UNITED NATIONS
ENVIRONMENT PROGRAMME

MANUAL
ON
ENVIRONMENTAL LEGISLATION

In cooperation with

THE INTERNATIONAL ASSOCIATION
OF LEGAL SCIENCE

February 1979

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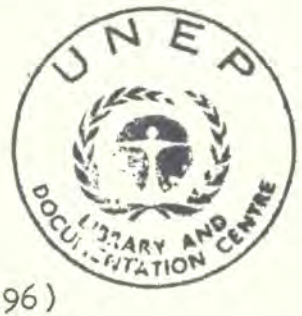

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FOREWORD

This Manual is the most complete effort so far to explain the meaning and importance of environmental legislation to Governments and to supply information now not easily available to them.

Neither UNEP nor IALS claim that the Manual provides every answer for the development of environmental law. But our two organizations have tried 1) to demonstrate through broad guidelines how the various countries could reform or develop their own environmental legislation, 2) to provide reference in the field of environment for international technical cooperation.

The Manual was prepared by Professor Jaro Mayda, Río Piedras, PR 00931, U.S.A. It is also available in French.

Any constructive criticism of this first effort should be used to prepare subsequent improved and updated editions.

UNITED NATIONS ENVIRONMENT PROGRAMME

INTERNATIONAL ASSOCIATION OF LEGAL SCIENCE

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SYNOPSIS

Focus of the Synopsis. This synopsis gives an overview of aspects of the Manual other than those that can be easily seen in the Table of contents. Another purpose is to lead the interested reader directly to concrete recommendations and suggestions, by means of a brief summary here and page references to the full text.

The principal objective of the Manual is to contribute to the improvement of environmental legislation on various levels of scope and goals, and under different conditions of resources and development. Common and comparable elements and principles are therefore emphasized. They are set in the framework of rational human uses of the environmental resources and the interdependence of socioeconomic development and proper resource management. The Manual is directed primarily at legislative efforts of the comprehensive enabling kind. The basic concepts, elements and approaches are, however, applicable and recommended on other levels of sectoral or subsidiary legislation and implementation. They can be scaled down to serve these various purposes.

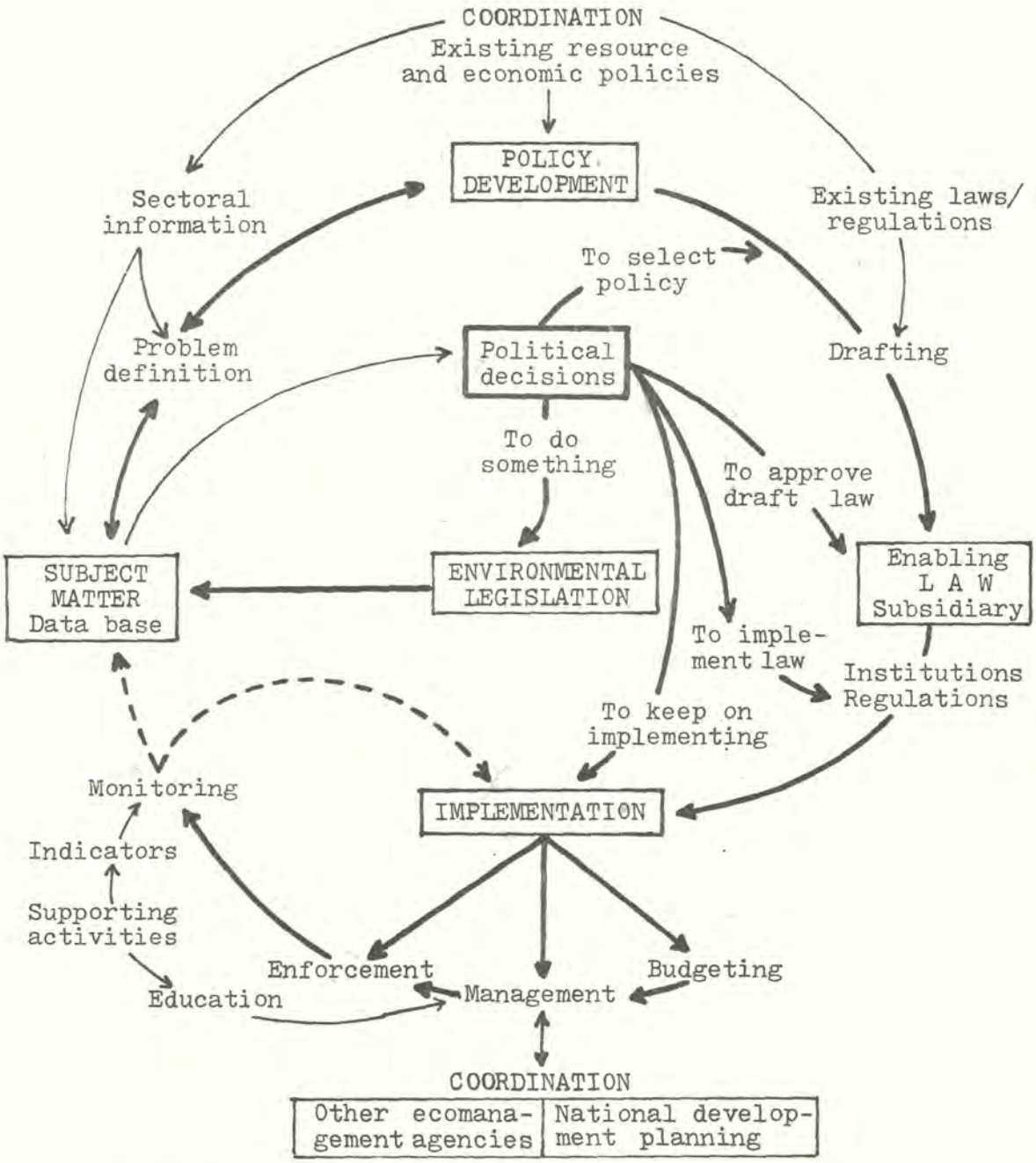
The targets for practical improvement. Past environmental law and practice have been often described as too rule-oriented, and poorly implemented and enforced. The common reasons for this state of affairs have been fragmentation of the legal basis, lack of institutional coordination, and deficiencies on the level of personnel and material means. The improvement of these conditions lies not only in better legislation, but also in education, planning, budgeting and national priorities. Good environmental legislation is, however, the foundation and a focal point for the coordination of the supporting inputs.

The process of environmental legislation. To serve its purpose, environmental legislation ought to be practiced as a continuous process of data generation, policy development, law making and amendment, implementation through management and enforcement, and monitoring-- in order to correct implementation and generate data for future decisions.

The elements of this cyclic process are set out in greater detail in Figure 1.

Figure 1

Conceptual "map" of the Manual



Broken lines indicate feedback. Some feedback loops are omitted. See Figure 4, page 19.

Further elaboration. The process of environmental legislation is stated in terms of "practical questions" and "concrete tasks and execution" in Figure 3 and the accompanying text (pages 16-22). The role of lawyers in the transformation and synthesis of data into policy and law is stressed. The underlying concepts of ecomanagement and the human ecosystem are discussed in Annex A, pages 104-108.

Pre-legislation inventory is the indicated first step toward new law. The existing problems and legal-institutional means are listed, evaluated and interrelated. A comprehensive matrix for this purpose is suggested. Sub-matrices for particular sectors or situations can be developed on this basis. An entry for a sample system--resource conservation--is suggested as an example (pages 23-28).

Tasks. The inventory not only helps to raise questions and formulate the tasks related to the intended legislation; as a by-product, it may also suggest improvements in environmental management which can be achieved without new law. Pertinent checklists, including the various forms of the new legislation, are on pages 29-32. Organic [framework, enabling] and sectoral laws and codification are characterized and compared (pages 32-33).

Structure and design of organic environmental law. With the expressed reservations that (i) effective environmental management depends more on the coordination of policies and programs, and on implementation, that on a particular form of the legal infrastructure, and (ii) consequently, the necessary legal base can be provided by various forms or combinations of legal instruments, the focus of discussion in the part of the Manual which deals with law making proper (pages 34-63) is on the organic type of legislation. It is the advantageous approach, especially for countries that are beginning to construct a comprehensive system of resource management and environmental protection. Moreover, effective sectoral and subsidiary legislation responds to the same basic principles.

The components. (i) A fairly detailed statement of the national environmental policy is the recommended basis for coordinated systems of law and management. Even where pertinent constitutional provisions exist, they need to be elaborated before they can become executory. A checklist of "key words and phrases" is on pages 37-38, as a possible starting point for the drafting of a country-specific policy statement. (ii) An environmental management statute may be indicated where a new régime of environmental (pollution) protection is needed, or where certain resource systems

(energy, waste control/management and the like) require policy and management innovations not easy to achieve within the existing sectoral framework. Other functions, related to comprehensive management or federal-state coordination, are also listed (pages 39-40). (iii) Institutional (re)organization. Five existing types of institutional structures are listed and evaluated (pages 41-42). Ministry of environment as the chief operational agency, and a high-level policy council, are analyzed as the key institutions, in the light of wide-ranging practice and opinion. A number of variations and combinations are available to fit specific needs and preferences. The role of the policy council as the interface between environmental policies and national development planning is noted (pages 42-44). (iv) Environmental impact assessment régime completes the components of an organic environmental legislation. It can be, of course, established by other legal/administrative means. Rather than being only a technique, EIA is a useful and necessary dimension of policy, management, citizen education and involvement with his human environment, and coordination of environmental and development planning. Past experience is analyzed in view of the interest in making EIA simple, flexible, economic and useful to decision makers. Shift from data-orientation to policy-orientation is cardinal for all these purposes. Common standards, as well as the questions each country needs to resolve while determining what particular EIA system to establish, are listed (pages 48-50). The key points are further elaborated: approaches to determining whether EIA is required; the initiation, preparation and cost; the administrative decision and appeal remedies (pages 50-54).

The elaboration, drafting in the broad sense, is the practical application of the various principles and concepts discussed in the preceding text. It may be necessary to collect a substantial amount of information in addition to the initial inventory. This is so, because data become meaningful and information gaps are discovered as problems are defined and analyzed. Scattered, sectoral and "soft" data "fall in place" when they are arranged in systems, as recommended in the inventory matrix. The effort to develop policy further sharpens the perspective. The principal policy questions are suggested as a first guide in concrete, specific situations. The process, as recommended, also facilitates critical adaptation of appropriate external data, rather than its uncritical transfer. Various checklists related to these operations are offered on pages 56-60. Questions concerning the details of legal form and coordination are raised on page 61.

Law drafting proper is the expression of the selected legal and management policies in executory language. Ideally, the draftsman should have participated in the whole process of data/policy development; if he did not, detailed briefing and continuous communication with the data generators and resource managers are desirable. Keeping the draft "under wrap" is discouraged; horizontal communication with legal counterparts in related agencies is advocated in favor of better legislation and implementation. The remainder is grammar, syntax, internal logic and local legislative style, but some generally applicable advise is offered (pages 62-63).

Implementation of the law requires that executory regulations (using this term generically) be promulgated; new institutions organized where it is indicated; management and enforcement be made operational; personnel be recruited and trained; material means and equipment be provided; and appropriate budgets be assigned. Without these measures, the decision to legislate remains ineffective in practice. Contrary to the traditional legal reliance on enforcement and remedies against violators, the emphasis in the field of the environment needs to be on management and prevention. This puts a high value on public understanding and acceptance of the environmental management and protection rules. But the regulatory and enforcement mechanisms must be available and effective, including sufficient administrative, civil and penal sanctions (pages 70, 78-82). Coordination of responsibilities for implementation is crucial. Various alternative solutions, as well as the special problems of federated countries, are analyzed (pages 71-73). Implementation techniques are listed and evaluated (pages 75-78). Supporting measures and activities are discussed (pages 82-3).

International technical cooperation and assistance (ITCA) in the field of environmental legislation is available in the form of information about other countries (pages 85-90) and external project assistance in the preparation of national legislation and implementation. The approach to the ITCA agency, the preparation and timing of the mission, and the consultant's profile and terms of reference are outlined (pages 90-94). Field experience is summarized (pages 94-96). The cooperative nature of ITCA and its potential contribution to the development of local capabilities are emphasized (page 97). Local representatives of ITCA agencies can enhance all these objectives if properly briefed in advance (pages 98-99).

I. PRELIMINARIES

A. ORGANIZATION AND REFERENCE

1.01 Self-contained text. The text of the Manual, beginning with the working definitions, is self-contained. Some bibliographical reference has been added, however, for two reasons: (i) The Manual deals, from the viewpoint of legislation, with a new field which draws on various nonlegal disciplines. The concepts and terminology are not uniform, nor are they widely known in practice. Their sources should be available to the interested reader. (ii) The secondary objectives of the Manual, especially with respect to education and training, also favor the notion that a rudimentary bibliography should be made available.

