whereas these figure are well known and often quoted, efforts to reverse the implicit damage they represent are rarely even mentioned. This may not be due so much to "lack of political will", as to the staggering costs of installing and maintaining water-treatment facilities. Understandably, given the other pressing social needs in the country, such expenditures receive low priority.

In the case of water pollution, it is possible that a carefully combined program of regulations, projects which use contaminated water (e.g. irrigation of forests) and relatively inexpensive state and municipal water treatment and recycling, is required. These would both reduce the total amount of water contamination and also make use of some contaminated water, thereby making more clean water available for uses which require it. The need for much research and development of locally appropriate technology is again evident.

El Salvador lacks quantitative data on water availability and water quality. To some extent such data are available but not applied. Generation and application of such data would be especially useful with regard to:

a. annual water cycles;
b. appropriate methods of water treatment and recycling; and
c. the relationship between water quality and quantity and the condition and management of watersheds and springs.

Much more efficiency is required in water use, especially in irrigation and aquaculture; such efficiency methods should be developed and disseminated. There is a particularly large gap with regard to information for managing streams, rivers, and lakes as ecosystems that sustain biological communities. Unless adequate limnological studies are carried out, many fishermen and other users of these aquatic systems may continue to experience depletion of much-needed resources.

D. FORESTRY

Heavy deforestation is a major characteristic of El Salvador's landscape. Although there is a high demand for forest products (in particular wood, resins and paper), and it would be possible to expect great interest in forestry projects, the fact is, that heavy deforestation continues and that forestry activities are meager. One of the consequences of this can easily be seen in several urban areas, where the cost of firewood has gone up by as much as 1,200% in ten years! These figures become more relevant when one realizes that gasoline, during the same period, has gone up a mere 450%. (Note that these figures, which do not correct for inflation, are given for illustrative and comparative purposes only. They become more dramatic when one points out

that the minimum wage in the same period has gone up less than 100%).

Very little is known of the 800 or more tree species estimated to exist in El Salvador (less than 25% are known by most experts themselves); less is known about their properties and their local uses. Thus, most reforestation projects implemented by the Salvadoran government have contemplated well-studied exotics, like teak, pine, and eucalyptus, rather than native species.

Very few of these projects have contemplated people's needs and demand for specific products. In fact, as stated previously, protection is usually the fundamental criterion which guides these activities. This implies that the projects do not envision any users of forest products which the projects might conceivably produce. Sites for forestry projects are typically selected on the basis of land-use, ending up mainly (if not exclusively) on steep terrain, which is "vocationally suited for forests". The criteria of yield per hectare and, above all, of profit or efficiency, are noticeably absent from most reforestation projects conceived in El Salvador thus far.

Perhaps not surprisingly, credit for reforestation projects is subsidized in El Salvador. The *Banco Central de Reserva* offers loans for reforestation at 6 per cent interest. The borrower needs to provide no convincing evidence to the lender that the plantation will be able to produce (or sell) enough to meet payments. Thus, credit apparently serves mainly as an incentive for people to stop or prevent erosion by planting trees, rather than to support these activities as profitable ventures. Furthermore, the tradition has arisen in governmental reforestation efforts, of providing seedlings at 50% of cost or less. While this incentive should encourage people to carry out reforestation projects, it has also created a clear disincentive for private enterprise in this basic activity (i.e. nurseries).

Furthermore, until recently, there have been no good market studies on qualitative and quantitative demands for wood in El Salvador. Even firewood studies have been based on a remarkable amount of extrapolation and have shown virtually no indication of regional preferences. CATIE has begun to remedy this situation by performing and publishing new studies of wood demand and supply. Wood needs for rural construction, furniture, tools, instruments, bridges and other uses have been, for all practical purposes, completely ignored.

Given their weak information base, it is not surprising that national reforestation policies are more abstract and romantic than practical and motivating. It is clear that forest products are in high demand in El Salvador -- and thus can probably command good prices in many cases, if backed by appropriate technology. However, lack of basic information, applied

research, and technology handicaps forestry development.

Information needs in the forestry sector include:

1. Inventory of native trees -- their growth response to different soils and climates and the physical, chemical and biological properties of their woods, resins and fruits.

2. Documentation of local uses of trees and derived products. The importance of this indigenous knowledge lies not so much in nostalgic or historic considerations but in the identification of potential markets and needs, both in the country and abroad. As an example, one local group is harvesting "balsam", using very crude technology, and selling it in the international market. Wider knowledge of this information would make it more useful.

3. Projection of economic yields from forestry -- which are simply growth curves plotted against market prices -- based on existing and generated information so as to establish an objective basis for credits and development.

4. Experimentation with trees as commercial crops on many different soil types as many tree species may actually represent better options than the traditional coffee, cotton, and sugar cane.

E. WILDLIFE

Wildlife management is at an even more primitive stage than forestry in El Salvador. In spite of the fact that thousands of rural Salvadorans satisfy food, medicine, construction, household, and artisanal needs through native plants and animals, there is little documentation of these uses. Mismanagement of native wildlife extends to marine and freshwater resources. For example, bodies of water that serve as substrate for other important ecosystems, are converted into exotic fish ponds. This is significant in a country that has limited surface water resources. Even less concern is shown for the fact that no accessible alternatives will be provided as local resources become depleted. Thus a major cause of increasing poverty is going almost entirely undetected.

The situation is further exacerbated by the frivolous uses of wildlife in urban areas, such as recreational uses (e.g. sport hunting) or ornamental uses (e.g. hardwood ceilings). Thus urban planners tend to greatly underestimate the impact of this type of demand. The fact that a project for a new law on the protection and management of wildlife has been sitting unattended in the National Assembly for over 13 years simply underscores the lack

of attention paid by decision-makers to this issue.

The lack of knowledge on native plants and animals -- and their uses both actual and potential -- is a major obstacle to formulating objective policy for wildlife protection and management.

Likewise, in spite of important developments in other countries, such as industries based on native resources and ecotourism, little consideration is given to these resources in national planning. Simply put, very little -- if any -- economic or social importance is given to wildlife. Ironically, this occurs at the same time that national planners struggle in the abstract to find alternatives for agricultural diversification and to increase tourism.

Existing information is deficient and urgently in need of expansion on the following important aspects of wildlife management:

a. inventory of biodiversity;
b. life-cycles of native and migratory species;
c. food habits and reproductive behavior of commercially important species; and
d. natural population restoration and breeding in captivity (or semi-captivity) of endangered species.

Information on habitat requirements and properties of native plants is important for recovery of plant populations and also to evaluate potential industries that could make use of these resources, thereby contributing to much-needed economic diversification.

F. FISHERIES

Fisheries seem to be the biological resource which has attained the highest levels of development and management in El Salvador. As such fisheries may well best illustrate several major limitations for the entire group of biological resources.

Commercial harvesting of shrimp is the most economically significant fisheries activity in the country. The Environmental Profile of El Salvador indicates that in 1981 shrimp sales amounted to C/. 59 million. In order of importance, white, brown, and red shrimp are sought near the coast. The more pelagic langostine has recently been added to the list, now occupying second place in economic importance after white shrimp.

Snapper, catfish, shark, mackerel and snook are some of the most important marine fish, followed loosely by flounder, jack,

mojarra, chub, mullet, seabass, skipjack, grouper, and others. Cichlids (including the introduced tilapias) and top-minnows are the most important freshwater catch, in particular the cichlids.

Several types of crabs, mussels, and clams are extracted, mainly from estuaries. Oysters and lobsters are also quite important along rocky areas of the coast.

Marked population decline is widespread. Catch of the white shrimp has gone down by over 60% in 20 years, a figure which is more dramatic when one points out that at least 3 times more effort is required to obtain a catch today than was necessary 20 years ago. The catch of lobster, rock crab and grouper have all gone down by over 80% in 20 years and are evidently at a critically low population point. In several mangroves, some shellfish have become locally extinct.

Fisheries are an important part of economic activity in the country. The fishing industry represents roughly 2% of GNP, and employs approximately 26,000 coastal and inland families, that have become dependent on these rapidly shrinking resources.

Although, over the last thirty years, considerable investment has gone into this sector, the existing information base on fisheries has the following significant gaps, all of which require urgent attention:

1. Life cycles and population dynamics of most local populations are unknown and food habits and reproductive behavior have seldom been documented.

2 More data on growth as related to food type and amount and population density are required. Although these are known to some degree, they need to be determined with greater accuracy.

3. Better data on cost of production versus commercial yield are indispensable for financial and economic projections, including credits and investments.

4. Capture methods versus economic yields should be carefully studied and evaluated.

5. Pesticide concentration and presence of pathogenic organisms in freshwater fish have rarely been measured.

Partly, this is due to the lack of resources of the government's fisheries department (CENDEPESCA), which has no boats with which to oversee activities in this sector, and no budget for basic research. It thus becomes clear that the formulation of policy for what has been called the "most technically and extensively

managed" natural biological resource in El Salvador is highly intuitive.

While the population at large is generally aware of the dramatic drop in the availability of many fish and shellfish, corrective measures are for the most part absent. At higher governmental levels, the statement "we must provide an alternative for the dependent population before taking corrective measures" has become almost routine. Required research, establishment of protected breeding areas, and closed seasons are not undertaken. Thus the "dependent populations" find themselves eliminating the very resources upon which they depend "in the name of social fairness". In other words, action on environmental policy is avoided in the mistaken belief that such action might have unfavorable social impact. Actually, the reverse is probably true. Securing the long-term productivity of fisheries is probably one of the most important steps that could be taken to assure the economic well being of rural populations, especially in coastal areas.

G. WATERSHED MANAGEMENT

As a concept, watershed management seems very easy to grasp. Hydrologists in El Salvador have long talked about the "watershed of x or y river". Likewise, soil conservation and reforestation experts handle the term frequently in their lexicon. There has even been a fairly extensive and detailed study of a major watershed in El Salvador -- that of the Acelhuate River. There is, however, little practical experience in watershed management in the country.

The fundamental problem arises from considering watersheds as units rather than systems. Even in the detailed study of the Acelhuate River, in which several different disciplines were involved, an integrated systems approach was absent.

A fundamental aspect of all systems is that they are composed of interacting parts. There is invariably an input-output flux (e.g.: of energy, nutrients, or, as in the case of watersheds, of water), that has a specific behavior, and "ties" the system together. In a watershed, the input is mainly precipitation, though condensation may also play an important role at times (e.g. in upper regions of wet montane forests). Stream flow at the lower point of a watershed is usually considered as the main output.

Watersheds, like protected areas and costal areas, need to be studied as systems. Input/output models and simulations must be developed to the point where theory approaches reality in the field so that predictions can be made. Energy, water, or nutrient flow can be selected as a basis for these models

depending on which is most convenient in each case. For example, water flow is the obvious choice in watersheds, but energy or nutrient flows are of much greater use in mangrove estuarine models.

Between input and output, system behavior in a watershed can be complicated by evaporation, evapotranspiration, temperature changes, infiltration into underground water tables or neighboring topographical watersheds, irrigation, and other factors. A simplistic approach can be taken in which direct correlation is measured between precipitation and stream outflow; in such a case the watershed is simply considered a "black box" in which unknown, unmeasured processes take place. But in order to really understand waterflow behavior and the effects of different conservation measures, it is usually desirable to consider factors such as those stated above, plus deforestation, flow of sediments, and infiltration into soils with various crops and under various soil conservation techniques.

An inescapable conclusion is that an integrated multi-disciplinary approach is required. In such a systems approach, climatologists, hydrologists, soil scientists and agronomists, among others, work simultaneously in specific watersheds as an integrated, organized team. The team seeks to understand the behavior of these watersheds as systems, that are vulnerable to human interventions such as slash-and-burn agriculture, reforestation, or soil conservation. The effects of these human activities can and must be quantified.