1.02 Form of reference. Bibliographical reference is incorporated into the text in the following form. The sources are listed in alphabetic order and numbered in Annex C. Only the numbers are used in the text, in parentheses and underscored, to distinguish them from other numerals. E.g., reference (12) in the text means that source number 12 in the bibliographical list is being cited. Page references are identified by plain numbers; e.g., (34, 56) means source 34, page 56. When something else than a page is referred to, the appropriate conventional abbreviation is used.

1.03 Background and reference notes. These notes (Annex A, 1-6) contain relevant information of historical and theoretical nature. The same form of reference is used.

1.04 Legislation in force is cited in the text in an abbreviated form (for example, Japan 1970). The full titles of the legal instruments are cited in Annex B.

1.05 Annexes carry, in addition to the continuing pagination, also their separate page numbers in the top outer corner of each page, for easier location. These numbers consist of the annex letter and page number, e.g. A-1.

1.06 Abbreviations and acronyms are listed on the following page.

1.07 Glossary and working definitions begin on page 3.

B. ABBREVIATIONS AND ACRONYMS

1.08

AID	U.S. Agency for International Development
cf.	See; compare
cpr	Common property resource(s)
ECE	U.N. Economic Commission for Europe
EEC	European Economic Community
e.g.	For example
ELIS	IUCN Environmental Law Information System
ESA	U.N. Department of Economic and Social Affairs
ESCAP	U.N. Economic and Social Commission for Asia and the Pacific
FAO	Food and Agricultural Organization of the United Nations
IAEA	International Atomic Energy Agency
IALS	International Association of Legal Science
IIASA	International Institute for Applied System Analysis
ILO	International Labour Organization
IOC	Intergovernmental Oceanographic Commission/UNESCO
IRS	UNEP International Referral System for sources of environmental information
ITCA	International technical cooperation and assistance
IUCN	International Union for Conservation of Nature and Natural Resources
MAB	Programme on Man and the Biosphere/UNESCO
OECD	Organization for Economic Cooperation and Development
UNDP	United Nations Development Programme
UNDRO	Office of the U.N. Disaster Relief Coordinator
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
US/AID	See AID
WHO	World Health Organization
WMO	World Meteorological Organization

C. GLOSSARY

1.09 The glossary contains: 1) an alphabetic list of the repeatedly used terms of art that are not part of standard legal vocabulary; and some terms which are used in the Manual with a specific meaning. 2) A list of working comprehensive definitions, in a functional order.

1.10 Apart from the obvious purpose of a glossary, there are two reasons for placing it so prominently at the beginning of the Manual. One is the convenience of using comprehensive terms with agreed-upon meaning as a linguistic shorthand. This eliminates long repetitious formulas. "Environmental legislation", as defined below, is one such term.

1.11 The other, more important reason is the need to keep on developing and improving the aspects of the field of environmental management and law that depend on language. These are:

(i) Communication. Many disciplines contribute to this field. Integration and synthesis are needed. New concepts and words for them have been developed. Meanings of established terms have been broadened or changed. Environmental lawyers need to communicate easily with the data generators, resource managers and other technicians. It is essential that they improve their understanding of the emerging common framework.

(ii) Information collection and classification.

(iii) Definition of problems and the development of policy recommendations for the environmental decision- and law makers.

(iv) Clear and concise draftsmanship.

1.12 The last item might appear to be a commonplace requirement in any good law making. But the art of drafting depends always on the definition and understanding of the problem, the goal and the means. This poses a particular challenge to draftsmen in a new and complex field such as environmental legislation.

1.13 1. Terms of art

ASSESSMENT, ENVIRONMENTAL IMPACT. Defined and distinguished from "environmental assessment" and "technology assessment" in paras 4.30 - 4.33.

COMMON PROPERTY RESOURCES (cpr). Standard term in environmental economics designating such resources as air and other than privately owned water and land.

DISECONOMY, -IC. The opposite of economy, -ic, in the sense of careful management of resources, avoiding waste. Environmental pollution is an example of diseconomy, because it represents careless management of cpr, and because many contaminants are valuable materials which can be recycled and reused. Cf. para 1.25 (iii).

DRAFTSMAN. See para. 1.29.

ECODEVELOPMENT. See reference note A, 5. (page 109).

ECOMANAGEMENT. Integrated management of environmental resources, based on ecosystemic principles, expressed in policy and law. See para 1.22 and note A, 3 (page 104).

ECOSYSTEM. All the living, physical and chemical components of a given environment and their interactions. Also used with reference to man-made, artificial environments, especially in their relation to a natural ecosystem and the laws that govern it.

EMPIRICAL. In the contemporary sciences, "empirical" means based on observed data, not devoid of systematic knowledge or theoretical basis (the older meaning). The term thus connects the factual base of knowledge and the method of arriving at theoretical models and adjusting them with reference to new information and pragmatic objectives, rather than speculative assumptions.

ENVIRONMENT. See paras 1.18 - 1.23.

ENVIRONMENTAL IMPACT. See ASSESSMENT.

ENVIRONMENTAL LAW. See paras 1.15, 1.17.

ENVIRONMENTAL LEGISLATION. See paras. 1.15, 1.16.

ENVIRONMENTAL POLLUTION. See para. 1.24.

EXTERNAL COSTS (Externalities). Environmental, social and property costs of economic activities, normally included in the calculation of the cost of production. Externalities are "internalized" when the cost of production reflects the free use of cpr and the various kinds of environmental damage.

HOLISTIC. Refers to an integrated, organic view based on the assumption that the parts of a system can be understood only with reference to the whole. In the environmental language, this term is the synonym of comprehensive, integrated, systemic; it is the antonym of a piecemeal, sectoral, "fragmented" view of the environment and approach to its management.

HUMAN ECOSYSTEM (HES). See paras. 1.21, 1.22 and note A, 5 (page 105).

INTERFACE. Surface or point of contact/interaction between two factors.

INTERNALIZE. See EXTERNAL COSTS.

MACHINERY. As used in contemporary legal parlance, it designates the mechanism (means, institutions, procedures) of implementing the law. The first dictionary meaning of "machinery" is that of machines or their parts collectively; "mechanism" has rather the connotation of an adaptable system, material or nonmaterial. This makes the latter term probably preferable in reference to the implementation of environmental law.

MANAGEMENT. See para 1.30.

MANUAL. The present Manual on environmental legislation.

ORGANIC (LAW). See para. 1.28, which also lists synonyms.

PHILOSOPHY, -ICAL. Beyond its traditional reference to speculative thought, this term has become a linguistic shorthand for any system of principles that guide the activitity in some field, or the approach to some category of problems or tasks. Thus, e.g., philosophy of management, of implementation, etc.

POLICY. The expression of a goal (e.g., the solution of an environmental problem; the achievement of certain management objectives) and of the means by which it is to be attained. Less comprehensive or technically precise synonyms are: purpose, objectives, goals, course of action, strategy.

POLICY DEVELOPMENT. See para. 1.27.

POLLUTION. See ENVIRONMENTAL POLLUTION.

RESOURCES. See the various definitions in paras 1.18 - 1.21.

SECTORAL. Referring to the law dealing with, or management of, a single resource or a limited group of resources.

SYNERGISM. Simultaneous action of various factors which (i) create a greater effect (such as environmental impact) than their arithmetic sum total, or (ii) have a collective effect which the individual factors could not achieve without the presence of the others (e.g., smog). "Synergistic" is often used as a synonym of cumulative. These two meanings are different, though the environmental impact may not be.

SYSTEMIC. Refers to a system, its components and functioning. Is not the same as "systematic" (arranged in an orderly form, complete, methodical).

TECHNOECONOMY. The use of technology for the purpose of more extensive, efficient or accelerated economic exploitation of resources, with no other concern. See note A, 4 (iii), (iv), page 105.

TECHNOCULTURE. Set of values, attitudes and operational modes characterized by a narrow "engineering" approach to problems, short-term perspective and fragmentation; and the educational system which produces it. See page 106.

2. Definitions of comprehensive terms.

1.14 The sequence of the definitions follows essentially the "conceptual map" of the Manual (Figure 1 , page vii). The comprehensiveness of the terms responds also to the evidence that narrow concepts and administrative fragmentation have been among the obstacles to effective environmental management based on and assisted by environmental law.

1.15 Legislation and law are interchangeable terms. If a distinction is made, legislation tends to mean the process of law making and its result. Law, if it does not mean a specific piece of legislation (act, statute, etc.), is understood as the collection of rules and procedures within a particular jurisdiction or a branch of the legal system. Environmental legislation and environmental law are distinguished in the Manual along similar lines.

1.16 Environmental legislation encompasses all the elements, stages and forms of the process of environmental law making. This includes the identification and definition of the problem(s), the data base, the policy development and its expression in law. Implicit in this comprehensive term are also the monitoring and feedback mechanisms necessary for the purpose of adjusting the law and its implementation.

1.17 Environmental law refers to the product of environmental legislation --the body of rules and legal means of implementation. If the term is used in another, less general sense, the meaning is appropriately identified.

1.18 Environment. Difficulties exist with regard to the definition of this focal term. In the UNEP/IRS thesaurus (see para. 6.05), the term environment is not used on the ground of being too broad and, therefore, meaningless. Legislative examples range from using the term in the title of the law without any need for further definition (e.g., Venezuela 1976) to partial definitions for the particular legislative purpose (e.g., Belgium 1973, Colombia 1974), to comprehensive definitions (e.g., Malaysia 1974, Papua New Guinea 1978). In other instances, environment is virtually identical with pollutable resources (e.g., Japan 1967, México 1971); or the environmental components and the principal impact sources are listed without being pulled together into a definition (e.g., United States 1969).

1.19 According to practice and the nature of the thing, there are at least three scopes and meanings of environment:

a) Renewable resources. As a target of environmental legislation, environment in this sense usually means resources to be protected against pollution or other deterioration, most often air, water, and land-as living space, recreational and esthetic resource.

1.20 b) All environmental resources. This includes the natural resources and processes that compose the environment understood as the biosphere (including the oceans) and the lithosphere (the crust of the earth, as far as it is accessible for exploitation). The main categories of environmental resource are:

- Renewable/flow resources (air, water, soil, fauna, flora, solar and other natural energy sources)
- Systems of natural resources: ecosystems, biomes, airsheds, water systems; animal/plant, soil/water/plant and other combined systems, such as coastal zones and wilderness preserves.
- Nonrenewable/stock resources (underground mineral and fuel resources). These resources are sometimes also called depletable; however, some renewable resources are also depletable (water, soil, specific flora and fauna). The term is, thus, not precise.

1.21. c) Resources for man. On this level, environmental resources are defined in the perspective of human needs and capacity to manage. Human needs comprise, but are not limited to, economic needs. Included in this conception are also concerns for public and environmental health, sanitation and food standards, and conservation for genetic, scientific, cultural and esthetic reasons. Although the use of natural resources for the good of man was part of early conservation philosophy (35), the conception was widely popularized under the term human environment in connection with the United Nations conference on this subject (1972). The management aspects of the human environment aim mainly at the reconciliation of environmental and economic considerations.

1.22 In a more complete technical sense, human environment as the object of environmental legislation and management is a system of:

- natural/environmental resources
- human resources
- events and activities that have impact on these resources, in systems that are predominantly natural (rural areas, coastal zones) or to a large extent man-made (cities)
- effort to control or eliminate the detrimental impacts, and to optimize the human uses and quality of the environment.

This complex of factors and interactions is more precisely described as human ecosystem, and the corresponding environmental management as ecosystemic management (ecomanagement). See also the reference notes (Annex A, sect. 3, 4).

1.23 Unless limited in the Manual by an attribute and by the context, environment as the object of environmental legislation equals human ecosystem. The principles which follow from this conception are considered to be applicable to comprehensive legislation as well as environmental law making and management on lower levels or in specific sectors.

1.24 Environmental pollution. Not only has environment been narrowly identified with pollution (para. 1.19 above; 55, para.656), but pollution and pollutants also have been often defined narrowly, that is, only in terms of adverse affects on the beneficial uses of the environment. A narrow definition of the problem leads inevitably to narrow law and regulations.

1.25 A complete definition of pollution includes not only (i) considerations of effects on human health and welfare, but also (ii) the ecological impact, which may be cumulative and may eventually undermine the regenerative capacity of the given ecosystem, and (iii) the economic damage: pollutants are often economic resources that are wasted or poorly managed in a world of growing scarcity. (The essence of a comprehensive definition of pollution is in Romania 1973)

1.26 The preceding definition of environmental pollution may affect the scope and meaning of the occasionally used term "environmental control." Both pollution control and environmental management aim not at the control of the environment, but of the adverse impacts on it. However, weather control or the control of natural forces so as to prevent or mitigate disasters, would be properly termed environmental control. These comments are explanatory only since the term "environmental control" is not used in the Manual.