Again, virtually no useful systems work has been done in watershed management in El Salvador, and seemingly little has been done to evaluate highly detailed and organized studies done elsewhere (such as the studies in the Coweeta watershed in North Carolina). Of course data obtained from individual watershed studies are unique due to specific geological, climatic and topographical characteristics (among others). Thus, these data cannot be transferred elsewhere for direct application. However, the methodology, principles and general results can give very valuable insights for studies and projects in El Salvador.

H. PROTECTED AREAS

One of the most serious environmental problems in El Salvador -- if not the most serious -- is the alarming disappearance of natural ecosystems. Not only are existing remnants small in number, they are small in size. The five largest natural areas in El Salvador combined, are just slightly smaller than the 31,000 hectare Corcovado National Park in Costa Rica, which is just a medium-sized park by Central American standards (Panama's Darien National Park has a size of 579,000 hectares). It is obvious that the situation in El Salvador is very precarious.

El Salvador's natural areas range from mangroves to upper montane "cloud" forests. Being entirely in the dry Pacific slope of Central America, El Salvador lacks the spectacular lowland "rainforest" of the Caribbean, which all other Central American countries possess. In spite of this, the country does have several natural areas of high regional value. These include the largest remnant of coastal flatland evergreen forest (Nancuchiname), a cloud forest (Montecristo) which qualifies as a world biosphere reserve, a classification-defying, mid-altitude, montane forest (El Imposible) and a beautiful, but little-known, Pacific coral reef (Los Cóbanos).

All told, despite the country's small size and remarkable deterioration, El Salvador's biodiversity is roughly that of the entire United States.

Unfortunately, El Salvador is rapidly losing its largest, most spectacular species of animals. In unprotected habitats, these usually disappear first, given their large territorial requirements and susceptibility to genetic deterioration when inbreeding in small groups. It has been scientifically proven that the biodiversity of a protected area is directly proportional to its size. Of the ten largest natural sites identified so far in El Salvador, the largest is just 8,000 hectares. Thus, if El Salvador does not respond now with the required energy and investment, its possibilities for participating in a regional ecotourism scheme centered around the wildlife and natural beauty of protected areas will be lost forever.

It is evident that this rapid loss of wildlands and the biodiversity that they contain, requires building national consensus around the need for an effective national parks strategy.

In setting the boundaries of protected areas, simply drawing lines on maps will not suffice. National Parks and other protected areas must be designed as ecological systems in order to preserve and stabilize the biological communities and physical resources they contain. Sometimes watershed criteria may define a protected area. In other cases, territorial requirements of major predators or nutrient influx may be the key variables. Additional complementary criteria must be identified and applied.

In addition to national parks and biological reserves, El Salvador should establish protected areas of other categories such as national forests, fragile lands, and natural parks. The national forests could support recreational as well as productive uses. Fragile lands would in fact be areas that require 100% protection -- very steep and rocky upper watersheds, for example. Natural parks, though containing native species, could also contain exotic species and would not necessarily represent native

ecosystems. Here recreational and productive uses could be optimized.

Because many of the remaining natural areas in El Salvador are small and dispersed, it seems unlikely that the government could remotely hope to administer and care for even half of them. Thus a more reasonable strategy would be to entice private sector participation. This could perhaps be achieved by promoting incentives for the establishment of private reserves and by allowing private management of national parks.

I. COASTAL RESOURCES

Coastal resources, of course, could be a topic that received extensive discussion. However, for practical reasons, the PROMESA project is mainly oriented towards non-marine, non-urban systems. Therefore, the discussion of coastal resources will emphasize transitional systems from land to sea (i.e. mangrove forest-estuary systems).

The roughly 46,000 hectares of mangrove forests in El Salvador represent just a fraction over 2% of the national territory. But the mangroves' characteristics as transitional systems make their bioproductivity enormous in proportion to their size. The complex behavior of mangroves has not received world attention until quite recently. Carefully conducted studies have revealed that mangroves are important for many species of commercially valuable fish, mollusc and crustaceans -- freshwater, estuarine and marine. The reason for their importance seems to be that mangroves support a rich food chain. This food chain is sustained by falling leaves of mangrove trees, high nutrient availability due to continuous flushing and entry of both freshwater and seawater, and favorable conditions for young offspring of fish and shellfish provided by shallow waters and protective roots. There seems to be a direct relationship between tidal amplitude and biological productivity. El Salvador has a relatively wide tidal amplitude of approximately 2.6 meters.

Several of El Salvador's most valuable commercial fisheries species depend on mangrove for reproduction and early development. These include white and brown shrimp, snapper, flounders, some groupers, jacks, crabs and several other species. The relationships between these species and the mangroves have been poorly documented in El Salvador.

Although mangrove trees are cut heavily for wood, there is strong evidence that alternatives exist for much of this exploitation. In fact much of the cutting takes place due to excessively lax and careless management (mangrove forests are national property

by law in El Salvador). Besides firewood, recreational buildings (i.e. beach houses and docks) seem to be the major sources of demand for mangrove wood.

It is virtually certain that mangrove deforestation contributes to fisheries depletion in El Salvador. So far, however, the effects of mangrove deforestation on decreased productivity of local fisheries have not been investigated scientifically.

J. RECAPITULATION OF ENVIRONMENTAL AND NATURAL RESOURCES PROBLEMS

Several conclusions flow from the foregoing description of El Salvador's environmental and natural resources problems. The country has experimented with a variety of policy measures. These have usually been narrowly focused toward single solutions and isolated outcomes. The country has not defined environmental problems so as to take into account their complexity and interrelatedness. So far, no comprehensive approach toward natural resources management has emerged. Thus, policy initiatives have not achieved expected results. Some ventures, for example in starting tree nurseries or promoting fish ponds, have appeared successful initially but later turned out to be disappointing.

Many policy proposals have not presented complete packages for natural resources management. Few policies set out clear objectives or precise strategies. Sometimes the missing element in policy was long-term commitment of government investment; other times policy foundered for lack of trained personnel. Insufficient information and lack of research have hampered both the formulation and the implementation of policy. Much reliance has been placed on regulation without either exploring other policy options or providing the governmental capacity to enforce the regulations.

In capsule form, it appears that an effective prescription for overcoming El Salvador's environmental and natural resources problems would contain the following elements:

1. Comprehensive understanding of the problem;

2. Clear statement of policy objectives;

3. Active debate of policy alternatives;

4. Proposed solutions which incorporate an array of policy actions;

5. Commitment of resources to implement the array of actions;

6. Monitoring the effects of policy in the field;

7. Revision of policy based on information obtained from monitoring.

The next two chapters of this report enlarge on this approach and present suggestions for a policy process as well as for the content of policies El Salvador could consider through the PROMESA Project.

IV THE PROMESA PROJECT AND THE POLICY PROCESS

A. RESTATEMENT OF THE PROBLEM

As expressed in the introductory chapter of this paper, a policy sets a clear, well justified objective, establishes a process for attaining the objective, and provides the resources to carry out that objective.

Despite the logic of this statement, many Salvadoran politicians find themselves baffled by the enormous difficulties of formulating and implementing clear, objective environmental policies. Environmental technicians and scientists seem to fair little better. For example, a considerable number of forestry experts have visited El Salvador from several outstanding organizations and institutions. Yet an objective, clear policy on reforestation, which actually motivates people to plant trees, is still sadly absent.

In general, environmental policy statements in El Salvador express vague, intuitive objectives that are easy to understand and are clearly desirable, but next to impossible to implement. Thus it is necessary to identify and establish criteria for policy formulation.

B. CRITERIA FOR SELECTING PRIORITIES

The rapid depletion of natural resources and degradation of the environment has led many developing nations to view these problems with increasing concern. El Salvador, with its high population density and relatively small territory, fortunately no longer represents an exception to this statement.

The greatest pressure to find solutions attaches to those problems which are considered "desperately urgent". But when one tries to select "priority" actions, the reality surfaces that the environmental world is a wide one indeed. Deforestation, soil erosion, wildlife extinction, loss of natural areas, pollution, environmental education, marine resource loss, water conservation, and climatic catastrophes are but some of the pressing problems. All of these problems are inter-related and, furthermore, each problem has several components. Among all these components, somewhere, are the "priorities".

SEMA has recently become one of the first institutions in El Salvador to make a serious attempt at setting priorities for solving environmental problems. SEMA sponsored a workshop in November, 1991, for the purpose of establishing criteria to identify priority areas for action. The workshop produced five criteria, three of which had been proposed earlier (1989) by FESA 20-30, an environmental NGO.

The following three criteria are considered the most basic for establishing environmental priorities:

1. **The problem is causing irreversible damage**

   Loss of natural ecosystems is an example of an irreversible process. In contrast, deforestation and top-soil loss, while certainly important and at times critical, are processes that can be reversed, even if long periods of time are sometimes required.

2. **The problem is an obstacle to solving other problems**

   Lack of environmental education is seen as a serious handicap for both private and governmental support and investment in solving environmental problems. However, lack of adequate programs and material with which to carry out this education, may be the true basic problem in the sense of constituting an obstacle to progress toward a solution.

3. **The problem is a cause of environmental damage, not an effect**

   While few would question the importance and value of medical campaigns for preventing dysentery, confronting water pollution attacks the actual cause of the disease.

Two additional criteria for setting priorities are:

4. **The proposed solution should carry a high pay-off relative to other possible solutions**

5. **The proposed solution benefits a large number of low-income people**

These two latter criteria indicate desirable attributes of solutions but they are not related to the urgency of the problems. However, their value is evident and thus they have been retained here.

The criteria established by SEMA for setting environmental priorities present a good starting point for PROMESA. PROMESA should adopt these criteria as it designs its program in environmental policy.

C. ELEMENTS OF WORKABLE POLICIES

Through application of the criteria for setting priorities, a few focal points for policy action will emerge. PROMESA will then propose policy measures which speak to the priorities. Such measures should evince the following characteristics:

1. Technical desirability; the proposed policies should promote technologies based on accurate information about the effects the technologies will have on natural resources and on economic productivity. The proposed policies should also be based on accurate information about their broader environmental and social impacts.

2. Financial feasibility; the proposed policies will require application of financial resources. It is important to predict in advance the magnitude of these resources, their source, and their duration. If possible, some determination should also be made of indirect financial impacts likely to result from the policy.

3. Political viability; the proposed policies should fit into the broad framework of national policy. The institutional mechanisms proposed for formulating and implementing the policies should mesh with existing roles. If they don't, special attention must be given to defining new roles that will not create conflicts.

D. A PROPOSED POLICY PROCESS THROUGH PROMESA

Policy statements should contain clearly stated goals and objectives. They should also establish mechanism and assign institutional responsibility for putting policy into effect. Environmental policy in El Salvador is a new and complex field. Only recently have national institutions begun to grapple with it. PROMESA can greatly assist on-going efforts at formulating environmental policy by supporting a comprehensive process for that purpose.

The following scheme sets out a model process for environmental policy formulation that should work well in El Salvador.

Step 1: Identify themes

Using the criteria for determining priorities discussed above, determine the general theme for which to formulate policy.

Step 2: Compile background information

It is essential to establish policy on as a solid a base of information as possible. Compiling background information will sharpen focus on the theme to which proposed policy relates. It also points the way toward pragmatic policies for that theme.

Step 3: Formulate initial policy statements

An initial statement of policy provides a starting point for public debate on the proposed policy. This statement, and subsequent revisions to it, should incorporate the basic elements of workable policy noted above.

Step 4: Deliberate proposed policies

Broad-based discussion of policy proposals will elicit suggestions for their improvement. It will also inform people that a particular policy theme is under discussion from which revised policy will probably emerge. This enables people to anticipate changes in policy. PROMESA should foster a participatory, public process for deliberating policy.

Step 5: Reformulate policy statements into final form

The results of the deliberative process should be incorporated into final, formal statements of policy. Such statements will usually issue as laws, or regulations, or memorandums of procedure which state policy in formal terms.

Step 6: Promulgate policy measures

The formal statements of policy that result from step five may require official enactment in order to become operational. Enactment may consist of passage of a law by the National Assembly, adoption of a resolution by a Ministry of the government, publication of a regulation adopted by a government agency, etc. Whatever the formal procedures required, it is important that they be taken so policy can become official and operational. It is important that these official policy statements contain complete statements of all the basic elements of a policy measure. That is, they must state policy objectives, mode of operation, institutional responsibility, and a process for monitoring effects of the policy. Usually, all the elements will appear in a single statement. In some instances, however, the complete policy may be set out in several separate instruments, e.g. a statute accompanied by a set of regulations.

Step 7: Put policies into operation

Of all the steps, this is the most important. This step probably cannot be accomplished unless the six previous steps have occurred successfully. But even an

excellent statement of policy, arrived at by a flawless process, carries no guarantee of successful implementation. Among many factors that affect policy implementation, two stand out: institutional readiness, and availability of resources.

Upon issuance of an official policy statement, some institution or group of institutions must be prepared to carry the policy out. Nearly always this means that the implementing institutions must have resources available for implementation. These resources include trained, motivated personnel, equipment, operating funds, etc. These all should be identified during the earlier steps in the process. If they are not in place at the time the policy goes into effect, provision must be made to put them in place as quickly as possible.

Step 8: Monitor effects of policies

The purpose of this step is to check up on policy after it has been in operation for some time. Monitoring will reveal whether the policy is accomplishing its intended objectives and whether it is having any unintended side effects. Results of monitoring feed back into the policy process to modify policy as necessary.

E. FITTING THE PROMESA POLICY PROCESS INTO THE SALVADORAN CONTEXT

E.1 The Roles of CONAMA and SEMA

CONAMA and SEMA, both very new institutions, have gotten off to a vigorous and productive beginning. They are small, staffed with capable people, and backed with adequate budgets. Since their inception they have produced the *Plan de Acción del Medio Ambiente* and the *Plan de Emergencia del Medio Ambiente*. These documents demonstrate a high level of professionalism and the ability to perform complex work expeditiously. Both documents result from a participatory public process.

Unquestionably, PROMESA should support CONAMA and SEMA in their current roles. The work they have already produced fits directly into PROMESA both as to its contents and as to the process from which it proceeds. The two environmental plans contain information which is pertinent to all aspects of the PROMESA Project. PROMESA can use the participatory process already established as a model for its own work.

CONAMA and SEMA function well, in part, because they have clearly defined roles. They deal with policy formulation and policy dialogue. They do not implement policy or perform any field work in environmental management. PROMESA should acknowledge these roles and work toward strengthening them. It is important, however, not to overload CONAMA and SEMA nor to distract them by expanding their functions much beyond their current roles. They have a definite place in PROMESA in policy formulation, networking, dialogue, and expanded participation in policy debate. They probably should not move into field work.

E.2 Role of Public Participation

Democratic processes have emerged fairly recently in El Salvador. The country supports freedom of expression and many organs and organizations exist for that expression. But the country does not have a tradition of successful translation of democratic expression into functional public policy. That tradition is currently in the making.

PROMESA should support an expanded role for public participation in making environmental decisions. The Project should fashion this role carefully, using recent successful public processes as guidelines. In close consultation with knowledgeable Salvadorans, PROMESA could develop public forums for policy dialogue. The Project could also hold seminars for an array of audiences and publish a series of documents that would inform debate on environmental questions. The process which produced the *Propuesta del Cerro Verde* serves as an example.

E.3 Role of Legislative Commission on the Environment

As noted above, the National Assembly has recently established a commission on environment. PROMESA should cultivate close ties with this new commission and with the National Assembly generally. The Assembly, and especially the commission, are essential participants in deliberating and enacting environmental legislation. They are also important participants in the dialogue on environmental policy measures which do not necessarily require new legislation, like defining the respective roles of government agencies and NGOs in environmental field work.

E.4 Role of Public Agencies like CENREN and CENTA

Several government agencies, mostly dependencies of the Ministry of Agriculture, have responsibilities for

environment and natural resources. These agencies are the implementing arms for current policy. They perform several central functions:

- managing natural resources in the field;
- determining availability and quality of natural resources;
- applying regulations on public and private use of natural resources; and
- monitoring natural resource stocks and environmental impacts.

As discussed in greater detail elsewhere in this report, field agencies in El Salvador, like CENREN, for example, suffer from a variety of weaknesses which reduce their ability to perform their functions well. These weaknesses may be summarized as:

- allocating too large a share of agency budgets to personnel costs;
- paradoxically, paying personnel poorly and offering few other professional incentives to motivate personnel;
- concentrating in the capital and major towns while providing insufficient presence in the countryside;
- operating with inadequate vehicles and other equipment;
- attempting to operate without sufficient funds to pay for full-scale operations.

The question facing PROMESA is: what role, if any, should these agencies have in the Project. Probably the best role, in most instances, consists of a combination of feeding information into the policy dialogue process, participating in that process, and performing field functions commensurate with the agencies' capacities. The agencies merit at least some institutional strengthening by way of training, equipment, better salaries, etc. But they probably cannot carry the full burden of implementing the Project's field activities. That role should be shared with NGOs.

E.5 An expanded Role for NGOs

Historically, NGOs, though numerous, have not been influential in El Salvador. As illustrated in the table on page 17 above, NGOs have interests and capacities which should enable them to participate well in PROMESA.

NGOs generate information and also compile and disseminate information. Some of the best sources of information on what is going on in the country and what kinds of actions might really solve problems lie in NGOs. There are environmental NGOs, development NGOs, NGOs interested in

education, health, and social transformation. Many are already involved in advocacy and in deliberating policy.

PROMESA should incorporate NGO participation into the process of formulating environmental policy.

Many NGOs engage in field work, much of it with an environmental focus. Some work with communities to improve public health; others work with farmers to increase productivity; still others operate conservation projects and manage protected areas. All should be welcome in PROMESA. In general the NGOs perform their field work efficiently and at a high technical standard. Collaboration between NGOs and public agencies would probably provide the best recipe for implementing PROMESA. NGOs could also assist in monitoring the Project. The Project should offer institutional strengthening to NGOs as well as to public agencies.

As PROMESA moves from design into implementation, it is important to match specific Project needs in all four components to NGOs with the capacity to meet those needs.

F. TRAINING FOR POLICY ANALYSTS, DECISION MAKERS AND NGO LEADERS

A good place for PROMESA to start training for solving environmental problems is by providing adequate information. The traditional "the sky is falling" approach should be avoided. Frightening policy makers is probably not the best way to obtain good policies. Well-organized workshops on specific topics should prove more useful. In such workshops, well-prepared lectures should document the physical (or chemical, or biological) problem, its social consequences, and its economic consequences. Alternative solutions, stating the advantages and disadvantages of each, could then be presented and discussed. Finally the workshops should consider the social, economic and environmental benefits of corrective measures and actions, at least on a hypothetical level. The fact that "environmental" benefits are expressed separately from social and economic ones should not be misleading. The results of many environmental projects of course produce direct economic and social benefits. However, in addition, many environmental benefits go beyond immediate social or economic well-being (e.g.: genetic bank reserves).

The above-stated workshops should be held one by one to explore each of the twelve or so major environmental areas (soil conservation, wildlife management, water pollution, etc). An apparently tedious procedure, this seems to be necessary both as information and for intellectual exercise. Thus it is important

to enliven the workshops with presentations and documents which are well illustrated, motivating, and easy to understand.

Another important training device, especially for NGO leaders, is providing information on how environmental problems are being solved elsewhere. Even though different cultures, technologies, and geographies will produce different "ideal" solutions, the comparative approach is still one of the best methods for augmenting local technology and solutions.

G. COORDINATION WITH OTHER COMPONENTS OF THE PROMESA PROJECT

It is clear that environmental policy overlaps with the other three PROMESA Project components: environmental education, institutional strengthening, and field activities. This overlap necessitates integration of all components over the whole seven-year span of the Project.

The **environmental education** component interests policy makers in the Ministry of Education, the National Council of Culture, the Ministry of Agriculture and some NGOs. Helping these institutions to address their interests by determining what strategy to employ is a form of policy making. The way in which such a strategy is implemented is an issue for the environmental education program itself. Both the policy team and the education team will have to work jointly to formulate educational policy that is really relevant to environment and natural resource management.

The **institutional strengthening** component overlaps with policy, especially as regards training for policy makers, though less so for resource managers or administrators. Efforts at coordination between the two components should concentrate on the higher policy-making levels usually not reached by environmental projects. CONAMA, the Ministry of Planning (MIPLAN) and the central Planning Office of the Ministry of Agriculture (OSPA) would seem to be prime beneficiaries of such coordination, especially CONAMA. Such coordination would introduce environmental considerations into national economic and social policy. Certain key NGOs might also be included. Again, providing assistance for the identification of goals, strategies, required means and financial sources, as well as for elaborating and implementing projects, can be invaluable tools for eventual policy formulation.

The **field activities** component appears, in principle, to have little overlap with policy formulation. It is the most promising component, however, in terms of demonstrating the value of environmental planning and policy application. Thus the need to design a good strategy for integrating efforts of this component with policy. With care, the field activities component should

present an opportunity for practical exercises in policy implementation.

V. PROPOSED POLICY ACTIONS UNDER PROMESA

A. MODES OF POLICY ACTION

As in most national activities, there are several ways to implement environmental policies in order to achieve desired changes and actions. One must constantly keep in mind the several goals being sought through environmental policy in order to reach them. As has happened in El Salvador with freshwater fish culture, it is easy to lose track and end up with spectacular, but essentially useless, results.

The principal general goals of environmental policy are:

1. The recovery of depleted natural resources so as to maintain them in the future at optimal levels of quantity and quality.

2. The development of sound, productive, sustainable techniques for utilizing native natural resources.

3. The recovery, improvement, and maintenance of environmental quality and the prevention of further degradation of natural resources.

4. The design of development programs that respond to pressing local needs without diluting available human and institutional resources or duplicating their efforts.

5. Monitoring indicators of environmental quality and availability of natural resources and patrolling in the field to enforce restrictions on resource use.

There are four modes of policy action which the PROMESA Project can employ to advance environmental policy in El Salvador:

1. Public Investment

2. Information

3. Incentives and Disincentives, and

4. Regulation

The discussion of these modes draws from the work of Jochen Eigen, currently with Habitat, a UN agency headquartered in Nairobi. Each of the four modes is defined and described below as a distinct entity. In practice, a comprehensive policy may well employ more than one mode to reach its objectives.

A.1 Public Investment

Public investment refers to the expenditure of public funds for long-range public purposes. Infrastructure is a conspicuous example. Governments build highways, dams, airports, power plants, and other facilities which form the basic infrastructure to support private sector economic activity. These facilities also benefit citizens in their personal lives. Other types of public investment include investment in education - for facilities, for personnel, for materials - investment in public health, investment in communications, and so on.

Public investment is probably the most powerful mode of policy action because it produces large, tangible effects quickly. On the other hand public investment requires the availability of public funds to invest. In the field of environment, examples of public investment include:

a. employment, training, and motivation of qualified managerial and technical personnel to manage natural resources;

b. purchase of land for protected areas and construction of facilities in the areas;

c. production or purchase of satellite images, aerial photographs, and maps to catalogue actual and potential land use;

d. construction and staffing of laboratories to test soils, or analyze pesticides, or determine pollutant levels in water samples.