1.27 Policy development is the discrete stage in the process of environmental legislation, in which the problem/object is defined, data are gathered and transformed into policy options/recommendations, and the policy is expressed in terms appropriate to environmental law and management. See also Figure 4.

1.28 Organic [Law, Act, etc.] is the term used in various countries, ranging from Romania 1973 (63,385) to Venezuela 1976a, to designate framework ("umbrella"-type) environmental law/legislation. While all these and similar terms are synonymous, "organic" has the additional meaning of "having an organization similar in its complexity to living organisms." This connotation appears to make it particularly appropriate in relation to comprehensive legislation that deals with environment as human ecosystem. It is therefore used in the Manual in preference to the other terms.

1.29 Draftsman. This term includes any agent--government lawyer, technician, legislator or consultant--who intervenes in environmental legislation from the development and application of policy to the writing of regulations. This definition excludes persons engaged in enforcement, management, monitoring, information processing and data generation. It also excludes citizens-participants in environmental law making and application (such as environmental impact assessment).

1.30 Management is used in a sense which corresponds to the preceding comprehensive definitions. It includes:

- Planning and programming
- Operations
- Appropriate use and exploitation
- Protection and prevention
- Conservation and rehabilitation
- Quality improvement and control
- Supporting activities: training, education, public information.

1.31 This definition makes in unnecessary to speak of "comprehensive management" or to use such composite terms as "management and protection," "harmonious conservation and exploitation" or "development and management."

1.32 The relations among the several basic conceptions defined above, and the structure of the Manual, are stated graphically in Figure 1 on page vii.

II. INTRODUCTION

2.01 The origin of the idea of the Manual and the factors that influenced its elaboration are summarized in a background note (Annex A, 1.)

A. OBJECTIVES

2.02 The objectives of the Manual, as they have been collectively defined, can be briefly stated in these terms:

(i) to provide broad guidelines for environmental legislation, adaptable to the particular circumstances of countries at different levels of development and with different combinations of resources and problems.

(ii) To serve as reference in the field of international technical cooperation and assistance (ITCA) related to environmental legislation.

(iii) To complement other efforts in this field.

The Manual meets these objectives by identifying the problems and providing a selection of means and approaches toward their management through environmental legislation.

2.03 The Manual is also intended to provide concepts and methodology that could be useful for the purposes of:

(i) national and international environmental education and training;

(ii) assistance in the preparation of future guidelines, specific to particular resources, activities or regions, and in their coordination with existing guidelines;

(iii) progressive harmonization of structure and method in the fields of environmental law and management, consistent with the variety of the subject matter and goals.

B. PREMISES

2.04 A consensus emerged also on several premises which in fact guided the elaboration of the Manual:

1. <u>Practice needs to be improved through better theory.</u> This has been a recurrent theme in discussions at various national and international levels. Among the more recent exemples of this concern are:

(i) the recommendation "to stimulate and develop...for the sake of efficiency...the study of basic definitions, general concepts and principles ...without them it [is] very difficult to achieve adequate application in the field of [environmental] legislation" (55b,para.223); (ii) the invitation "to steer away from a detailed discussion of the usual technical elements...and concentrate upon the conceptual...and policy considerations ...to which sufficient attention has not been paid" (62, 3).

2.05 2. The principles of good environmental legislation are common to all countries. The distinction between the developing and the industrialized countries is based mainly on economic indicators. It is not automatically or necessarily applicable to environmental management and law. In fact, as it was noted, "certain basic problems...receive remarkably similar solutions despite geographical differences and disparities in the level of development" (56; 55b, para.409). An assumption of common principles is also implicit in the agreement that "the ultimate objective [is] environmentally sound development...on a sustainable basis through rational use of resources and respect for environmental factors" (55c, para.418). Any sound environmental legislation will seek to contribute to this objective. The Manual proceeds on the premise that the applicable knowledge is common on the level of principles. If the emphasis, especially in the more specific later chapters, is nevertheless on the developing countries, it is because their requirements as to the kind and quantity of environmental legislation are probably relatively greater.

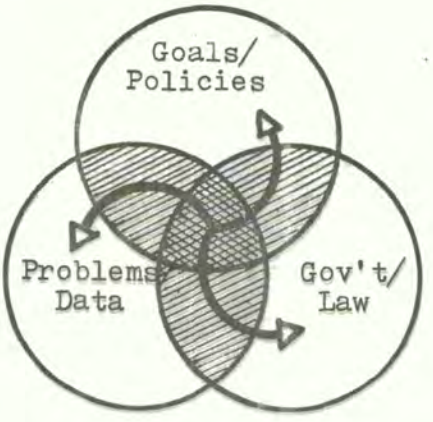
2.06 3. Uniform law models are neither practical not desirable. Environmental legislation does not appear to be the proper subject for the textual uniformity that is sought through the medium of uniform codes and model statutes in such fields as commercial law, procedural laws or conflict of laws (private international law). Specific formulas can be selected from existing environmental laws and built into the draft legislation. It is the purpose of the Handbook and of other collections (para. 6.09) to provide reference and source material. However, any such models must be evaluated in terms of the concrete goals and policies, if mechanical transfer is to be prevented.

2.07 Verbal models may be more useful for the purpose of sectoral legislation and regulation, especially in subject areas characterized by homogeneous technical content (e.g., toxic substances, radiation protection,

lations between these building blocks of environmental legislation can be schematized in the form suggested by Figure 1. The three major inputs--(i) problems and data, (ii) goals and policies, (iii) government and legal system--are represented by overlapping circles. The crisscrossed area in the center, where all the elements overlapp, is the common core of environmental legislation. The diagonally-shaded areas, partially overlapping, represent the comparable elements and solutions, and the white areas the country-specific variables. The arrows suggest the preferable orderly progression from the common principles, through comparative considerations, to specific concrete solutions.

Figure 2

Common, comparable and country-specific elements in environmental legislation



III. ELEMENTS OF ENVIRONMENTAL LEGISLATION

A. THE STATE OF THE ART

1. Critique

3.01 Contemporary practice has been subject, not without some justification, to criticism such as this: "Legislation [in the sense of the formal system] is really not the critical factor in environmental improvement. Legislation does not guarantee that the intent of the legislator will be implemented in practice. The major problems result from the difficulty to set up control and enforcement mechanisms to apply the legal provisions. In the first place, a considerable portion of laws [in the region of reference] have never been expressed in regulations. Their application is therefore pending. In the second place, the difficult task of establishing effective systems of control and enforcement frequently exceeds the capabilities of the public sector" (46,99).

3.02 This critique, which is directed mainly at environmental protection legislation, parallels statements on the state of the art in such a neighboring field as environmental health legislation (62). To make environmental law more effective, it is necessary to understand the main reasons for the lack of effectiveness. These originate long before the stage of implementation. They can be summed up in several simple propositions.

a) Environmental law is too rule-oriented.

3.03 The degree of dogmatism and pragmatism varies, of course, widely from country to country, and from one cultural family to another. But on the whole, environmental law making is still rule-oriented. This is a residue of the past image of law and the corresponding formal training of lawyers. The implied premise is that problems can be solved by law, rather than through law as one of several interlocked social techniques.

b) It does not reflect the state of knowledge in the input disciplines.

3.04 By input disciplines are meant the fields of knowledge which provide data about the problems (environmental and social sciences, technological information); the method of analysis and policy development; and the management goals and purposes environmental law is to serve. These

are not consistently expressed in most environmental legislation. Correctly sounding verbal formulas are not a substitute, although they indicate a growing awareness of the relations between the rules and their substance and purpose. Modern jurisprudence, which is the most direct technical reference for contemporary law making, has in fact discarded the rule-oriented approach in favor of a conception that emphasizes the dependence of formal law on data, policy and practical effects (see the reference note in Annex A, 2).

c) It is fragmented and uncoordinated.

3.05 This judgment refers to both law and implementation. Contemporary government is more often than not a crisis-solving mechanism. Piecemeal remedies, inclusive in matters of environment, are the norm. Implementation is comparably fragmented. Government agencies are poorly horizontally coordinated in identifying problems and dealing with them. This contrasts with the vertical powers of government decision and implementation. The result is not only the absence of comprehensive and effective legal mechanisms for national ecomanagement. Even in sectors where integrated management philosophy prevails, such as in water resources, the legal and institutional situation still often lets various agencies administer concurrently or even competitively the several aspects of conservation, development, utilization and related rights (51).

d) Its policy base is underdeveloped.

3.06 Inadequate and uncoordinated environmental legislation appears to be most often characterized by the fact that it bypasses discrete and articulate policy development. The law may express some policy principles; however, they are likely to be not "underlying" but rather "superimposed," that is, justifying decisions made on basis of what was deemed acceptable in the light of other considerations or in spite of available contrary data.

e) Legal and technical expertise is lacking.

3.07 The preceding proposition implies an occasional conflict between political will and environmental interests. It would be too facile, however, to put all the blame for ineffective environmental law and management on the political government. Expertise and integration in the environmental sector--especially between lawyers and the other professionals and technicians--has often lacked. As a result, the government decision makers have seldom, if ever, been presented with the whole picture, that is, the

environmental problems in question as a part of the larger system of eco-management for the purpose of, among other things, successful and sustained economic and social development. Even where environmental management and development planning exist side by side, effective integration has not been often visible.

f) Implementation depends on the whole legal system.

3.08 Finally -to return to the initial summary critique and anticipate chapter V - the effectiveness of any law is the function of the whole system--the government structure and tradition, the educational level, the social and cultural particularities. Environmental legislation is no exception.

2. Corrective factors

3.09 Some obstacles to adequate environmental law and management are obviously structural. To correct or remove them is, therefore, a longer-term task. Several short- and medium-term approaches are available, though. These can sensibly improve the quality of environmental legislation and thereby enhance its implementation beyond what might otherwise appear possible.

a) Development of national cadres

3.10 Environmental education, including technical and professional training, is generally a medium-term task. Nevertheless, the minimum key personnel, necessary to develop basic environmental legislation and maintain it operative, can be trained (and, even easier, reeducated) in a planned accelerated fashion. Multidisciplinary programs, including lawyers and environmental policy specialists, need to be envisaged. International cooperation and assistance are essential on two levels: (i) to develop and operate the training programs, perhaps on regional or subregional basis; (ii) external project assistance can be deliberately combined with on-the-job training of local officials and technicians. This idea is further developed in para. 6.37. The effort needed to develop the specialized skills will be made more attractive by assured professional opportunities.

b) Understanding the value and limits of law

3.11 Law is the basis of the power to do things, including environmental management; and it provides the rules for orderly procedure and conflict resolution. To be effective, any law requires the concurrence of many nonlegal factors. But the rules of law do represent the pattern and the outer limits of management, whether by officials, judges or resource managers. It is essential that the law be adequate.

3.12 Adequate environmental law is not made in the drafting stage. To use apposite computer language, the legal rules are an output, which depends on input/information, and on conversion/policy development. This is the reason for emphasis on process in the definition of environmental legislation.

c) Management-oriented law

3.13 Rule-oriented law stresses prohibition, administrative or judicial remedies, sanctions and conflict resolution. Management-oriented law promotes prevention of damage and conflict through assessment, planning, coordination, medium- and long-range policies. It relies on incentives in favor of rational use and protection of environmental resources, rather than on penalties and compensation payments for their abuse. The need to use legal remedies may indicate that the primary management function is not effective enough.

3.14 The preceding points, combined with the new and complex nature of the subject matter, indicate that environmental legislation should not be considered as a simple extension of traditional law making precepts to another field. To be adequate, which also means prospective, environmental legislation requires fresh concepts and approaches.

3. Environmental legislation as a process

3.15 The scope and dynamic of the field of environment present the draftsman with the challenge of making law that is sufficient to accomodate new data, management interests and implementation problems into a reasonably distant future. If he errs, it should be on the side of comprehensiveness and foresight. The resulting emphasis on process and policy does not change or question the value of law as a set of rules. Quite on the contrary, it enhances the law by (i) making explicit its sources and goals, and (ii) setting it in a comprehensive and realistic operational framework. This framework is outlined in the following Figure 3.

Figure 3

Environmental legislation as a process *

		1	2	3	4
A	PRACTICAL QUESTIONS	What is the problem? What do we know about it?	What is desirable, possible? How can it be done?	What do we decide to do? How? When? In what legal form?	How to make it work? How does it work? What can be improved and how?
B	CONCEPTUAL CATEGORY	Problem definition Information base 3.27 f.	Policy development 3.21 f.	Decisions: Policy selection/ approval Priorities/Timing Form & content of law 3.38 f., 4.01 f.	Law making and Implementation
C	CONCRETE TASKS & EXECUTION	Gather all available relevant information 3.27 f., 4.60-4.63 Find & fill gaps 4.64 Refine problem definition Transform the problem/ data complex into appropriate (alternative)recommendation(s) 3.21, 4.65 Justify with the help of models, where warranted 4.68	Interact with the decision makers: Selection/refinement of policy recommendation(s) Details of legislative expression, institutions,etc. 4.69 f.		Draft, adopt and promulgate the law 4.59 f., 4.73 f. (Re)organize institutions Regulations Programs/Budget Control/Enforcement Monitor results Develop indicators Feedback to Data, Policy,Implementation Information processing Other supporting activities 5.01 f.
		[INPUT]	←[CONVERSION]→		←[OUTPUT]→

* The numbers inside the boxes indicate the sections of the Manual where the topics are further discussed.