Environmental policy measures in the area of public investment seek to answer the question: How can limited public funds be best invested to obtain maximum benefits from natural resources management and to alleviate environmental problems?

A.2 Information

This report dwells at length on the connection between solid information and sound policy. All policy, regardless of which mode it employs for implementation, relies on good information. Decisions on public investment require information on alternatives, on costs, on rates of use, on projected returns, etc. Decisions on incentives rest on information about the structure of the economically active population, products, prices, substitutes, and so on.

When we speak of information as a mode of policy action, however, we are using that term in a special sense. Information as a mode of policy action refers to policy that operates by providing information in the expectation that people will make private use of the information to advance a public purpose. As an example, a policy to provide farmers with information about soil quality should induce the farmers to use land more productively. Information on how to conserve soil should lead to improved soil conservation practices.

Information works as a mode of policy action because most people will take advantage of information that enables them to advance their own interests. This attribute of information as a motivator has an important limitation. Few people will apply information for the purpose of benefitting someone else. Thus if a landowner is informed that his or her practices contaminate water to the detriment of downstream users, he or she probably will not change his or her practices. If the same landowner is informed that conservation measures will increase his or her yields, it is much more likely that he or she will adopt those measures.

Information may be the most important of the four modes to apply in El Salvador at this point. Referring back to the criteria for establishing priorities, one notes that unresolved aspects of one problem may constitute obstacles to the resolution of other problems. With reference to policy, it is evident that lack of basic information can be a major obstacle to defining and implementing actions in public investment, incentives and disincentives, and regulation.

There are three important aspects to using information to formulate policy:

1. Identifying types of information that are essential to obtain;

2. Obtaining the right information through various forms of research and information transfer; and

3. Disseminating the information to the right people in the right way (extension, demonstration projects, environmental education) so that it will be readily available and used.

It is worth reiterating that a nation that does not know its natural resources and environment well (or that, at best, understands them poorly) can not expect to manage them to its advantage.

A.3 Incentives and Disincentives

Incentives and disincentives refer to encouragements or impediments to private action created by government. Often these take the form of tax breaks or tax surcharges. Thus, in some countries, farmers receive property tax relief for holding their land in agriculture rather than developing it for other uses. In other situations, high quality land is taxed at a higher rate than low quality land, thereby pushing people to either increase productivity or lose money on inefficient operations.

In addition to affecting taxes, incentives and disincentives can be used to channel credit, to forgive indebtedness, to set user fees, or in other ways. Incentives and disincentives work well because they motivate people to further the public interest by furthering their own private economic interest.

Incentives and disincentives are probably the best inducements for the population at large, especially if one assumes that the will to do things right predominates in the Salvadoran population. Technical assistance, training, credits, tax exemptions and other tools could all be employed to restore the environment and to manage natural resources.

A.4 Regulation

Regulation brings the police power of the state to bear on private activity. It operates by establishment of rules and enforcement of penalties for infringement of the rules. It requires investment in a police force, in judicial process, and in equipment and facilities for enforcement. It modifies behavior through compulsion rather than persuasion. This has obvious drawbacks. Nonetheless, regulation is an important component of well-rounded policy, including environmental policy.

The best way to control use of a dangerous, but otherwise effective, pesticide is to proscribe its manufacture, sale, use, and possession and to enforce those proscriptions. Other environmental regulations prohibit taking wildlife during closed seasons or in protected areas, establish penalties for dumping pollutants into water supplies, and so on. On the other hand, some regulations, like trying to control cutting of trees on private land, will probably never work well. Clearly regulations are essential to achieving environmental management. But in contemplating regulations it is important to set up effective apparatus for their enforcement.

Regulations, considered by some as a "last resort", have so far received the greatest emphasis in environmental policy in El Salvador and in many Latin American countries. Reliance on prohibitions reflects a general lack of basic knowledge as to what must be done to manage natural resources and maintain environmental quality. Such reliance also facilitates, and even promotes, corruption and excessive expenditure on police-like controls.

B. POLICY PROPOSALS FOR PUBLIC INVESTMENT

B.1 Overview

The discussion of public investment as an important mode for implementing environmental policy relates to a point stated above: in order to work well, a policy must set clear objectives and it must lay out a strategy for attaining those objectives. That is policy is not an end in itself but a means to an end -- in this case the end of making wise public investments in natural resources management and environmental conservation.

Until now the avoidance of setting long-term goals has handicapped the ability to formulate environmental policy in El Salvador. Most national goals are set within a maximum time span of 5 years. Although this time frame coincides neatly with the period for which a given government is elected, it limits ability to make long-range public investments. This limitation has adverse consequences for the field of environmental affairs.

Aspects of natural resources management and environmental protection in El Salvador which require public investment include:

a. Personnel;
b. Infrastructure; and
c. Equipment and materials.

Obviously, in order to be able to make public investment, a government must have reliable revenue in sufficient amounts. Currently, the World Bank and the government of El Salvador are discussing a project which would evaluate the income side of public revenue in the country. The Project would propose structural reform to increase revenue collection.

B.2 Public Investment in Personnel

The "personnel problem" in the field of environment reflects deficiencies in national planning and policy-making.

Local universities and technical schools do not offer degrees in any of the specialized fields which comprise the broad realm of environmental sciences. Thus, soil scientists, forest engineers, wildlife biologists, hydrologists, meteorologists, marine and fisheries biologists, systems ecologists, and pollution analysts all must study abroad. For all of Central America as a region, let alone just for El Salvador, it is prohibitively expensive and technically not feasible to teach anything but elementary aspects of these disciplines.

The following points show some of the reasons why it is difficult to find and keep adequately trained personnel to work in the fields of environment and natural resources in El Salvador:

1. Trained personnel are preferred for administrative posts, thus minimizing technical output and research.

2. The Salvadoran government has not, to date, identified key areas where training is required and actively set out to obtain scholarships and training for qualified and interested candidates.

3. Training, especially through scholarships abroad, is regarded as a "reward" or "positive stimulus" to compensate for low salaries or faithful work. It is rarely used within a strategy for institutional development.

4. Trained professionals returning from abroad rarely have set tasks to perform upon their return. Increased salaries are not considered necessary; rather the returning professional must usually meet an obligation to "work for two years for each year of training". This is so even if the individual's work has nothing to do with the training received.

5. Because of the tendency to employ trained personnel to carry out administrative tasks, returning trained personnel are frequently viewed as threats by the people who occupy administrative posts. Thus people who return often find themselves isolated in an office that lacks resources and support. All too often, such a person then resigns and leaves the government.

6. Very few government offices have set research programs and priorities. Thus, many good training opportunities are considered "trivial" and no candidates are presented for them.

7. During the last two decades, government policy with regard to salaries in the public sector has caused the phenomenon of "salary flattening". Probably more for political than for social considerations, the criterion for salary advancement within the government has been that "increases should benefit only those who must struggle hardest to survive (i.e. those with lowest income)." The result is that now, in some government offices, trained professionals at the level of B.Sc. or higher actually earn the same salary as the driver or the cleaning lady. In fact in some cases they may even earn less. Many institutions now have an excessive number of less well-trained personnel and virtually no technical leadership. CENREN is currently one such case as noted above on page 12.

   Needless to say this policy regarding public sector salaries has also led to the resignation of qualified people and difficulty in replacing them.

It is clear, then, that there is no policy for maintaining qualified professionals in the public sector. In fact current policies actually discourage public service for professionals. The PROMESA Project could confront this problem by supporting investments in training and by working with the government to improve salaries and job security in the natural resources agencies.

B.3 Public Investment in Land Use Classification

A solid basis for classifying land capability is the cornerstone for other efforts in natural resources management. A land capability classification system based on ecological criteria would serve as a guide for public investment in infrastructure, research, even personnel.

The PROMESA Project should advocate the adoption and application of a national system for determining land capability and classifying land in accordance with its capacity. This will entail declaring the public intention to adopt such a system and then designing a system that reflects conditions in El Salvador.

To put a land classification system in place will require public investment in training, in satellite images, aerial photographs, and maps, and in production and dissemination of documents and maps that describe the system.

B.4 Public Investment in Land Titling and Land Registry

In El Salvador, land titling is a cumbersome, time-consuming, expensive process. Land registries are

incomplete and out of date. Many people hold land without title, making their possession precarious.

A streamlined process for land titling and registry would facilitate improved natural resources management. It would also help resolve some of El Salvador's other serious problems like resettlement of persons displaced by the conflict. Such a process would make it easier to match land owners with land capability. It would facilitate programs in technical assistance, taxation, and other incentives. Accurate land registries and agile titling procedures would even facilitate research and make regulation less complicated.

The PROMESA Project, possibly in conjunction with the USAID Office of Democratic Initiatives, should work with the Salvadoran government to analyze how the existing process for land titling and land registry could be simplified. After learning where the bottlenecks are in the current system, policy could be revised to eliminate them. Then investment could be made in training, computers, information systems, etc. to bring new titling and registry processes on line.

B.5 Public Investment in Monitoring Environmental Quality

Existing capacity in El Salvador to monitor environmental quality is rudimentary. A few laboratories exist but they are understaffed and underequipped.

Any venture in natural resources management will require environmental monitoring, both to help establish management goals and practices and to determine how well management is working. PROMESA should support investment in environmental monitoring infrastructure. After determining needs, investment should cover facilities, equipment, personnel, and training.

The following areas for environmental monitoring are among those which PROMESA could explore.

1. Analysis of physical, chemical, and biological properties of soils;

2. Water monitoring for quality, quantity, and dynamics; (This would entail coordinated efforts between CENREN, for physical and chemical properties, and the Ministry of Health for biological characteristics.

3. Capability of government agencies and NGOs to perform environmental impact studies;

B.6 Public Investment in Protected Areas

Because so little of El Salvador's national territory benefits from formal protection, it is imperative to invest immediately in expansion of the country's protected areas.

PROMESA should support a policy of public purchase of lands for inclusion into national parks and also into other types of protected areas like watershed protection zones. In addition to outright purchase of lands, the protected areas policy could also consider payments to private landowners for restrictions on usage of lands needed for protection.

The Instituto Salvadoreño de Transformación Agraria, ISTA, holds large amounts of land throughout El Salvador. Some of this land is in fairly unspoiled condition and overlaps with areas which SEMA has designated as prospective wildlands. These lands could serve both to conserve biodiversity and to provide other environmental services like watershed protection. PROMESA could facilitate dialogue between ISTA and SEMA on which lands are most appropriate to set aside for protection and on how to ensure their protection in the field.

In addition to land purchase, public investment in protected areas is needed for infrastructure, personnel, and public education. NGOs can probably play a large role in implementing policy on investment in protected areas.

A well defined policy on protected areas could include:

1. Inventories of ecological associations to include areas, condition, species, and critical sizes of habitats for key species.

2. A strategic plan for the whole national system of protected areas.

3. Development of a management plan for a wildlife reserve in Lake Jocotal and Nancuchiname.

4. Assistance to CENREN and FESA to prepare an integrated pilot management plan for El Imposible National Park.

5. Quantification of the need for electric utilities and water agencies to acquire fragile lands for protection in upper watersheds.

6. Assistance to local governments and communities for forest fire prevention and control.

B.7 Public Investment in Research Capacity

The field activities component of the PROMESA project provides an excellent opportunity to carry out applied research. Research through PROMESA would produce valuable information on natural resources and it would also train researchers and strengthen research institutions.

The PROMESA research agenda could include comprehensive study of watersheds, fisheries, and coastal resources that probably would never occur in El Salvador but for the Project. The comprehensive research agenda could cover the following:

1. Design of models for studying and monitoring watersheds as ecosystems and for integrated watershed management.

2. With CENREN, establish a pilot watershed study, preferably in El Imposible/Barra de Santiago. This study could lead to a pilot project of municipal management of microwatersheds.

3. Establish a small research center in Barra de Santiago as a base for the study of mangroves as transitional ecosystems between land, freshwater, and sea. CENREN, AMAR, and the National University could engage in research at this center.

4. Establish management models for commercial harvesting of free-living fish populations.

C. POLICY PROPOSALS FOR INFORMATION

C.1 Overview

Unless they are based on solid information and methods, environmental policies will most likely fail. With regard to most environmental problems, the basic information required for long-term, effective policy-making is simply not available. How does one design credits for tree plantations without knowing growth rates and yields per hectare? How does one establish a closed season for a given shellfish when its breeding period, behavior, and location are unknown? Whereas these two examples illustrate minute points, it is convenient to recognize two broad categories in which lack of adequate information is a serious obstacle to policy formulation.

The first category is lack of knowledge of local needs. The problem of failing to understand local needs often arises when planners go into a region and instantly propose

solutions. Regardless of experience or expertise, this approach usually causes one to overlook the most pressing local needs. Nor are most of the traditional socio-economic studies of much use for assessing local needs.

Careful local studies must be made to ensure that policies can be implemented in ways which will be acceptable to the local inhabitants. Such studies require participation not only by environmental scientists but also by professional cultural anthropologists. It is a great pity and a major handicap -- in particular in developing countries -- that anthropology is still so widely viewed as a purely academic discipline. Time, patience, and cultural penetration are required to truly identify local needs so as to ensure acceptance and success of proposed policies. Sometimes, in addition to determining local needs, it is important to also obtain knowledge of basic customs. Such information may be vital to selecting the right strategy to implement a given policy.

The second broad category of required information consists of knowing local resources well enough to incorporate them into the proposed solution. For example, too often exotic tree species are promoted not because local needs and preferences have not been identified. Rather, growth, yield, and other basic aspects of local tree species are unknown to the foresters (often outside experts with little local experience) who design the work.

The PROMESA Project appears to be an ideal vehicle for producing a series of informational documents designed specifically for people who formulate policies. These will require good indexes to ensure that the necessary information is included and is easy to find. The documents should be written in non-technical language but with professional precision. Superfluous data should be avoided so as not to distract the reader.

C.2 Information on Land Use Capability

Once a land use classification system is in place, it is important to make information about land capability available to the public. This information could take the form of maps at a large enough scale that they would really be useful to landowners. A variety of manuals and other documents could accompany the maps and provide information on resource management and conservation.

Information on land capability should also be provided to government agencies and NGOs to assist them in planning, in research, and in operations.

C.3 Research and Information Program in Natural Resources Management

As an adjunct to supporting public investment in research capacity, PROMESA should advocate a policy of applied research in natural resources management. This research could use the facilities and personnel provided through public investment. The applied research program could undertake the following types of research:

1. Establish trial plots to determine interaction between soil, climate, and water application on different soil types. The trials should cover both forestry and agricultural plots.

2. Determine soil conservation measures that minimize soil loss and improve soil structure and depth.

3. Determine agricultural practices that optimize the physical, chemical, and biological components of soil.

4. Determine methods to measure soil formation and soil loss.

5. Identify end uses of water resources in order to design a program of efficient water use.

6. Augment studies currently underway through the USAID Madeleña Project to perform inventories of tree species and wood properties. These studies would identify markets and also point the way toward satisfying subsistence needs.

7. Perform inventory of wildlife and wildlife use to develop wildlife management and production strategies.

8. Carry out market studies on different commercial fish species and research on appropriate fish farming technologies.

D. POLICY PROPOSALS FOR INCENTIVES AND DISINCENTIVES

D.1 Overview

In contrast to regulations, incentives and disincentives motivate action rather than control it. It is clear that the vast environmental deterioration that El Salvador has suffered will not be repaired simply by regulating future actions. Corrective measures must be encouraged in practical, objective ways. But it is not practical to expect a financially-constricted government to foot the

whole bill for past carelessness, ignorance, or even wanton destruction. In most cases, the best type of governmental action is to provide conditions through which all citizens can participate in improving their environment. This implies that the citizen must feel that a better environment benefits him or her directly and also his or her family and neighbors.

Incentives must be oriented towards promoting the adoption of environmentally sound practices. Usually, the practices promoted through incentives will generate direct benefits to those who adopt them (e.g. soil conservation methods should result in higher crop yields and therefore greater income). In these cases, if assistance and encouragement are provided during a transition stage, it can be expected that soon the resulting benefits will be motivation enough. At this point the transition will have been completed. In some cases, however, the benefits generated will be of more universal nature (i.e. social, national, etc.). In such cases greater support and incentives will be required. Only in exceptional situations (e.g. major national parks) can it be expected that full State intervention -- in this case for land purchase and protection -- will be required.

Characteristically, the information deficiency with reference to environment and natural resources impedes the establishment and implementation of environmental incentives. Incentives and disincentives must be based on factual circumstances to be successful. To motivate a person to carry out a fisheries or reforestation project only to be faced with severe losses will serve as a strong disincentive to that person as well as to other people who witness the loss. Situations like this have already occurred in El Salvador. Enticed by government incentives, people have invested in tree plantations or in fish ponds which later have proven incapable of providing sufficient yields to compensate for costs.

Certainly, even well designed projects may fail. But this only underscores the point that, in a transitional stage of development, at least minimal guarantees must be provided so that unfortunate failures do not fall entirely on the shoulders of volunteer participants in the projects. Rather, it is important to push these volunteers to succeed so that others will follow them. In other words, policies to promote untested environmental actions require the support of incentives (not just leap-into-the-water credits) currently not contemplated in El Salvador.

If the basic purpose is to motivate action, then even disincentives must motivate people. As an example, setting higher taxes or higher interest rates on credits for

landowners whose practices degrade soils or vegetation sends a clear message without creating a negative feeling of injustice. The conservation measures encouraged through disincentives must be profitable. Otherwise such policy measures become self-defeating.

D.2 Incentives and Disincentives Tied to Land Use and Natural Resource Capability

In principle, the land use capability classification system advocated in the section on public investment could provide a basis for policy decisions with regard to incentives and disincentives. Simply put, policy could provide incentives for land uses that were consistent with land use capability. Policy on disincentives would apply to land uses that were inconsistent with capability.

Incentives and disincentives fall into several categories. Tax rates can be adjusted lower to provide incentives and higher to provide disincentives. El Salvador currently does not tax rural land and land taxation is a volatile issue in the country. PROMESA might explore the possibility of land taxes as a source of revenue and the further possibility of tying tax rates to land use. The lowest tax rates would apply to land uses that matched capability - agriculture on agricultural land, forestry on forest land. Higher tax rates would apply to overuse, like agriculture on forest land, or underuse, like unimproved pasture on agricultural land. Of course allowances would have to apply to appropriate technology like terraces on forest lands.

Technical assistance is another incentive that could tie to land capability. Technical assistance could be available only for activities consistent with land capability and unavailable for underuse or overuse.

Often subsidized credit is among the incentives used to motivate production activities. The theory is that landowners will seek credit and that, if credit is only available at subsidized rates for certain activities, the landowners will engage in those activities in order to obtain the subsidized credit. Subsidized credit has several drawbacks. It creates negative impacts in the broader economy and it is hard to monitor whether the credit is really being put to its intended purposes. PROMESA may well avoid subsidized credit, but if the Project does embark on such a program it could apply to land use.

Another type of fiscal incentive to induce private conservation is direct payments to landowners for performing certain acts like reforestation or setting land aside for protection. Direct payment programs suffer from the same

defects as subsidized credit. Should PROMESA decide to become involved in direct payments it could use them for such things as natural forest management, reforestation, soil conservation infrastructure, and private preserves.

One type of incentive that might be tailor-made for El salvador would be forgiveness of land debt in exchange for conservation practices. As a result of agrarian reform, there are many cooperatives in the country which own land against which they have an obligation to pay debt resulting from compensation to former owners. The cooperatives do not have the means to pay these debts and they probably never will. Meanwhile, presence of the debt obligation prevents the coops from obtaining access to credit. If the debt were forgiven to cooperatives which instituted conservation practices, those cooperatives would have an excellent incentive to engage in conservation. The debt would be repaid indirectly from the public benefits accruing from conservation and the cooperatives would enjoy better financial health. PROMESA could promote this "debt for nature" concept, at least at a pilot level.

In addition to the types of activities just noted, PROMESA could explore providing the following types of incentives and disincentives:

1. Financial and technical assistance for pilot projects on wildlife farming.

2. Disincentives for inappropriate fish harvesting practices.

3. Taxes on timber and fuelwood set to reflect real costs of forest replacement and management.

D.3 User Fees Tied to Costs of Conservation and Management

In El Salvador, fees for basic goods and services like water and electricity do not cover the cost of providing these goods and services. This is especially true if costs of natural resource conservation and management are taken into account. USAID El Salvador is currently considering a national accounts project that would explore this very point. It seems only reasonable that the price of water reflect not only the cost of capturing the water, purifying it, and delivering it to the consumer, but the cost of maintaining the watersheds that produce the water.

Probably one of the most useful and practical policy interventions that PROMESA could advocate is increasing fees for water and electricity, and, possibly, for such services as sewerage and solid waste disposal. Higher fees would

provide revenue to perform natural resources management. Increased rates for domestic water, irrigation water, and electricity would also encourage conservation of these resources.

With regard to parks and recreation, the Project could consider an environmental education program which, by stages, would permit greater access and use of park facilities and participation in park activities. Such programs are known as volunteer visitor selection programs.

E. POLICY PROPOSALS FOR REGULATION

E.1 Overview

Environmental regulation in El Salvador relies on two basic mechanisms: penalties and permits. Penalties exist under current laws for such acts as cutting trees illegally, fishing out of season, hunting protected wildlife, and numerous other acts. Permits are required for tree cutting, fishing, and other activities. A person who performs an act that requires a permit without obtaining the permit incurs a penalty.

Neither the penalties nor the permits work very well. People who seek permits become embroiled in bureaucratic red tape. Lots of violations occur but relatively few are prosecuted. When penalties are imposed, they frequently bear no relation to the gravity of the offense. Some penalties are too severe and others are too lenient.

E.2 Some Permits and Penalties that PROMESA Could Consider

Notwithstanding the poor track record of environmental regulation through permits and penalties, PROMESA should consider supporting both permits and penalties in certain instances.

Permits would probably work for access to fisheries via licensing programs. In fact, it is probably impossible to manage fisheries without permits. The same might be true for certain other activities like cutting mangroves and taking wildlife. A system of penalties would complement the permit system. To work well, both penalties and permits must be targeted closely to valuable resources that require protection. Operating the permits and penalties will require well-trained, dedicated personnel. The system must be administered with a minimum of bureaucracy. A resource user should be able to obtain a permit quickly and at reasonable expense. Permit fees could be indexed to the amount of resource covered by the permit. Under such a

system, a license to fish at a commercial scale should cost a lot more than a license to fish for subsistence. Similarly, the penalties for fishing without a license or in violation of the terms of the license should be stiffer for a commercial operator than for an artisan.

Penalties are probably also appropriate to control entry into protected areas, to protect forests from man-caused fires, and to prohibit certain acts that pollute waters. On the other hand, penalties will probably work less well to control land use or to require soil conservation measures.