3.16 As the sequence of the "practical questions" in Figure 3 shows, both the elements and the order of the conceptual schema (horizontal column B) are inherent and necessary. Well-drafted laws make the structure almost visible. For example, the Convention on migratory species 1977:

Problem definition	Arts I to III
Information (data base)	Art. V, para. 2, a) to c)
Policy directives	Idem, para. 2, d) (i) to (v)
Law [the structure and content of the intergovernmental agreements to be concluded under the convention]	Idem, paras 1, 2
Implementation (management)	Art. V, para. 1, f)
Monitoring	Idem, para. 2, e)
Feedback (amendments)	Art. VI, para. 4

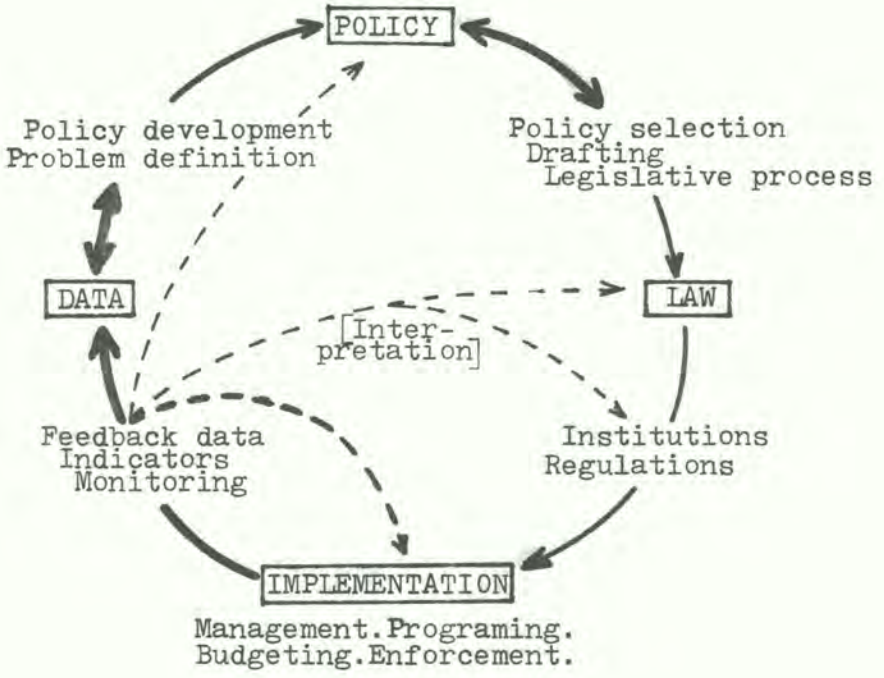
3.17 A comprehensive schema is bound to appear too complicated with regard to some practical needs; on the other hand, being a schema, it looks more linear than the real-life process. With regard to the first reservation, the needs of environmental management often also require that limited technical data and goals be expressed in highly specific rules and measures. One example would be the setting of permissible emission standards for a particular industrial process, which requires that determined technical devices be installed and monitored. But even these relatively simple acts of ordering and enforcement must be based on legal power. If the power is derived from an enabling framework legislation, the various schematized steps were (or should have been) taken. If the power to set standards and enforce them is given expressly for the specific purpose, for example by an emergency decree, adequate execution will, in fact, require the same process. The results is likely to be superior if the officials have an articulate understanding of what they are doing.

3.18 With regard to the second possible reservation--dealing with the too linear nature of the schema--it is certain that it does not show important "back-and-forth" interactions which occur in the process of making environmental law. The two main types of interactions are these: (i) between the data generators and the policy developers, especially in the stage of problem definition and the selection of (or search for) relevant policy data; (ii) between the draftsmen and the decision makers, as policies are selected and expressed in the draft law. Figure 3 also omits the feedback loops which represent mechanisms of "mid-course" correction in

implementation, or signal the need for an amendment of the law. These interactions and feedbacks are represented in Figure 1. This figure is simplified below as a supplement to Figure 3.

Figure 4

The law-making cycle



3.19 For the sake of clarity, a brief comparison appears to be warranted at this point between the conceptual model of environmental legislation and the Stockholm Action Plan of 1972 (61, II.A). The components of the Plan are:

3.20 This framework makes no explicit reference to environmental legislation, nor to policy as a prelude to environmental law making. But the points of contact can be made apparent. For example, while it may appear too narrow to relate "goal setting and planning" (that is, policy in the

broad sense, classified as "assessment") to management only, it is also true that in a properly drafted environmental law policy will, indeed, focus beyond the formal law on implementation/management. "Assessment" also includes data gathering and monitoring; "supporting measures" refer to such elements of implementation as institutions, budgeting, education and technical cooperation. Although this kind of interpretation is feasible, the Stockholm scheme is on its face somewhat oversimplified. Moreover, it projects the image of law which the Manual attempts to correct. Recent analysis of "environmental management in the decision making process"(58b, 37-38) is cast in terms which can be directly related to the postulated structure of environmental legislation. See also para 3.11 on the dependence of management on the legal power.

4. The policy pivot

3.20 The term policy is used frequently in a loose sense of goals, purpose, values, leading concepts or even technical norms. Statements of policy in the sense of goals or purpose are often found in various kinds of legislation. Typically they form part of preambles. These are normally considered as a declaration of the legislative intent, valuable for the purpose of interpretation, but not legally binding. In this sense, environmental policy would not deserve the prominent position it is assigned in the central columns 2 and 3 of Figure 3. This position corresponds to a concrete technical phase in decision- and law making, first proposed with specific reference to the environment in the late 1960s (19; USA 1969).

a) Policy development

3.21 Policy development in general consists of the following more or less separable steps:

(i) Problem definition. The nature and scope of the problem(s) to be dealt with by legislation is defined. This process may also identify data that are apparently necessary for the purpose of devising adequate solution(s), but are not available in this preliminary stage.

(ii) Information base. Relevant data from the various sources are gathered, selected, evaluated and consolidated. Gaps are noted and filled by means of interpolation, analogy or explicit assumption. The range of information can vary widely, depending on the problem to be dealt with. In the case of major comprehensive legislation, the following categories of data will normally require consideration:

. Scientific and technological information
. Social goals and needs
. Economic considerations
. Institutional capabilities
. Relation to other problems, policies, activities
. Constraints.

(iii) Policy model. This is the conversion of the information base into evaluated and justified recommendation(s) ("options," "strategies") with regard to the proposed environmental legislation and management. The word model refers to the particular arrangement of the factors and their relations. Despite the current connotation in other fields, such as environmental technology/monitoring, there are models other than mathematical, computerized. An environmental policy model is more likely to be conceptual or, with regard to relatively simple problems, even verbal or mental. Reason dictates that numerical, quantified data be used as far as available. But a great deal of information that is "soft," not quantifiable, needs to be also considered and incorporated into the policy model, if it is to be realistic. Part of the art of environmental policy development is to prepare the way for rational decisions and effective legislation even with incomplete or uncertain data. See also para 4.38, (i).

b) Implications

3.22 In the perspective of management-oriented environmental legislation, proper policy development has two implications. Their practical value can not be overstated.

(i) In the simplified sequence Data-Policy-Law-Management, the role of policy is to reduce a great deal of information to legal formulas for the purpose of management in the broadest sense (see para. 1.29). The more appropriately the abstract, generalized formulas of policy and law reflect the concrete, detailed reality of the data, the more effective they are likely to be in their application to another set of concrete, detailed realities--the day-by-day management decisions.

(ii) Proper policy development provides an opportunity of a field view beyond the specific problem. Waste generation causing water pollution may be thus related with water management legislation focused on supply and distribution. Concurrent law/management efforts (e.g., public health) or the activities in various impact sectors (public works, energy, transportation) will be seen in a coordinating perspective. On the highest

level, the interface between national environmental and development policies and planning will become apparent. The importance for environmental management of these system connections would seem to be obvious.

c) The role of lawyers

3.23 Legal advisers and draftsmen have an important part to play in the policy stage. First, they are a source of input into the information base, along with natural and social scientists, resource managers and technologists. The information lawyers contribute concerns the legal, institutional and administrative parameters that will determine the effective implementation of the law. Second, with respect to policy development proper, lawyers have two contributions to make: (i) their professional preparation for, and experience with, the translation of fact situations into the language of law and government; (ii) their knowledge of the inner workings of government administration. This makes them the natural mediators in the process of the preparation and approval of the environmental law in question.

3.24 These essential functions are beyond the typical professional training and modus operandi of most lawyers. To be useful, they need to learn how to communicate with the data generators and resource management experts. They need to become skilled in the new art of environmental policy development. These communication and policy skills ought to be among the focal points of specialized legal education, in the graduate law schools and in mid-career reeducation programs.

B. PREPARATORY STEPS

1. Introduction.

3.25 Even an initially skeptical reader might be convinced by now that there are no quick solutions or prefabricated formulas in environmental legislation. Even the most specific solutions need to be conceived within a broader context, if they are to be effective and lasting. Narrow and fragmented measures are likely to cause more damage than they repair--often indirectly. Environmental problems that are not of strictly local nature tend to occur in clusters of impacts or mutually reinforcing reactions. Smog is the classical example. Severe environmental deterioration, with substantial effects on humans, is a socio-environmental problem, that is, one which reaches beyond the system of environmental resources. Excessive sand extraction from beaches, or the development of tourist facilities likely to affect coastal wetlands must be regulated within the framework of the natural land-sea system called the coastal zone. Transportation in the world's megalopolises, many of them in the developing countries, involves energy demand, air quality, technology assessment, congestion and noise, environmental and social impact of related public works, and other factors that affect various resources. All these are system problems. Effective environmental policy, legislation and management need to respond to this reality.

3.26 It would be incorrect to relate the system approach exclusively with computerized models and data processing ("system analysis"). System approach is, in the first place, a state of mind, a way of thinking. It uses electronics where indicated and possible, but it does not depend on this technology alone. As discussed here, system approach is an individual and institutional habit to think about environmental problems in a comprehensive frame of reference.

2. Pre-legislation inventory

3.27 The first step toward any environmental legislation ought to be an inventory of existing problems and legal-institutional means. This can be best achieved with the help of a matrix. A sample matrix is in Figure 5. It lists in the first column an illustrative selection of standard categories of resources, impacts, needs and management techniques. This list can be supplemented for local application. The second column lists sample systems for the purpose of developing integrated approaches and policies.

Figure 5

Pre-legislation inventory matrix: Sample and checklist

Selected categories ⟷	System samples	Existing legislation	Existing institut'ns	Evaluation
1. Agricultural waste	A. LAND MANAGEMENT			
2. Air pollution	33. 57. 22. 31. 51.			
3. Biosphere reserves	Plant siting.			
4. Coastal zone	35. 25. 49. 11 13.			
5. Conservation				
6. Cultural environm't	B. FRESH WATER			
7. Disaster control				
8. Drought control	52 a,b,c. 36.			
9. Energy: a. sources, b. generation	Cost/rates. 28. 51. 9 a,b.			
10. Environmental education	C. COASTAL ZONE			
11. Environmental impact assessment	4. 21. 28. 51. 30. 14. 43. 40 (on- & offshore). 49.			
12. Erosion				
13. Esthetics				
14. Fisheries	D. ENERGY			
15. Fertilizers (chem.)				
16. Flood control	9 a,b. 19. 26. 18. 52 a. 36. 2. 37. 5. 48. 11.			
17. Flora (terrestrial, aquatic)				
18. Forests	E. MINERALS			
19. Fossil fuels				
20. Genetic resources	26. 25. 19. 5. 41. 53.			
21. Harbor environm'ts				
22. Human settlements: a. rural, b. urban	F. TRANSPORTATION			
23. Human waste				
24. Land/Soil	22. 24. 9. 5. 48. 11.			
25. Materials				
26. Minerals	G. WASTE MANAGEMENT			
27. Natural preserves				
28. Navigable waters	53. 1. 23. 46. 50. 41.			
29. Noise pollution				
30. Oil pollution				
31. Parks/Green belts	H. ENVIRONMENTAL POLLUTION/QUALITY			
32. Pesticides				
33. Planning	2. 24. 52 c. 30. 15. 32. 29. 53. 34. 35. 36. 48. 11. 13.			
34. Public health				
35. Public works				
36. Public utilities				
37. Radiation				
38. Recreation	J. PREVENTION			
39. Rehabilitation (environmental)	H. 7. 8. 12. 16.			
40. Resource exploitat'n				
41. Reuse/Recycling	K. PUBLIC HEALTH			
42. River basins	G. H. J. 56.			
43. Sand extraction				
44. Scenic resources				
45. Sensitive areas				

[Continues]

[Figure 5 continued]		Existing*/ legislation	Existing institut'ns	Evaluation
46.Solid waste 47.Technicians(training) 48.Technology assessm't 49.Tourism 50.Toxic substances 51.Transportation 52.Water: a.resources, b.delivery systems, c.pollution 53.Waste generation control 54.Wetlands 55.Wildlife: a.migratory species b.endangered species c.conservation d.hunting 56. Work environment 57. Zoning	L. CONSERVATION 39. 24. 18.42. 17. 55 a-c. 20. 41. 1. 23. 25. 26. 19. M. SPECIAL MANAGEMENT 3. 27. 44. 45. 4. 54. 6. 20. N. SUPPORTING ACTIVITIES 10. 47. 11. 48.			

a) Comments on the matrix

3.28 (i) Since the environment is defined, for the purpose of the Manual, as human ecosystem (para. 1.23), the population factor is implicit throughout the matrix.