VI. SYNOPSIS

The critical state of environment and natural resources in El Salvador combine with existing knowledge and experiences in the country to make immediate environmental action imperative. Huge gaps in information exist, however, as regards the precise status, properties, and behavior of natural resources and environment. Because of these information gaps, it is virtually impossible to formulate policy and undertake long-term planning that is objective and sustainable. The scant basic knowledge that exists concerning local environment and natural resources limits ability to define regulations, incentives, disincentives, and actions. This paper reflects this imbalance by emphasizing the importance of information. It presents examples of ineffective policy implementation attributable to lack of information. The basic hypothesis is that each country's environmental and natural resources problems are unique. Therefore, each country must undertake its own research and design its own actions to solve its problems. Knowledge and experiences from other countries can point out the path, but each country must make the path -- and walk it -- on its own two feet.

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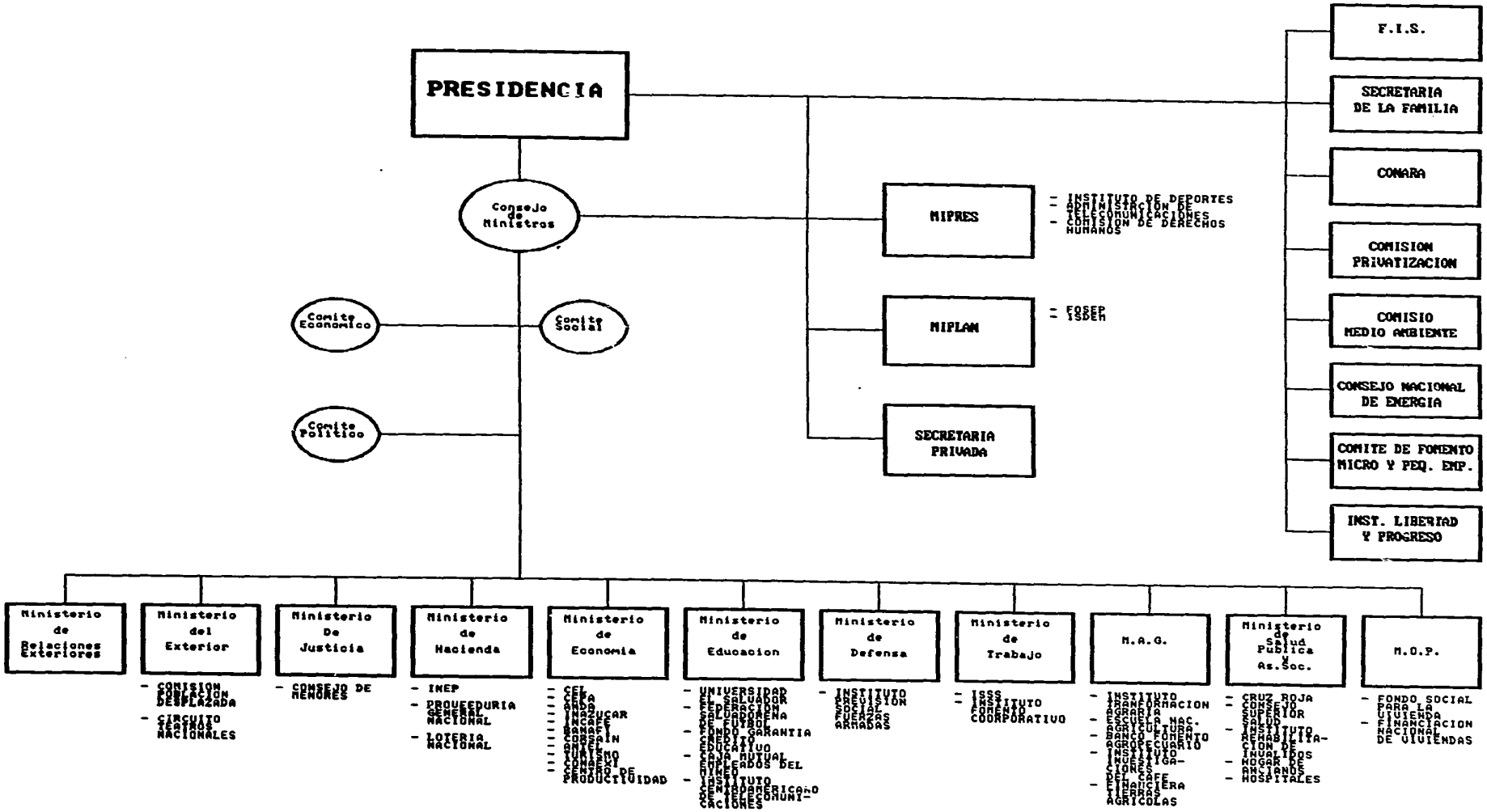
APPENDIX

FIG. 1

ORGANIZACION DEL PODER EJECUTIVO DE EL SALVADOR



65

ESTRUCTURA OPERACIONAL

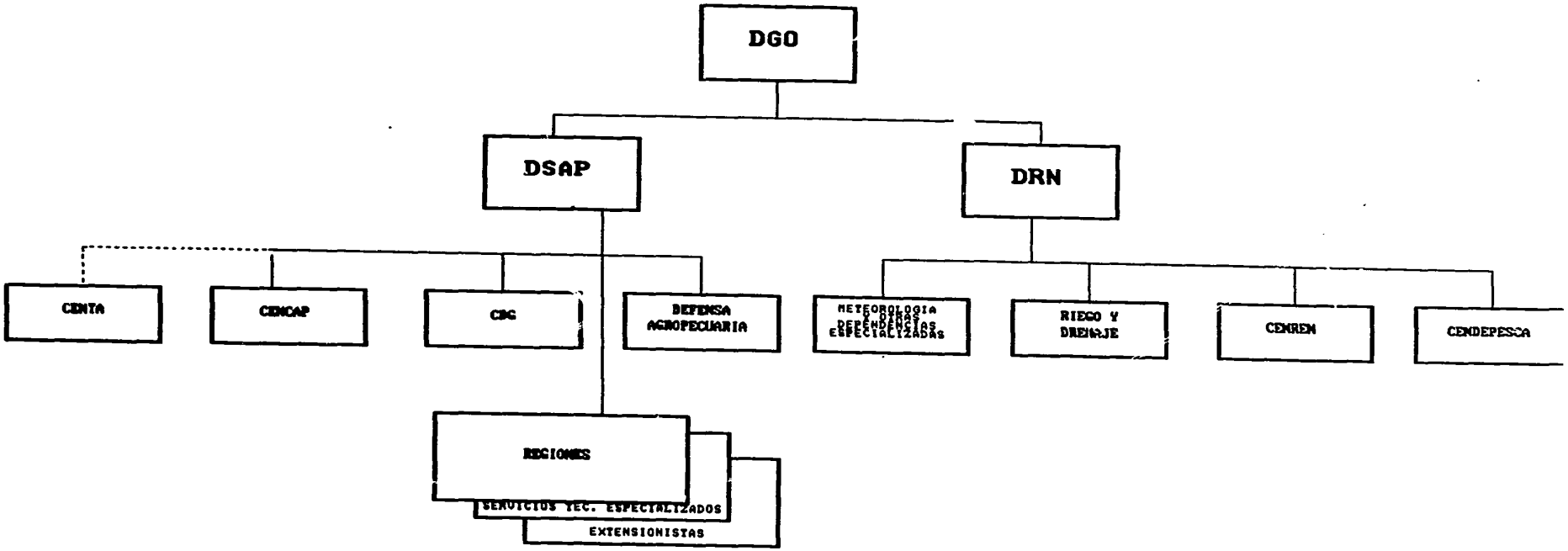


Fig. 2 (cont.)

Fig. 2

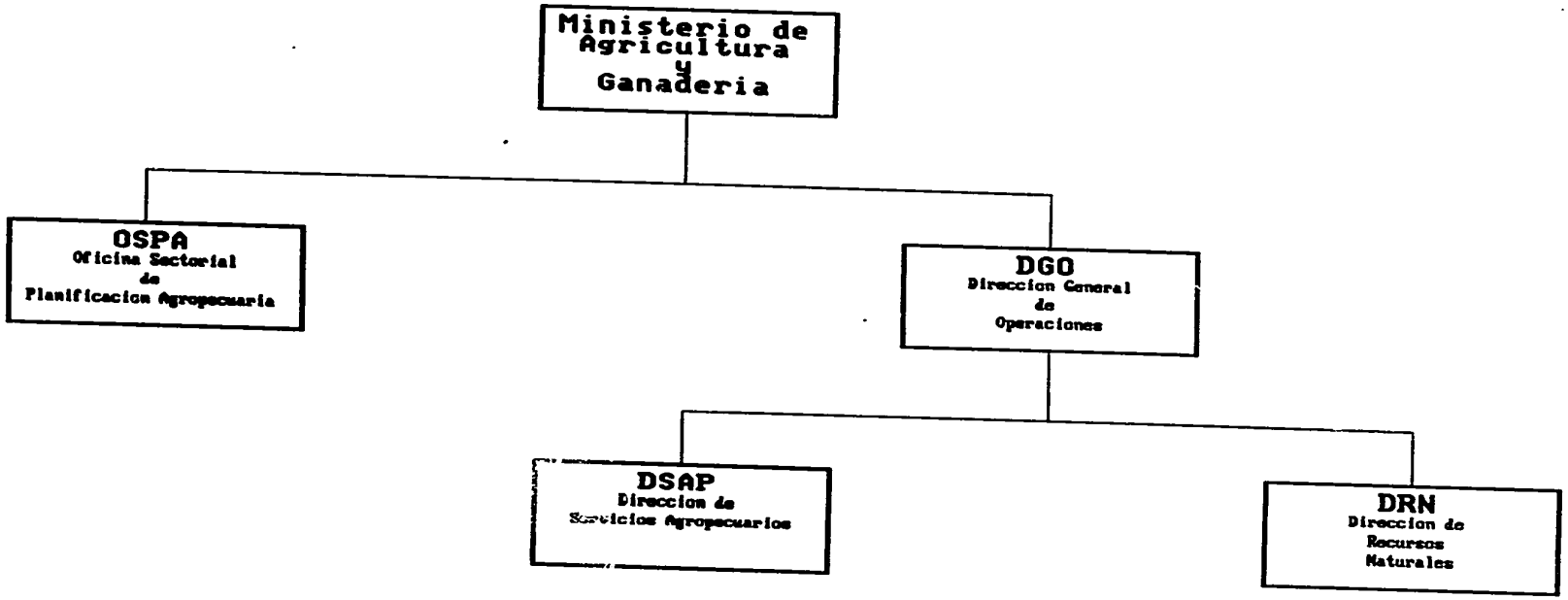

Ministerio de Agricultura y Ganaderia
OSPA
Oficina Sectorial de Planificacion Agropecuaria
DGO
Direccion General de Operaciones
DSAP
Direccion de Servicios Agropecuarios
DRN
Direccion de Recursos Naturales