(ii) The matrix makes no reference to internationally shared natural resources. The solution of problems in this sector is considered to depend primarily on proper national ecomanagement. International environmental legislation ought to be noted in the column "Existing legislation," even if the particular country has not yet signed or ratified it.

(iii) A sub-matrix can be developed for any sector. The several items in the second column of the matrix (except A, J and N) indicate the possible scope of various sectors/systems. In some cases the scope is more comprehensive than it has been usually understood. This corresponds to the approach advocated in the Manual. The particular user of the matrix will determine what are the proper sectoral components in his case. More detailed checklists are available for such sectors as agriculture, industry, transportation, utilities and public health (70); tropical rain forest management (36); tropical coastal zone(31) and water resources(52).

* It ought to be kept in mind that relevant information--especially with regard to land, water and mineral rights, damages, nuissance, liability and enforcement--may be also found in general codes, nonenvironmental statutes, planning documents, etc.

(iv) The list of existing institutions can be descriptive or analytical. In the latter case, they are not simply listed, but their specific functions with regard to the resources, problems or administrative/service responsibility are indicated. The following code, adapted from a regional survey (7,183 [1974]), could serve as a tentative beginning:

I. Policy development/decisions
II. Planning and programming
III. Information
  a) collection/processing
  b) dissemination
IV. Law making: a) general
  b) subsidiary
  c) regional/local
V. Public works and services
VI. Finances, budgeting
VII. Conflict resolution
VIII. Technical, financial aid
IX. Research and training
X. Enforcement
XI. Monitoring

If the institutional structure is complicated, an organogram or other graphic representation of agency jurisdictions and relations can usefully supplement the list. An organogram will acquire more meaning if the formal powers and jurisdictions are related to budgetary assignments.

(v) In the column "Evaluation," a composite judgment on efficacy of the legislation and the performance of the institution(s) can be noted, also in a coded form (with additional descriptive comments, where indicated). The evaluation can be based on a schedule such as this:

(1) Satisfactory
(2) Fair: stronger legal powers needed
(3) Fair: budget or personnel deficiencies
(4) Fair: inadequate sectoral (other?) coordination
(5) Not effective (state briefly the reason)

Necessary new legislation or other measures can be also noted in this column, with a brief explanatory comment or reference (e.g., to preceding actions).

b) A sample entry

3.29 The matrix is susceptible of extensive adaptations to suit the needs and preferences of the user. If used along the suggested lines, a sample entry may look like this:

Figure 6

The use of the inventory matrix: A sample entry

SECTOR/SYSTEM	LEGISLATION	INSTITUTIONS	EVALUATION
Conservation Soil	Soil Conservation Act, 1960	Ministry of Agriculture	I (5) - short-term programs only II,III (3) (4) - Water Res, Divis., Min. Publ. Works Forest Devel.Corp. IVb, X (2) VI,VIII (3) XI (5) - Personnel [Details on a separate sheet]
Forests	Forest Development Act, 1975	Forest Development Corporation	II (1) - Emphasis on reforestation IIIa, XI (5) - not yet implemented X (5) - shifting cultivation; tree cutting for fuel; poor education; lack of alternate resources VI (3) - reinvest more in conservation
Wildlife Flora	Government Reorganization Decree 1976	Division of Renewable Resources, Min. of Environment	I, II, III, IV, IX, X, XI (5) - in process of internal organiz.
	Convention on migratory species Convention on endangered species	Idem	Signed but no yet ratified
Materials	---	---	Needed: Solid waste management
Water	General organization acts/charters. No specific legislation.	Water Res. Div. Min.Publ.Works Aqueducts & Sewers Authority Min. of Agricult. Municipalities Power Gener.Auth. (Hydroelectricity)	Needed: Integrated, multiple-use management

3.30 Depending on the purpose, the pre-legislation inventory is likely to be prepared on one of three levels:

(i) Figure 6 is an example of inventory on the level of one comprehensive sector.

(ii) Substantially more comprehensive inventory would be recommended for the purpose of enabling legislation in the field of environmental protection, integrated land use management or coastal zone management. For example, in the last case, at least the following sectors would be involved: land use (including the siting of power plants and industry), coastal waters, transportation, fisheries, recreation, tourism, minerals extraction, as well as ecological conservation interests upgraded to environmental quality and protection.

(iii) A complete inventory of all systems would be the appropriate first step in the process of preparing an environmental code. Even if the code were to be restricted to some resource categories or systems only, it would be convenient and necessary to establish the relations between the included and the excluded sectors. For example, the intent may be to exclude non-renewable resources from the code. But the impact of their extraction, processing and uses on the renewable environment still needs to be considered in determining the environmental protection policies of the code as proposed.

c) Processing the inventory

3.31. The inventory is intended to answer as well as to raise questions:

(i) What is the legislation in force? Do jurisdictions overlapp or conflict? (This may be true more on the level of regulations than of the enabling laws. In more complex situations, the column "Legislation" may require the listing of both laws and regulations.

(ii) How is the law in force implemented? What is the institutional structure, coordination (horizontal, with other agencies; vertical, centralization or delegation to local operational levels), performance?

(iii) What are the gaps: in law? In implementation?

(iv) What are the policies? How are they oriented: On public health? On traditional conservation? Other?

(v) What should the sectoral or national environmental policies be,

in the light of the gaps/needs?

(vi) How could the policies be best carried out? Which sectors or resource systems need a new or revised legislative base? Should the legislation have a particular focus (resource management, pollution control, human settlements, environmental quality, etc.)? What is the indicated or preferrable form of the new legislation? What are the opportunities or necessities to use the existing institutional infrastructure and orientation for the purpose of the new legislation and implementation?

(vii) What are the optimum priorities, sequences and time frames for the legislative and implementation actions? What could/should be the objectives and projections for the short term (1-3 years), the medium term (3-10 years) and the long term (10-25 years), in view of what appear to be the imperative tasks vs. flexible aspirations?

(viii) What are the controlling international obligations and standards?

3. Tasks

a) Improvements short of new legislation

3.32 One task the inventory may make obvious is to improve the operation and performance of the existing system without any new legislation. Figure 6--a hypothesis that attempts to keep close to reality--suggests several possible steps. They are listed below in their order in column "Evaluation."

- Develop policy capabilities, to replace programming tied to the yearly budget by longer-range program planning, which is reflected in budgetary requests.
- Improve information/monitoring to provide data for policy development and corrections.
- Improve interagency coordination, on policy and operation levels.
- Speed up internal organization of new agencies to make them effective in implementing the law.
- Tie the enforcement-inhibiting social problems with national development planning and education.
- Change programming/budgeting to reinvest more resource proceeds in conservation (that is, protection of sustained yield).

3.33 Among these and other possible steps to make existing law more effective, two have usually the greatest potential:

(i) Enforcement (see also paras 5.33 to 5.42).

(ii) Institutional coordination. Where interagency coordination is

not decreed (as, e.g., in Colombia 1978), it can be established by way of cooperative pacts. For example, the U.S. Environmental Protection Agency and the Department of Agriculture have a five-year memorandum of understanding to pursue "common objectives, interests, and statutory requirements, and to avoid duplication of effort" by sharing employees, funds and facilities to clean up rural waterways, protect important farm and forest land from development, create sound pest control programs and cooperate in other areas of mutual interest. Joint task forces are another alternative.

3.34 There are also more comprehensive feasible techniques which might be worth considering:

(i) Broader interpretation of the existing law on basis of new, better integrated policy and planning, possibly formulated in a national development plan.

(ii) Institutional coordination expressing (i).

(iii) Revised structure of national budget implementing (i).

3.35 Finally, technology and environment assessment, as rudimentary as it may be in the beginning, is likely to improve the effectiveness of existing environmental legislation by preventing at least some damaging actions and impacts. It also begins to generate the sense of system which underlies most of these improvements short of new environmental legislation. The steps listed in this and the preceding paragraph may, however, prove to be too big in the face of existing institutional interests and momentum. The "push" can be provided then only by the kind of high-level decision "to do something" which needs to be expressed in new or thoroughly revised law.

b) Motives for new legislation

3.36 The precise reason for deciding to proceed with new legislation can be based on one or several factors such as these:

(i) A set of new needs arises; for example, the need of a systematic protection of the environment against pollution, due to the impacts of economic development and population growth and migration to the cities.

(ii) Improved awareness of the environmental problems shows that the existing institutions have a low level of effectiveness, duplicate their efforts, are inconsistent in goals and actions, act in isolation although they are interdependent and complimentary.

(iii) The relation between resource management and economic development planning is perceived. The legal and institutional base on the environment side is insufficient to implement the new policies.

(iv) As the longer-term environmental interests are defined and higher management standards are set, reorganization may also become necessary in the field of federal-state or state-local responsibilities and jurisdiction.

(v) International legislation or well-functioning foreign models act as catalyst.

3.37 The particular motive for the new environmental legislation will define its scope and thrust. But the process and the tasks ought to be determined in the case of any legislation--whether a sectoral statute, a comprehensive organic legislation or a codification--by the pattern outlined in paras 3.15 to 3.18 and further elaborated in chapter IV.

4. Selection of the forms of legislation

a) Classification and distinctions

3.38 The following table lists the various possible types and levels of environmental legislation and the alternative terms used in this context.

Purpose and level	Form	Issuing authority	Scope
Principles, policies, framework rules	Constitution; Code; Act/Law/ Statute	National legislature: Parliament, Congress, Diet, Assembly, etc.	National, comprehensive, organic, general
Detailed legal norms; general administrative rules	Decree, order, general regulation	Head of State, President, Council of Ministers	Executory, sectoral (by subject or political subdivision)
Detailed regulations, standards, procedural rules	Order, regulation, rule, by-laws	Minister, head of agency, regional/local authorities	Specific, local

3.39 Chapter IV of the Manual focuses on the first level--the comprehensive, enabling, framework, "umbrella"-type legislation. For reasons explained in the Definitions (para. 1.31), the term organic is used in the Manual to refer to this kind of environmental legislation. Chapter V, B. deals with the second- and third-level rules, sometimes called collectively "subsidiary legislation."

3.40 More important than any particular terminology are the characteristics of the enabling first-level legislation. First among these characteristics is the degree to which the law is based on adequate unifying policy. In this sense there should not be any difference among the three main varieties of comprehensive legislation:

(i) Organic: sets the general environmental policy and establishes the institutions and mechanism for coordinated management of the various resource sectors or systems. These are then regulated in detail by the subsidiary legislation. When the country's constitution contains principles, rights and duties concerning the environment, the formulas are likely to be so general as to require elaboration on the organic level before they can be applied to the various sectors.

(ii) Sectoral: if it is comprehensive (in the sense of Figures 3 and 5), and if no superior declaration of national environmental policy exists, the sectoral legislation will contain its respective policy statements. A complete and adequate system of national environmental management can consist of various such sectoral statutes. Sectors regulated in earlier years may be informed by older concepts of conservation rather than of contemporary management. Their policy statements, if any, may be limited to preambular generalities. Thorough revision may provide an adequate policy base. Nevertheless, the national environmental policy is likely to be better coordinated if it is expressed in one new, common document.

(iii) Codification: combines (i) and (ii). The general policy is stated first, followed by common institutions (policy development, administrative system, general management and enforcement provisions) and by chapters on specific resources.

b) Characteristic advantages of organic legislation.