Fig. 3

ESTRUCTURA OPERATIVA DE LA SECRETARIA EJECUTIVA DEL MEDIO AMBIENTE

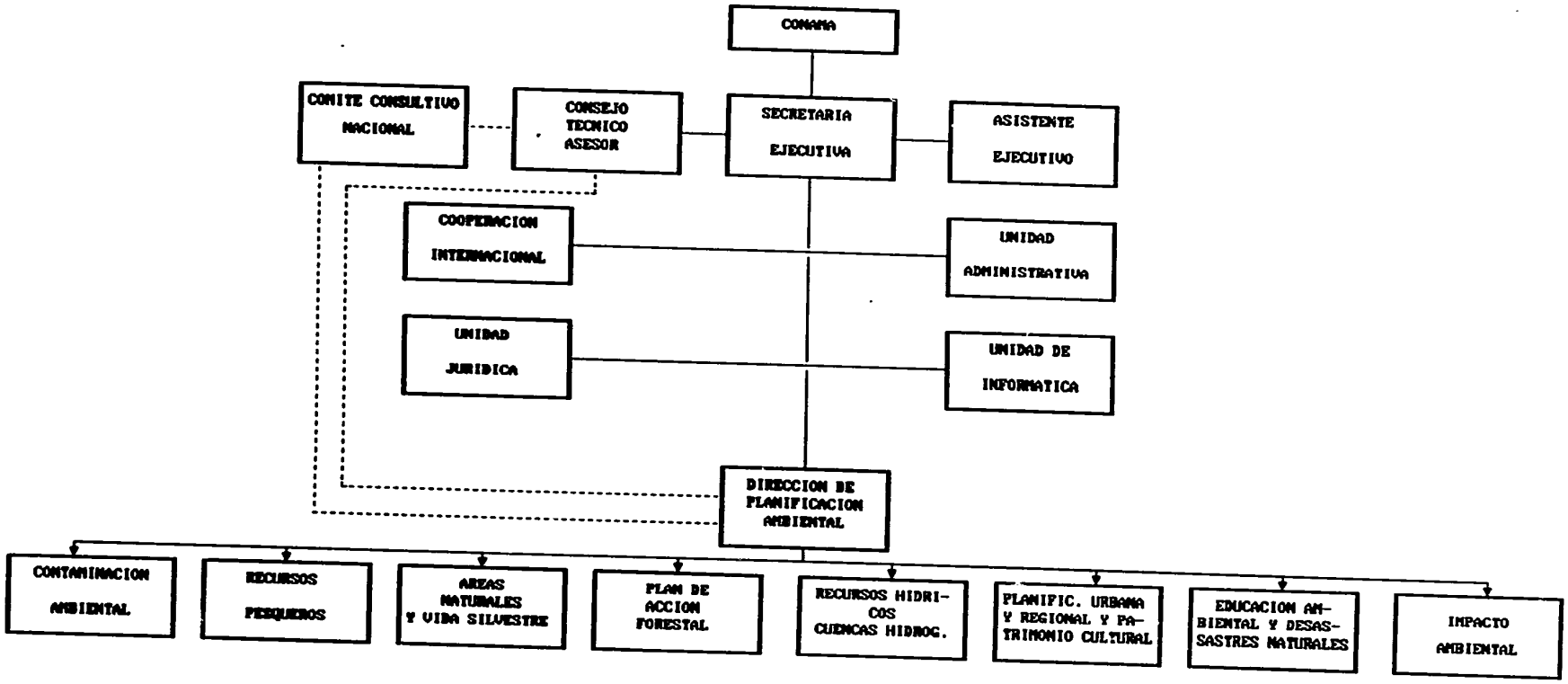
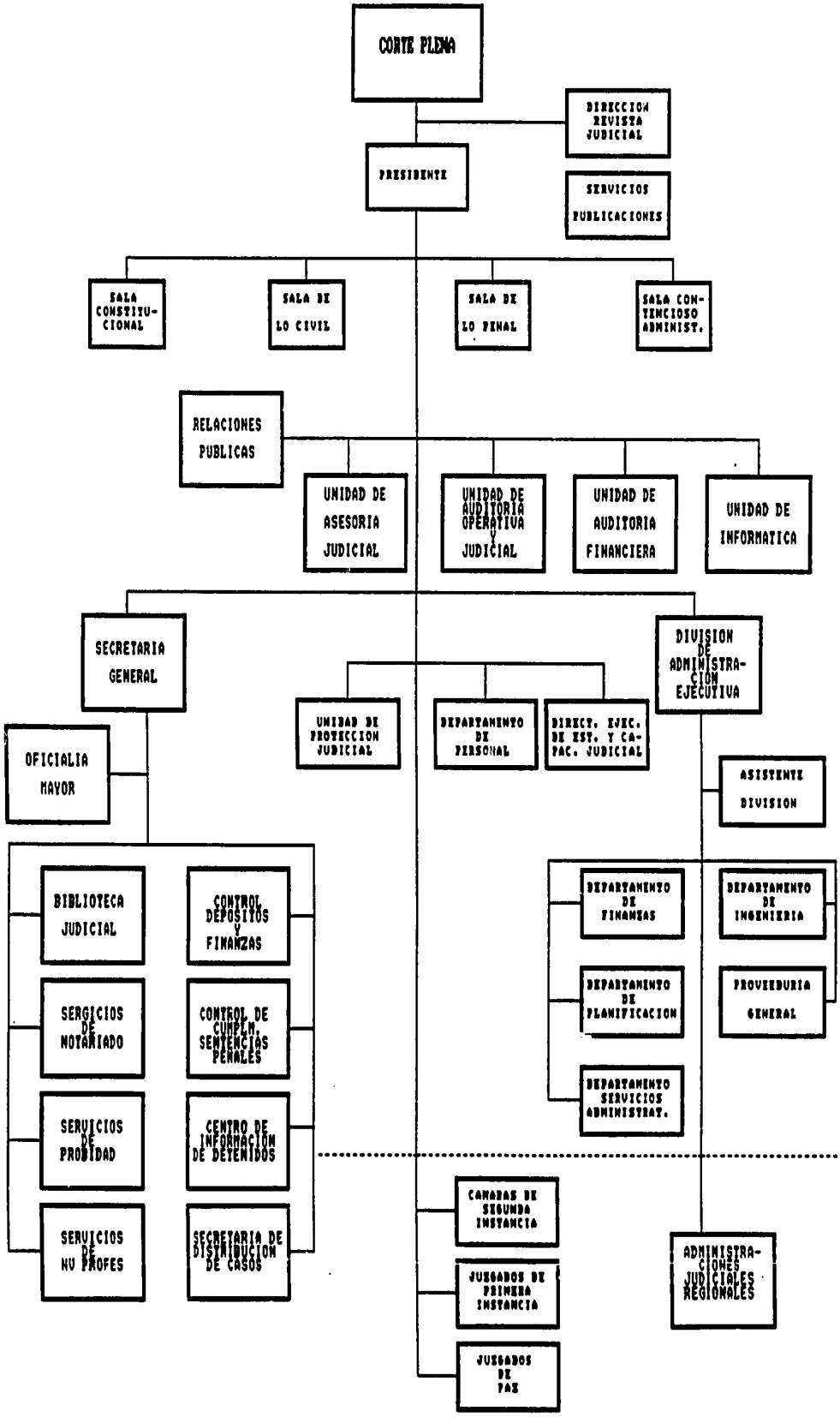


Fig. 5

ORGANIGRAMA DEL ORGANO JUDICIAL



TALLER SOBRE POLITICAS AMBIENTALES

EN EL SALVADOR

PACA/CARE/USAID

SAN SALVADOR,

9 DE ABRIL DE 1992

HOTEL EL SALVADOR SHERATON

70

San Salvador, 9 de Abril de 1992

TALLER SOBRE POLITICAS AMBIENTALES

EN EL SALVADOR

AGENDA DEL DIA

0730 - 0800 Inscripción de participantes

0800 - 0815 Inaguración del evento por el Director Ejecutivo del SEMA/CONAMA, Lic Miguel Eduardo Araujo

0815 - 0830 Perspectiva del proyecto PROMESA
Representante de la US-AID

0830 - 0850 Explicación sobre el Informe de Políticas Ambientales
Dr Dennis McCaffrey, Consultor para PACA/CARE

0850 - 0920 Mecánica del Taller sobre Políticas Ambientales
Francisco Serrano, Consultor temporal para PACA/CARE

0920 - 0945 Café

0945 - 1000 Organización de las mesas de trabajo

1000 - 1200 Primer período de mesas de trabajo
Discusión

1200 - 1400 Almuerzo

1400 - 1530 Segundo período de mesas de trabajo
Elaboración de acetatos

1530 - 1600 Café

1600 - 1700 Plenaria. Presentación de resultados y comentarios.

1700 - 1710 Clausura del evento

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TALLER SOBRE POLITICAS AMBIENTALES PACA/CARE/USAID

LUGAR: **San Salvador, Hotel El Salvador-Sheraton**

FECHA: **9 de abril de 1992.**

INTRODUCCION:

Este taller multisectorial fue llevado a cabo para proporcionar al equipo de PROMESA un criterio adicional para el diseño inicial del componente de Políticas Ambientales. Aun cuando fue proporcionado a los participantes un documento base elaborado por el equipo de PACA/CARE, los resultados del taller son mas bien un reflejo independiente de los criterios de los participantes. Asistieron personas del sector público (principalmente del MAG, SEMA/CONAMA, MIPLAN, Fiscalía, etc.) y del sector privado (principalmente ONG's conservacionistas; ver listado de participantes en apéndice III). El equipo de Políticas Ambientales de PROMESA contarán además con otros documentos bases, como el perfil ambiental de El Salvador, el inventario de Políticas Ambientales y otros. Observese que este taller probablemente tendrá mucho mayor valor si se da un seguimiento con otros talleres mas especializados y con mas tiempo en esta misma área de Políticas Ambientales.

DESENVOLVIMIENTO:

El evento se llevo a cabo según la Agenda establecida en la primera página de este documento.

En primer lugar el acto fue inaugurado por el Licenciado Miguel Eduardo Araujo, Director Ejecutivo de SEMA/CONAMA. En su presentación el Licenciado Araujo enfatizo la necesidad de evaluar políticas e impactos ambientales positivos de las actividades del hombre. Sugirió además buscar areas de productividad así como un marco de políticas consistentes. Indico que en 1992 se inicia un nuevo El Salvador que a la vez debe incluir un nuevo enfoque hacia el medio ambiente y el desarrollo del país.

En segundo lugar, el señor Peter Gore, representante de la AID, dio una descripción general del proyecto PROMESA. Enfatizo de que ya es hora de actuar. Bajo la concepción de la AID, aun cuando los daños son grandes y de siglos hay que empezar. Sugirió buscar desde el inicio una coherencia entre las políticas, las instituciones, las ONG's y demás elementos. Hay que buscar y asignar recursos a quienes pueden actuar. Hay que ayudar a la población a dimensionar las problemáticas y soluciones ambientales. Finalmente hay que experimentar en forma demostrativa como se puede actuar en el campo en el buen manejo de los recursos naturales.
En tercer lugar, el Doctor Dennis McCaffrey, co-autor del documento sobre Políticas

Ambientales, trazo en forma genérica el contenido de este documento. Indico que el documento se concentrara en uno de cinco aspectos generales de la problemática ambiental: el del Manejo y Aprovechamiento de los Recursos Naturales Renovables. Por tanto no abarcaba la contaminación, la ecología marina, la ecología urbana ni la energía. Asimismo, indico que aun cuando se presenten ejemplos, se había evitado hasta donde se podía emitir juicios de importancia y prioridad. Enfatizo que consideraba de gran importancia las definiciones presentadas en el documento. También sostuvo que el proceso de participación es muy importante, en particular en esta etapa de democracia incipiente en El Salvador. Esto requiere adiestramiento. Concluyo señalando la necesidad de definir políticas que sean operativas, que señalen los requerimientos para implementar efectivamente estas políticas y como satisfacer estas necesidades.

En cuarto lugar, el señor Francisco Serrano, señalo la mecánica del taller. Hizo enfásis en la conveniencia de que los participantes no limitaran su participación hacia o contra el contenido del documento base para el taller, aun cuando era muy conveniente el conocer el criterio al respecto. Acto seguido, se concreto esencialmente a leer en forma ligeramente ampliada la hoja de instrucciones proporcionada a los participantes y que se presenta en este documento (ver apéndices I y II).