3.41 When compared with the other alternatives, organic legislation appears to offer several advantages. In addition to those already mentioned--

- a prominent, comprehensive statement of policy, where no constitutional principles have been declared; a specific, detailed elaboration, in one high-level document, of the general constitutional formulas where they are available;
- a probably more uniform and consistent expression of the national policy than can be achieved through the sum total of separate sectoral policies,

the following points deserve consideration:

- the inventory, which is the first step toward the organic legislation, is likely to identify the need for substantial revision of sectoral laws, or a new sectoral legislation altogether;
- the "suprasectoral" policy is then likely to speed up the elaboration of the new, or thorough revision of existing, sectoral laws;
- if the organic legislation provides for a high-level council-type body--as it is likely to if it does not create a central ministry--its policy decisions may affect favorably the interpretation and application of existing sectoral legislation. A central policy council may, of course, be established without an organic act.

c) Comparison with codification

3.42 The preceding summary is not meant to be an argument against codification, where that alternative approach to comprehensive environmental legislation is favored. Organic law making, however, is simpler technically and has political advantages. Thus it is a speedier way of providing the framework of policy, legal powers and institutions for the purpose of a better environmental protection, which is often the crucial need. A code requires, first, the equivalent of an organic law (a general part, "preliminary title") and, second, the various resource chapters. This is not only a longer process, but it requires also that a number of sectoral laws and institutions be revised or drawn up at the same time. As a consequence, the various special interests, including those of the established resource agencies, are put into motion simultaneously. This is unlikely to create a favorable climate for the development of a balanced, comprehensive policy. The difference may be only one of degree, as compared with an organic legislation which covers one or more major resource systems, but it can affect the result or the time necessary to achieve it.

3.43 The traditional rationale for codification has been the internal unity and consistency which the code establishes with respect to the given body of rules. In contemporary environmental legislation, this unity and consistency is achieved not on the verbal level or through the rules of interpretation, but by means of a coherent policy. Thus the difference between the two major forms of general environmental legislation is mainly one of quantity. Even on this account, codification does not necessarily mean a complete coverage (as contrasted with a partial coverage by the organic law). For example, the Colombian code of 1974 excluded eight classes of resources, among them nonrenewable and energy resources, sea, and scenic resources (7,201).

IV. ORGANIC ENVIRONMENTAL LAW

A. STRUCTURE AND DESIGN

1. Introduction

4.01 The effectiveness of the environmental management régime in a particular country is determined not by the specific form or structure of the environmental law and institutions, but by policies, programs and implementation. However, these functions are likely to be more easy to carry out and to coordinate if the legal-administrative framework is appropriate.

4.02 Each country needs to evaluate carefully such factors as its needs and goals with respect to ecomanagement, the inventory of laws and institutions, the advisability of adding to or changing the existing administrative structure, and the full cost/benefit balance--largely the admistrative costs compared with the environmental benefits. There are likely to exist as many variations of structure and design as there are countries undertaking environmental legislation. The different combinations of environmental factors and problems, of social and economic goals, of cultural preferences and government tradition, will all be reflected in the outcome.

4.03 This chapter deals with the elements of an optimum model of environmental legislation, focused on the needs of any country which

(i) lacks a basis for comprehensive management, including especially also environmental protection in the narrow sense (renewable resources/human environment), or

(ii) wishes to revise thoroughly its present, not adequate system.

With appropriate adjustments to the particular scale, the structure and design can be adapted to any combination of needs, goals and means.

4.04 It is obviously desirable to strike a reasonable balance in terms of realities on both sides: needs and priorities, and means, especially also administrative and management capabilities. An overambitious legal structure is not only likely to be sterile; it may cause damage by generating a false feeling of achievement. The other extreme, a piecemeal approach, is equally unfavorable. If the basic framework is being generated, the law ought to be organic--that is, sufficiently comprehensive and in one piece--and it ought to be ahead of its time. This kind of legislation is a major effort. It is not likely to be repeated

soon enough, even if the law turns out to be too narrow, incomplete or otherwise not forward-looking. Moreover, even good law may suffer of slow or piecemeal implementation. But, at least, it exists as a target for progressive and coherent improvements in the proper direction.

4.05 The following discussion of the structure and design of an organic law focuses on the four components that are judged to represent the cornerstones of a full-fledged environmental management régime. They are:

- Declaration of National Environmental Policy [NEP]
- Legal base for comprehensive environmental management
- High-level institutions for policy and management
- Establishment of Environmental Impact Assessment [EIA]

The interdependence between environmental management and national development ought to be kept in mind with respect to all these components. It is made explicit in paras 4.55 ff.

2. Declaration of National Environmental Policy

a) Constitutional-level provisions

4.06 Country constitutions in various regions of the world contain policy statements that are either addressed to resource use and environmental protection, or can be interpreted to include such concerns. In terms of concreteness, these provisions fall into three major groups:

(i) Very general. For example, it is declared to be the state responsibility "to advance the general welfare...land, water and natural resources...shall be utilized for the greatest welfare of the people" (Indonesia 1945); the state "shall protect the environment and natural resources, and prevent and eliminate pollution and other hazards to the people" (People's Republic of China 1978).

(ii) Listing general categories of resources, actions, duties. For example: "Nature conservation, the efficient use and protection of land, the prevention of water and air pollution, and the protection of flora, fauna, and natural beauties of the countries [are] duties of government and society, and also of every citizen" (German Democratic Republic 1969); or "In the interest of the present and future generations ...necessary measures shall be taken for the purpose of protection and scientifically based, rational use of land, subsoil, water resources, flora and fauna, and protection of clean air and water to assure the pre-

servation of natural resources and improvement of the human environment" (USSR 1977).

(iii) Stating the principles of the country's NEP, e.g. Papua New Guinea 1975.

4.07 The existence of constitutional provisions related to the environment can have a salutary effect. They can highlight a national priority, thereby influence future policies, legislation and executive action, and also further define the states' duties to their citizens. However, the absence of constitutional provisions in no way impedes the formulation and implementation of environmental policies. Moreover, not all countries have a written constitution.

b) Declaration of NEP in the organic law

4.08 Even where constitutional provisions exist, they will require considerable elaboration before they can be practically implemented. The difference is, thus, not between the existence or absence of constitutional provisions related to the environment, but between a situation where the draftsmen of the environmental legislation can make reference to the constitution, and the situation where they cannot. The detailed work always has to be undertaken on the sub-constitutional level. Where the particular country does not have a strong central policy authority, or where the environmental policy is not pulled together in one framework law, whatever principles and mandates exist will be elaborated on the level of (economic) planning and resource management agencies. That process is more likely to dissipate than to carry out even an expressed intent of the constitutional legislator.

4.09 In its ideal form, NEP would be the verbal, appropriately expressed and citable version of the policy model developed for the purpose of the organic environmental law. It would be the result of multidisciplinary, multilevel input, as it corresponds to the complexity and long time frames which characterize this field. It would be drafted by a team of environmental policy and law experts, and national development planners (demography, economics, sociology), with the intent to develop genuine communication and substantive integration. In close contact with the sponsoring political decision makers, the drafting of NEP would be staged as an extensive process of education on the political, the expert and the citizen levels concerning the nature of the problems and the optimal approach to solutions.

4.10 Even without a perfect setting, much can be achieved by the process of working out and agreeing upon a relatively simple list of concrete policy principles, cast in terms of local problems and perceptions. A declaration of NEP should carry an authentic local signature. Its structure and content can be suggested in the abstract only by a checklist of key words and phrases.

c) Key words and phrases

4.11 The following list contains raw material for the consideration of a declaration of NEP, in an approximate logical sequence. Comprehensive terms are used as defined in I.C.2 above (pages 6-9).

(i) Environment is a common patrimony. Obligation of rational use. Interest of future generations.

(ii) Comprehensive and integrated management (ecomanagement) is a high-priority national interest. NEP considers all the elements of the natural and human environment as a system. Aims: Survival. Public health. Economic welfare. Culture and civilization.

(iii) Guiding principles for the management of the human ecosystem:

- Harmony: man-nature. Balance: population-resources.
- Renewable resources: sustained-yield management. Non-renewable resources: controlled exploitation to synchronize their exhaustion with transition to new materials, energy resources and technologies. Awareness of the carrying capacity and limits.
- Land-use reform and planning to facilitate ecomanagement.
- Planned rehabilitation and prevention of future damage.
- Implantation of technology and environmental-impact assessment as tools for policy and prevention. Integration of these processes with the existing physical/economic planning. Concept and practice of environmentally sound development projects.
- Appropriate technology as a goal of assessment and planning, to include agriculture, industry, public works, services, environmental health and quality.

(iv) NEP as framework for government actions:

- Obligation of government decision makers and instrumentalities.
- Supportive obligations of the citizens.
- Generation of necessary professional and administrative capabilities.
- Environmental education on all levels.
- Involvement of citizens in the quality and economics of their living and work environment.
- Collection and processing of data necessary to implement NEP and continuously update it.

. Appropriate system of controls: integrated programming and budgeting; monitoring of local implementation; licencing; import/export controls.

. Appropriate system of incentives, disicentives and sanctions.

(v) NEP is the base or point of reference in the making, interpretation and application of all existing laws related to the human ecosystem. Commitment to reform and complement present laws where necessary, stressing prevention over remedies.

(vi) NEP is an integral part of national development, to be applied by government and private entities where indicated.

(vii) Goals of national development related to the environment:

. Self-sufficiency in basic needs: food, energy and fuels, housing, materials.

. Most economic uses of resources. Promotion and facilitation of multiple use, reuse and recycling of organic as well as inorganic matter.

. Promotion and rehabilitation of traditional production techniques and life styles, enhanced by appropriate, energy-saving technologies.

. Planning in terms of integrated systems, across established sectoral lines.

. Definition of environmental pollution as diseconomic use of resources.

. Development of integrated economic/environmental/social cost-benefit accounts. Internalization of environmental impact costs as economic production costs.

. Rehabilitation of the environment (such as through reforestation) and public works to prevent or lessen the effect of natural disasters (floods, drought, forest fires, etc.). Development and maintenance of the capability to act in non-preventable mass emergencies.

4.12 Since NEP is the pivot and essential ingredient of the organic law, it might not be inappropriate to name it the "National Environmental Policy Law" (Act, Statute)."

3. Legal base for management

4.13 This part of the organic law would amount to an environmental management statute (EMS). The substantive legal content of EMS should correspond to the most pressing needs of the particular country, as established by means of the pre-legislation inventory. Some areas can be suggested for consideration:

(i) Rehabilitation and protection of the so-called common property resources: air, water, certain land uses (other than agriculture, mining,

special management areas, etc., better covered by detailed sectoral laws). This has been, in fact, the principal focus of "environmental pollution," "environmental protection" or "pollution prevention" laws such as those of México 1971, Denmark 1973 and Perú 1976.

(ii) Environmental quality management, including noise and such quality aspects of land use as urban green areas, recreation space and facilities, and environmental esthetics. This is an expanded scope of (i). In the process of this expansion of the minimum pollution control statutes, some industrial countries found it convenient to separate, for special attention, highly toxic pollutants and various types of radiation.

4.14 (iii) Because of its policy orientation, the organic law might properly deal also with systems which combine operational elements, technology and environmental impact in such a way as to generate strong need for policy innovation. Energy is one such system. Various sources of energy overlapp with other resource and planning sectors: hydroelectricity with multiple-use water management; biomass with agriculture and land-use planning; firewood with forest management; solar energy with urban planning and zoning; human-physical power with appropriate technology and socioeconomic planning. Energy uses have environmental impact in industry, transportation and in homes. Energy can be conserved through recycling of materials and generated from combustible waste. A system like this fits no traditional planning and management category. Yet, it should be conceived as a unit for best policy and coordinated management. A similar argument could be made with regard to waste management (see Figure 7 on page 60) as well as other systems. The organic law is in a position to promulgate the integrated policy and direct the operational agencies to implement it in detail--if it does not establish a central operational authority such as a ministry of environment.

4.15 The EMS is also an appropriate framework for the expression, in terms of guidelines and priorities, of the management principles expressed in the national environmental policy. Thus, for example, priorities for water allocation between various users may be set (domestic use, agriculture, power generation, industrial demand, aquaculture, mining, etc.), subject to a periodic review.

4.16 The preceding illustrative exposition implies no rigid lines of division between EMS and the sectoral laws. This division must respond flexibly to local needs and jurisdictional peculiarities. The important

goal is to coordinate all the laws and institutions by means of the common NEP directives. The same applies also in the case of another jurisdictional division, that between the federal and the state governments. The respective environment-related jurisdictions are usually delimited with the help of (legislative) lists--federal (central, union), concurrent and state. This arrangement may leave vital sectoral responsibilities with the states, e.g., water, land, solid waste, public health and sanitation, agriculture, including pest control (India 1950), as well as forestry, mining and soil conservation (Malaysia 1960). An item such as "Environmental pollution and ecology" may be on a concurrent list (Pakistan 1973), which means that both the federal and the state governments may legislate and administer in the sector. In any of the resulting situations, political or administrative interests may make institutional integration all but impossible. The only practical path is, then, through an implemented agreement on national policy. (See also paras 5.20 ff.)

4. Institutional arrangements

a) Tasks

4.17 The three main tasks that should be expressed in the institutional arrangementes were identified as follows (40, 33):

	Task	Type of institution
(i)	Policy development and coordination ("strategy")	High-level council
(ii)	Operations, standard setting, implementation	Executive agency of ministerial rank
(iii)	"Intelligence" (monitoring, research, data base)	"Science-oriented" body

4.18 In terms of the working model of environmental legislation, the last-mentioned task belongs both at the end (monitoring, indicators, assessment) and, even more importantly, at the beginning. "Intelligence" in the sense of applied science and processed information is the starting point for the determination of what to do and how best to do it in any situation or time frame--from long-term projections to policy development for specific legislation to the proper handling of emergencies.

4.19 The scope of environmental "intelligence" in this sense exceeds the normal activities and capabilities of government institutions in the proper sense. It is likely to require the input of many other institutions,

goverment-sponsored (public universities, national science foundations, scientific academies and research institutes) and private or nongovernmental. The critical point is the reception and application of this information by the government decision makers and agencies.

b) Existing institutional structures

4.20 With respect to tasks (i) policy, and (ii) operations, the existing institutional arrangements fall into several broad categories:

- Several government departments, each dealing with policy and opetions in its sphere of responsibility.
- A coordinating interministerial committee.
- Department/Ministry of environmental affairs.
- A department which deals with a major group of resources (e.g., renewable resources).
- National advisory body/council on the environment (ad hoc, or statutory/permanent).

4.21 Common trends in the evolutionary process toward institutionalizing environmental management have been detected in a survey of a major world region with a great variety of countries in terms of both size and level of development (14,10-14). Three stages were identified:

- Routine "policy" review of environmental issues by various departments connected with resource development or conservation, without any specific statutory responsibility or guidelines.
- Designation of a specific department or committee to look after environmental issues.
- The trend in the 1970s: a full-time ministry/department of environment or, as an alternative, a national board or committee. The emphasis is in each case on integration or improved coordination, inclusive on the policy level.

c) Evaluation

4.22 Among the alternatives listed in para. 4.20, the first one is uncoordinated, by definition as well as by experience in the countries where it exists. The institutional situation is likely to be more favorable where one agency is responsible for an integrated group of resources and, in addition, becomes, by law or administrative decision, the lead agency for further integration/coordination on the policy and operational levels (e.g., special management of a critical resource system; integration between renewable resources and public health; integrated management of a metropolitan region [Colombia 1978]).

4.23 A solution of the problem of dispersed responsibilies has been sought through the institution of interagency coordinating committees. The experience has ranged from good to unsatisfactory. Inadequate functioning was ascribed to such factors as personnel/competence conflicts; lack of willingness to share information; a low level of attendance at meetings; tendency to act together only in crises expected to have a wide political impact, or where the chairman was a powerful minister (10). Coordinating committees have been active both within a sector (e.g., water) and as between an environmental protection department and other departments having to do with environment-related matters (agriculture, health, transport, trade, etc.).

4.24 A department or ministry of environment exists, under various names, in many countries. Its creation is considered elsewhere (e.g., USA). Several aspects, based on practical experience, need to be considered when evaluating this institutional alternative:

(i) A central environmental authority is normally created to integrate in one agency various preexisting operational departments, agencies, public authorities, etc. Such a reorganization does not guarantee by itself an integration, either in policy or in operations. Examples range from one extreme to the other on the scales of size and development. In a continent-size industrial country, air and water quality, solid waste management, noise abatement, toxic substances and radiation were combined into a federal environmental (protection) agency, without bringing about any notable fusion among these sectors. Agriculture, interior affairs (forests, parks, wildlife, mining, etc.), oceans and atmosphere, and other agencies dealing with environmental resources remained separate. In a small developing country on the same continent, a ministry of natural resources consists of the divisions of renewable resources, agriculture, and mining and energy, with no policy or operational coordination either.

(ii) An agency of the ministerial type is inevitably oriented toward operations. This is evident in any available organogram. The policy function is not institutionally superordinated to operations. It may not appear at all as a separate module in the organizational chart; or it may be in a position which limits its importance or its scope. The latter is likely to happen when the policy responsibility is exercised by a committee or council on "environmental protection," "environmental research," "nature conservancy," and the like, which is attached to (that means, exercises whatever influence it has through) a sectoral ministry such as agri-

culture, education and science, or health and welfare.

(iii) Such an institutional structure makes it difficult, if not impossible, for policy to play its "natural" role in the process of environmental legislation and implementation.

d) Recommendations

4.25 There is a wide agreement on an institutional framework which the overall problems and circumstances seem to warrant. The formulas range from "a specific full-time environmental agency...preferably a statutory body [with] a national policy-making and coordination role" (14, 14), to "high-level coordinating body responsible for overall environmental policy and approval of standards...at the national level; in federal countries ...a body with similar functions should be established at the state level" (62).

4.26 These and similar recommendations allow for a number of combinations which can closely respond to the local situation, requirements and resources. The agency can be cast in the form of a ministry, a council or a board. It can develop and control policy; set general standards; implement the laws and regulations through its own personnel, through existing agencies or, in federated countries, through the state departments (forest rangers, game wardens, sanitary inspectors, etc.). It can stimulate or generate new legislation and regulations. It can be the focal point for supporting activities such as the development of skilled manpower and facilities for effective implementation. It can disseminate information and generate public awareness about environmental problems and actions.

In any of these functional combinations, the advantage of a central, unitary agency is seen in its singleness of purpose, avoidance of conflict of interests, and activism--in order to justify its existence and budget, but in fact serving its purpose. It is recognized, however, that not the initiative, but the implementation counts in the final analysis.

4.27 Unless the agency is of the ministry type, comprizes all the major resource sectors and has a central policy/planning unit at the top, the institutional arrangement is likely to be incomplete without a statutory national environmental policy council (para 4.20, last item). Widely geographically distributed prototypes of such a policy body are: the U.S. Coun-

cil on Environmental Quality (USA 1969) and the National Environmental Council (Venezuela 1976), both attached to the offices of the respective Presidents; and the Headquarters for Environmental Pollution Control, supplemented by the Commission on the Living Environment (Japan 1967, 1970), attached to the Cabinet--directly in the case of the Headquarters, and through the Economic Planning Agency in the case of the Commission. A proposed Environmental Protection and Improvement Council (Pakistan 1978) attempts, under specific local circumstances, to "establish comprehensive national environmental policy" and supervise its implementation under the chairmanship of the federal minister of environment.

4.28 The highest formal position and potential influence of a policy council is achieved if it is not only attached to the office of the head of state, but presided by him (e.g., Philippines 1977). A countervailing argument may be that the policy council is likely to be more effective if it is close to the center of political power, but not an integral part of it. Whatever the specific form and position, the standing and impact of such a council depends also on its membership and the quality of its staff. Considering the place and function of policy in environmental legislation and management, the council should be preferably an apolitical, expert body, representing all the main input disciplines, including expertise on political and institutional opportunities and constraints. It this form it may function best as an autonomous link between the world of technical data and the government decision makers. If past experience in several countries can be generalized, a council composed exclusively or predominantly of the heads of departments is likely to aim more at the resolution of policy conflicts than the development and evaluation of objective policy alternatives.

4.29 A high-level policy council is also the proper interface between environmental policies and national development planning. This function is explicitly envisaged, for example, in Venezuela 1976. In New Zealand, the Environmental Council functioned as an independent advisory body within the National Development Council, from 1970 until the latter was abolished in 1974 (30).

5. Environmental impact assessment

a) Purpose and scope

4.30 The fourth major component of a complete legal-institutional basis for environmental management is a mechanism whereby potential damage to the environment can be determined and prevented, or at least substantially reduced. This mechanism can be established and made obligatory in various forms. Organic environmental legislation is one of the more convenient ways of doing it. Environmental impact assessment (EIA) is not only closely related to environmental policy and integrated management, the focal points of any comprehensive environmental law; EIA is, in fact, a dimension and tool of policy and management.

4.31 The global term assessment (or analysis), related to environmental impact, includes at least three different aspects of the process:

(i) inquiry, the preliminary determination as to whether the proposed action can have any significant environmental impact;

(ii) assessment proper;

(iii) statement, the document which summarizes the evaluation of the data and of the proposed or alternative, more favorable, courses of action.

4.32 Most often, EIA is related to a specific action/project. It can be also generic. This is the case when a group of actions or uses with potential impact is assessed, for example, for the purpose of new or uniform regulations. In either case, EIA must be distinguished from environmental assessment in the sense of continuous or periodic monitoring and evaluation of the environment. An example of environmental assessment is UNEP Earthwatch, the purpose of which is to identify global problems and gather the data necessary to understand and manage them.

4.33 Another term which needs to be clarified is technology assessment. The mutual relations between this term and EIA may be briefly defined as follows. (i) Whenever the potential environmental impact may be caused by some technology (in the engineering sense of equipment or process), technology assessment is an input into EIA. (ii) Even when technology assessment is practiced for another purpose, such as to determine technical or economic feasibility, it should be expanded into an EIA, that is evaluated also in terms of external costs and benefits.

b) Contemporary practice and experience

4.34 Since the introduction of EIA into environmental legislation (United States 1969, Section 102(2)), a number of countries have adopted and adapted the process. Some have done it by law. The provisions range from simple policy statements (e.g., German Democratic Republic 1970, Hungary 1976) to concise enabling provisions (Colombia 1974), to detailed guidelines coordinated with national development planning (Papua New Guinea 1978). Other countries introduced EIA by administrative decree (Canada 1973, New Zealand 1973). Still other reported in the ESCAP survey (1977) that they conducted inquiries into the environmental impact as a matter of policy. The introduction of common EIA standards and approaches has been considered on international regional levels, for example, by the EEC and the Mediterranean countries under the Barcelona Convention of 1976.

4.35 A wide consensus could be detected with regard to these points:

(i) An institutionalized EIA is desirable and necessary.

(ii) The precise form should be decided by the individual countries.

(iii) Consideration should be given to the ways of making EIA simple, flexible and not too costly in monetary terms.

(iv) Emphasis in EIA should be on the transformation of environmental data into useful policy guidance for the decision makers.

(v) EIA is a possible means of encouraging public involvement and fostering environmental conscience.

4.36 Past practice has not fully corresponded to the precepts and considerations summarized in items (iii) and (iv) above. Because EIA is so essential to sound environmental management, the most important shortcomings deserve a listing:

- Emphasis on collection of data, often following mechanically some uniform guideline without regard for the relevance of the data to the particular assessment.
- Identification of important data with quantified data. Consequent incompleteness of the data base, as many important considerations of an impact on the human ecosystem are not quantified, nor even quantifiable, at the present or foreseeable state of the art.
- On the other hand, lack of baseline data. This was noted on both a wide regional basis (47) and with regard to specific needs for assessment and decision/regulation. One of the more telling examples in the latter category was the Showa Maru oil spill (1975), which required immediate national measures and a coordinated inter-

national response; however, the most recent baseline data on the Strait of Malacca dated from 1957.

- Lack of analysis which would make even complete, relevant data useful to the decision makers; or analysis focused on the justification of the proposed action/project, rather than on comparative evaluation of alternatives where the assessment of the proposal, as presented, was unfavorable with regard to one or several important aspects.

- Lack of uniformity in structure, standards and evaluation, where several agencies were administering EIA with regard to projects or activities falling within their jurisdiction (64); or as between the federal and state laws and practice (13).

- Lack of specialized, or even qualified, personnel. Reduction of the EIA to paper processing within the sphere of the government, with resulting excessive reliance on the judgment of outside consultants.

- As a composite result of these and related factors: bulky and costly descriptive statements; unnecessarily long EIA process; relatively low value for decision making and public understanding of the issues and decisions.

4.37 All the important weaknesses detected in the first years of practicing EIA can be related to a common denominator: the lack of emphasis on and capability for policy development, as defined with regard to environmental legislation in general (paras 3.15, 3.21). EIA is environmental legislation writ small. The differences are in the particular objective and scope, not in the elements and process. Even where the purpose of EIA is to allow the participants in the decision process to reach an informed judgment about how a given project could be carried out within acceptable impact risks and trade offs, it requires the same steps from problem definition through data analysis to policy recommendations, as they are necessary to produce sound environmental legislation. When the objective of EIA is generic--planning or regulations for management--the assessment is in principle almost undistinguishable from the preparatory steps for sectoral environmental legislation. Concrete examples where such an EIA was (or ought to be) practiced are: long-term forestry management, toxic waste disposal, national procedures to control trade for the purpose of implementing an international convention, e.g. CITES; and others.