RESULTADOS DE LAS MESAS DE TRABAJO DEL TALLER SOBRE POLITICAS AMBIENTALES

GRUPO DE TRABAJO #1

A. INTEGRANTES

- Dennis McCaffrey
- Carlos Aguilar Molina
- Cesar Abrego
- José Bueno
- Megan Hill
- Mercedes Llort
- Francisco Perdomo Lino
- José Luis Rodríguez
- Mario Soundy
- Agustín Blanco Hernández
- Francisco Rivas
- Peter Gore

B. RESULTADOS

I-Inversión del Sector Público.

A-De qué problema se trata?
El deterioro ecológico

B-Política propuesta:
Establecer criterios para evaluar y asegurar que la inversión pública y privada propuesta no contribuya al deterioro ecológico.

C-Cómo resolverá el problema esta política?
Regulando aquellos proyectos que tienen efectos directos o colaterales que deterioran los recursos naturales y el medio ambiente.

D-Entidad responsable:
Financiamiento: MIPLAN/SETEFE
Ministerio de Hacienda
Ejecución: CONAMA-SEMA
MIPLAN/SINACIP

II-Información.

A-De qué problema se trata?
Ausencia de un sistema nacional de información sobre los recursos naturales y el medio ambiente.

B-Política propuesta.
Establecer un sistema de investigación, información, capacitación y divulgación de los Recursos Naturales y el Medio Ambiente.

C-Cómo resolverá el problema esta política?
Generando información sistematizada de cada uno de los recursos y su interrelación, que esté disponible a los usuarios para el desarrollo de actividades productivas en forma sostenida

D-Entidad responsable.
Financiamiento: No definido
Ejecución: SEMA

III-Incentivos y Desincentivos.

A-De qué problema se trata?
No existe un sistema de incentivos que estimule a los habitantes a evitar el deterioro de los recursos naturales.

B-Política propuesta.
Establecer un sistema de incentivos, basado en el monitoreo de los efectos de las políticas macroeconómicas y sectoriales sobre los recursos naturales.

C-Cómo resolverá el problema esta política?
Implantando incentivos que sean atractivos y que estimulen a la población para que se haga un mejor uso de los recursos naturales.

D-Entidad responsable.
Financiamiento : GOES
Ejecución : Comité Económico

IV-Reglamentación.

A-De qué problema se trata?
Diversidad y dispersión de leyes relacionadas con el medio ambiente que se vuelven contradictorias e ineficaces.

B-Política propuesta.

Unificación de la normatividad ambiental

C-Cómo resolverá el problema esta política?
Mediante la emisión de una Ley Marco o Código Ambiental

D-Entidad responsable.
Financiamiento: GOES - Instituciones Internacionales
Ejecución: MAG

GRUPO DE TRABAJO #2

A. INTEGRANTES

- Rubén D. Nuñez
- José Roberto Denys
- Constance McCorkle
- Luis E. Gusmán Cucalón
- Ricardo Hernández
- Rafael Marroquín
- Juan Marco Alvarez
- Alma Sonia Nuila
- Magno Tulio Sandoval
- Rafael Serrano Cáceres
- Carlos Solorzano
- Cristina Barrios Cader
- Don Harrington

B. CONCLUSIONES

I- Inversión del sector Público

A- De que problemas se trata?
La no existencia de una Política de ordenamiento territorial

B- Política Propuesta
Implementación de un Plan Nacional que involucre los aspectos:

-Legal
-Institucional
-Planificación

C- Como resolverá el problema esta Política?
Proporcionando un adecuado ordenamiento de los Recursos Naturales Renovables para su desarrollo sostenido.

D-Entidad Responsable
Financiamiento interno y externo: No definido
Ejecución: MIPLAN, coordinando con diferentes instituciones

II- Información

A- De que problema se trata?
No existe información actualizada sobre los Recursos Naturales Renovables y Humanos; déficit de personal capacitado.

B- Política Propuesta
Capacitación del recurso humano y estabilidad de las entidades ejecutoras.

C- Como resolverá el problema esta Política?
Proporcionando información adecuada para la toma de decisiones.

D- Entidad Responsable
Cada Institución según su área.
Financiamiento interno y externo : No definido
Ejecución : cada institución

III- Incentivos y Desincentivos

A- De que problema se trata?
Muy poca conciencia Política en la toma de decisiones para aplicar incentivos vigentes y crear nuevos; asimismo existe sobreexplotación de los recursos por encima de su capacidad disponible.

B- Política Propuesta
Diseñar incentivos y desincentivos en base a consultas multidisciplinarias.

C- Como resolverá el problema esta Política?
Orientando inversiones y actividades socio-económicas que mediante incentivos y desincentivos promueva un desarrollo sostenido.

D-Entidad Responsable
CONAMA/SEMA
Financiamiento: CONAMA/SEMA
Ejecución: Cada institución de acuerdo al recurso que maneje.

IV- Legislación (Reglamentación)

A- De que problema se trata?
La Legislación vigente se encuentra desfasada, dispersa e ineficiente, así como la falta de aplicabilidad por las instituciones responsables.

B- Política Propuesta
Consolidación de la Legislación mediante la creación de un Código del MEDIO AMBIENTE; así como la agilización de su aplicación.

C- Como resolverá el problema Esta Política?
Mediante un mejor control y uniformidad en la aplicación del CODIGO DEL MEDIO AMBIENTE para lograr un manejo adecuado de los recursos naturales.

D- Entidad Responsable: CONAMA/SEMA
Financiamiento: CONAMA/SEMA
Ejecución: MAG.

Exactamente a la hora programada (4:00 p.m.) se dió inicio a la sesión plenaria.

Durante la primera parte de la discusión el concepto de ordenamiento territorial domino la discusión. Se indico que esta era una actividad prioritaria y que el ejecutor principal debería ser el Ministerio de Planificación. Mas adelante en la discusión surgio un conflicto existente entre dos modelos de ordenamiento territorial que actualmente se proponen para El Salvador; se esperaba la intervención de la SEMA para resolver este conflicto.

Durante la segunda parte de la discusión se enfatizo la necesidad de hacer cumplir las leyes. Un nuevo participante en el escenario ambiental --la Fiscalía General de la República-- centro la atención del grupo al mencionar varias acciones concretas en este sentido. Representado por un fiscal ecológico, la Fiscalía señalo varios casos en que se habían tomado ya declaraciones, citado a testigos e inclusive formalmente puesto orden de detención para infractores al medio ambiente.

Finalmente se reenfatizó normatividad y ejecución en el ámbito ambiental, y la esperanza de que el proyecto PROMESA pudiese ser un catalizador importante y efectivo en este nuevo empuje ambiental.

Entre las críticas señaladas, se señaló refleja un marco de política ambiental si no más bien un conjunto de criterios, programas y acciones. Asimismo, se indico que el tiempo del taller era insuficiente para abarcar la temática señalada en forma satisfactoria.

CONCLUSIONES:

Este evento proporciono algunas perspectivas de gran importancia para el equipo de Políticas Ambientales de PROMESA.

En primer lugar, es evidente de que han habido esfuerzos extensivos (aun cuando aislados) por definir políticas ambientales en distintos campos de esta área. Además del ordenamiento territorial, los recursos forestales, pesqueros y el suelo han recibido una cantidad considerable de atención. Sin embargo, son evidentes las enormes lagunas en estas areas y aun mas en las otras, en particular por la falta de información base.

En segundo lugar, también se hace evidente la ausencia de políticas ambientales amplias y coherentes. Es este un campo muy nuevo para El Salvador. Urge la capacitación de personal y la consolidación de las instituciones que velan por el buen manejo de los recursos naturales y medio ambiente.

Finalmente, aun cuando no hubo concenso o claridad sobre la conveniencia a plazo inmediato de establecer un Código Ambiental e inclusive un Ministerio de Recursos Naturales y de Medio Ambiente, la discusión evidencio que estos temas son considerados de enorme importancia y relevancia para el país.

APENDICE I: INSTRUCCIONES A PARTICIPANTES

Este taller está contemplado en cuatro partes:

1. La primera parte (8 a 10 am.) es la inauguración y las bases e instrucciones generales del taller. Incluye el primer receso o café.

2. La segunda parte es la primera mesa de trabajo (10 a 12 am). En este período se analizarán cada uno de los cuatro instrumentos de implementación de políticas siguientes:
   a) Inversión pública
   b) Información
   c) Incentivos y desincentivos y
   d) Regulaciones

   Cada uno de estos instrumentos políticos se analizará (durante media hora cada uno) de la siguiente manera:
   2.1 Listar cinco acciones consideradas como importantes
   2.2 Seleccionar las dos acciones consideradas como prioritarias.
   2.3 Tomar estas acciones prioritarias e identificar lo siguiente:
      2.3.1. Cual es el problema que se busca corregir?
      2.3.2. Qué política se propone?
      2.3.3. Como resolverá el problema esta política?
      2.3.4. Que entidad(es) es responsable de implementarla?
      2.3.5. Quien(es) debe(rán) financiarla?

   Durante esta sesión de la mañana, por razones de tiempo y efectividad, cada mesa deberá limitarse a tomar sus notas en forma general y rápida.

3. La tercera parte -- separada de la segunda por el almuerzo -- es la segunda mesa de trabajo (de 2 a 3:30pm). Durante esta sesión cada mesa deberá poner en forma clara y concisa los resultados obtenidos siguiendo el formulario muestra EN LOS ACETATOS (el relator deberá encargarse de irlos escribiendo). Por favor obsérvese lo escueto de los espacios proporcionados en este formulario muestra. Esto es para asegurar de que pueda ser presentada en forma clara, concisa y BREVE en la última parte del taller.

4. Finalmente, nabrá una sesión plenaria en que se presentarán los resultados de cada mesa, con un breve período para discusión y comentarios (4 a 5 pm).

Los resultados de este taller serán presentados al grupo de PROMESA en forma íntegra e independiente (aunque anexa) al documento utilizado como orientativo.

APENDICE II: GUIA PARA COMPLETAR ACETATOS DE MESAS DE TRABAJO

I. Inversión del Sector Público

A. De Que Problema Se Trata?

B. Política Propuesta

C. Como Resolverá El Problema Este Política?

D. Entidad Responsable:

Financiamiento: Ejecucion:

A. De Que Problema Se Trata?

B. Política Propuesta

C. Como Resolverá El Problema Este Política?

D. Entidad Responsable:

Financiamiento: Ejecucion:

San Salvador, 9 de Abril de 1992

TALLER SOBRE POLTICAS AMBIENTALES EN EL SALVADOR

II. Investigación

A. De Que Problema Se Trata?

B. Política Propuesta

C. Como Resolverá El Problema Este Política?

D. Entidad Responsable:

Financiamiento: Ejecucion:

A. De Que Problema Se Trata?

B. Política Propuesta

C. Como Resolverá El Problema Este Política?

D. Entidad Responsable:

Financiamiento: Ejecucion:

San Salvador, 9 de Abril de 1992

TALLER SOBRE POLTICAS AMBIENTALES EN EL SALVADOR

III. Incentivos Y Desincentivos

A. De Que Problema Se Trata?

B. Política Propuesta

C. Como Resolverá El Problema Este Política?

D. Entidad Responsable:

Financiamiento: Ejecucion:

A. De Que Problema Se Trata?

B. Política Propuesta

C. Como Resolverá El Problema Este Política?

D. Entidad Responsable:

Financiamiento: Ejecucion:

04

San Salvador, 9 de Abril de 1992

TALLER SOBRE POLTICAS AMBIENTALES EN EL SALVADOR

IV. Reglamentación

A. De Que Problema Se Trata?

B. Política Propuesta

C. Como Resolverá El Problema Este Política?

D. Entidad Responsable:

Financiamiento: Ejecucion:

A. De Que Problema Se Trata?

B. Política Propuesta

C. Como Resolverá El Problema Este Política?

D. Entidad Responsable:

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