4.38 Two other interrelated aspect of EIA practice deserve to be singled out: (i) "Disenchantment" when quantified data were not available with respect to important aspects of the assessment. The reference here is not to such baseline data as those mentioned in para. 4.36. It is rather to what is generically called "social indicators" and what should be understood

here in the context of society as human ecosystem. Corrective trends are emerging. It has come to be understood that decision making must and can go ahead with "fuzzy information" (68); that "when data are lacking, even the crudest observations will often yield viable results...small amount of data is better than no data...The optimum may be discoverable by intuition" (67; cf. 58, 36). The crucial factor is not the quantity or form of data, but the methodology of using and supplementing them in the process of policy development.

(ii) Resistance of decision makers. Where it exists, it is no doubt motivated mainly by the impression that EIA limits their power of decision; but it is likely to be reinforced by a too exclusive faith in numbers. The distinction is then drawn between "probably unrepresentative judgments of professionals [with regard to unquantifiable impacts]" and the "political process review" to which such judgments ought to be left (13). In fact, quantified scientific, technological and even socioeconomic data have a meaning for EIA only in terms of concrete problems. They do not stand by themselves; they must be always interpreted in view of the particular application. Moreover, the distinction between the experts and the decision makers, as it is typically expressed above, puts into opposition two elements in the decision process that ought to naturally follow each other and interact. There can be not the slightest doubt that the decision is always political-administrative; and that it will always include a strong element of intuition, except in clear-cut technical decisions of limited scope. The rationale of EIA as a policy exercise is to make the intuitive decision as "educated" as it can be made through comprehensive data/policy analysis.

c) The common standards

4.39 Despite the various shortcomings, due not to the concept but to initial problems of implementation, EIA has demonstrated its essential value as a tool for decision making, planning, uniform application of standards and public participation. Several common principles or standards for the establishment of an effective EIA régime can be derived from past experience:

(i) The policy principles and requirements ought to be expressed with specific reference to the nature and purpose of EIA. If EIA is practised without such a specific basis--for example, in the framework of a town-and-country planning law--it may happen that, in an assessment of the

impact on the coast of offshore petroleum exploitation, greater attention will be paid to esthetics and visual intrusion than to natural and human ecology.

(ii) The implementation should be based on uniform regulations. This requirement applies particularly to major countries, with multiple jurisdictions responsible for EIA--whether they are federal states or various resource agencies. For example, there were some 70 agency regulations under the 1970 U.S. CEQ guidelines; by 1978 it was found to be necessary and convenient to upgrade the guidelines to uniform regulations. These still leave enough room for specific adaptations (64;65).

(iii) Form of the EIA document/statement. The following pragmatic standards have emerged from the review of the practice in several countries:

- Limited lengths (normally 150 pages or less)
  - Eliminate repetitive discussion and duplications
  - Incorporate by reference data and documents that are accessible, instead of quoting them in full
  - Avoid accumulations of background data
- Clear standardized format:
  - Issue(s) to be resolved
  - Areas of controversy
  - Major conclusions, stating real alternatives
  - Sources and authorities
  - Explanation of methodology, interpretation of data (where applicable)
- Plain language. Consistent terminology.
- Obligatory summary of the environmental impact statement (to be circulated where the whole document is not necessary)
- Simple and specific procedures for comments on and minor changes in draft statements.

(iv) With regard to the contents, various detailed checklists are available (e.g.,70;37;44).

d) Country-specific considerations

4.40 With regard to the specific form of EIA which a particular country wishes to establish, the following questions ought to be addressed:

(i) When should an EIA be required?
(ii) Who should initiate and prepare it?
(iii) Who should participate in the evaluation of the draft statement?
(iv) What should be the time limits and other procedural standards?
(v) Who should make the final decision?
(vi) Who should bear the cost?
(vii) What review procedures and remedies should be available?

4.41 Requirement. This is the threshold question. A legislative formula which requires EIA if an "environmentally significant" or "potentially damaging" action is proposed, begs the question rather than answers it. The significance or potentially damaging nature cannot be defined a priori in the abstract. Even a list of categories of projects or actions does not supply the answer in a concrete case. It is, therefore, essential to establish some simple obligatory procedure by which it can be determined whether the proposed action can have any significant environmental impact, so as to require a full EIA.

4.42 There are at least three practical approaches to the preliminary inquiry:

(i) Permit or licencing. The use of specified equipment (e.g., heavy earth-moving machinery, except for minor work on private land) or import-export trade, from noisy automotive equipment to animal products and exotic plants, can be subjected to a permit requirement. The evaluation of the application is an opportunity to determine whether an EIA is indicated.

(ii) Questionnaire. The filling out of a standardized questionnaire can be required in various categories of projects or actions, defined by scope, nature, cost or some combination of characteristics. The descriptive information is the base for the requirement or waiver of EIA. The filing of the questionnaire before the action, and the complete and correct information, must be obligatory under appropriate sanctions.

(iii) Negative EIA. The proponent who assumes that his project might fall within some category requiring EIA, can be given the opportunity to present a sufficiently justified statement to the effect that the proposal, despite its scope or nature, is not expected to have any significant environmental impact. Provision for review and overruling of the negative EIA is necessary.

4.43 Unless the negative EIA is reduced in practice to a mere formality (i.e., the presentation of major descriptive data with a simple conclusion that no adverse environmental impact is anticipated), it already requires a rudimentary assessment. The questionnaire may be the simplest approach to the preliminary inquiry. It requires adequate manpower, but may be seized as an opportunity to create an evaluation division in which it would be possible to integrate the talent scattered in the various resource and planning agencies and the universities; it would also afford the opportu-

ty of an early identification of personnel and expertise gaps, and the attendant effort to fill them. The permit/licencing requirement and the questionnaire procedure may be combined to advantage, for example, with regard to industrial development projects. The evaluation should be made in such cases by the same division or agency, or should follow uniform rules.

4.44 Preparation and cost. The tacit assumption in the preceding discussion is that there is no difference between public and private projects or actions. Private activities may raise important environmental issues, beyond the "narrow" environmental impact. For example, should a tract of land suitable for rice production be subject to the practically irreversible conversion into an urbanization? Can the cumulative effect of relatively small private activities have eventually a significant damaging impact?

4.45 Various countries do not draw any distinction between public and private activities for the purpose of EIA. Elsewhere, only public actions (including major environment-related legislation) are subject to EIA. The assumption is that only activities of this scope can have significant environmental impact. While this may be the rule on the given federal level, the several states may be free to extend the duty of EIA also to non-governmental activities.

4.46 The EIA process may be initiated in one of several possible ways:

(i) As a result of the mechanism of preliminary inquiry (para 4.42). Either of the modalities may be applicable to both private and public activities. A ministry of public works or a nuclear energy authority can be made subject to the questionnaire, just as a private enterpreneur is.

(ii) In a more advanced system, public agencies should themselves initiate the inquiry and either prepare a negative EIA or follow through with a full assessment.

(iii) Some specialized agency or branch of the government can be charged with the duty to bring to the attention of the proper authority proposed activities which ought to be subject to EIA (e.g., New Zealand 1973: Commission for the Environment, acting through the Minister of Environment).

(iv) Individual citizens or environmental protection organizations may have the standing to complain, administratively or judicially, that the law was violated in the particular case by not preparing an EIA.

4.47 When several departments of the government are directly or indirectly involved in the proposed action, a lead agency may be designated for the purpose of managing EIA. The designation can be ad hoc, or as a matter or law. In the latter case it is likely to be the ministry of environment or other central environmental agency. In spite of its policy function, EIA should be probably best considered an operational event. While the policy council, if in existence, is a also a possible candidate for the function of a lead agency, it might be preferably saved for a control or review function.

4.48 The standards designed to simplify EIA (para. 4.39, iii) should also substantially reduce the cost. The government/taxpayers will pay for the public EIAs; the private enterpreneurs/consumers will pay for the nongovernmental EIAs. In the latter case, there is a greater danger that the statement will be slanted in favor of the party who pays for it; however, the consulting industry which has sprung up in the major countries has not been insensitive to the wishes of the proposing government agencies, either. High-level control and review are necessary.

4.49 The preparation of EIA offers an opportunity to combine the quality control with the development of public capabilities and cadres for ecomanagement. Where it is feasible, the government may consider the establishment of a system under which it will prepare the required EIA with its own personnel, at cost. The personnel would be normally the same as that evaluating the preliminary inquiry in one of the forms suggested in para. 4.43. The cost, even if including a component dedicated to improved generation and processing of data, and training of technicians, would be most likely well below the rates of private consulting groups. A system like this would, of course, not completely eliminate the need for specialized outside experts. But their contribution would be integrated with the development of local capabilities and expertise, much along the same lines as are suggested with regard to international technical cooperation and assistance (paras 6.37ff.).

4.50 Final decision. EIA is usually prepared in a draft form for circulation and comment. For the sake of economy of time, effort and cost, the draft EIA should incorporate all the relevant data, documentation, etc. collected during the inquiry. The starting point for the assessment should be the opinion emitted in this preliminary stage that a full EIA is required under the law.

4.51 All those affected by the final decision should have an opportunity to comment on the draft. This involves, in the first place, all the public agencies whose jurisdiction is affected or which have administrative expertise to contribute. The implementing regulation should contain the requirement that the draft be circulated; a standard list of agencies, subject to additions when circumstances warrant them; and a time table which gives a reasonable time to comment (most usually thirty days, or so) and sets time limits on follow-up proceedings in cases where serious objections against the draft are raised.

4.52 The second group of interested parties are individuals. Community or private interest may be affected by the proposal being assessed. This fact and its extent can be best ascertained by publication and hearings. Other appropriate ways to obtain citizen input in EIA are also feasible in countries where formal, structured hearing procedure is not preferable. Although some narrow objections may be raised, citizen participation has often produced realistic opinion, helpful to select the least damaging way of carrying out the planned activity.

4.53 Distinctions may be usefully drawn in determining who will make the decision on final EIA document. In routine cases, it may be the lead agency or the minister of environment. In special cases, generically defined in advance in the law or designated ad hoc, a ministerial committee, the council of ministers (cabinet) and/or the environmental policy council may be required to ratify the decision.

4.54 The ratification jurisdiction may double up as the instance in charge of administrative review in routine cases. The standing to appeal and the time limitations need to be stipulated. Judicial appeal may also be made available against the final administrative decision by ratification or on review. No special provisions are necessary in countries which have a general system of judicial review. Elsewhere, a specific provision must be made to allow judicial review of EIA. Such an arrangement depends entirely on the constitutional rules and legal tradition of the particular country.

6. Coordination with national development planning

4.55 The "interlocking nature of environment and development issues" (58b, para.39) and the consequent need for the integration of environmental planning with national economic and social planning (62) is now widely recognized (see also the reference note in Annex A,6). An early statement of the need for a national policy is contained in the Fourth Five-Year Plan (1969-74) of India: "Planning for harmonious development...is possible only on the basis of a comprehensive appraisal of environmental issues... It is necessary, therefore, to introduce the environmental aspect into our planning and development...At present there is no point in the structure of the Government where the environmental aspect receives close attention in an integrated manner."

4.56 Comprehensive environmental legislation is an opportunity to initiate the integration of physical and economic development planning with environmental considerations for the purpose of rational long-term management of the human ecosystem. Some countries have written such a policy principle into their organic laws, to be implemented under the direction of the head of state (Venezuela 1976, Philippines 1977). Putting this policy into operation presupposes effective environmental management and planning as provided for by the organic law. The development of EIA capabilities has a high priority, for EIA is perhaps the most important interface between economic development and environment. In this framework it is possible to close the gap betwen environmental management and the planning for physical and economic development--the main weakness in contemporary national planning. The first, transitional step is the coordination of the economy and the environment; environment becomes an important variable in national development planning. The next steps ought to be toward the integration of the two sectors. Environment will thus become an internal dimension of development, as well as the contour that defines long-term opportunities and constraints.

7. International implications

4.57 As distinguished from sectoral laws and regulations, organic environmental legislation deals largely with what was defined as the common core of policy, law and management principles (Figure 2 , page 12). As an increasing number of countries promulgate such organic laws in one form or another, at least three positive international effects are likely to ensue:

(i) The ratification and implementation of international environment-related conventions will be facilitated.

(ii) The development of national ecomanagement systems (Principle 13, Stockholm Declaration 1972) will increase beneficial transborder impacts in the case of shared natural resources, and minimize adverse impacts (Principles 20 and 21, Stockholm Declaration; Draft Principles of Conduct 1978).

(iii) Bilateral and regional treaty making will be enhanced.

4.58 The need for effective national EIA systems is supported also by the growing practice of international and national development aid agencies to promote the environmental soundness of projects they are requested to help to finance.

B. ELABORATION

1. The frame of reference

4.59 Practical elaboration of environmental legislation--drafting in the broad sense--is a specific application of the principles and concepts discussed in the preceding sections, especially those on:

- . environmental legislation as a process (pages 16-19)
- . policy development and the respective role of lawyers (pages 20-22)
- . pre-legislation inventory and its processing (pages 23-30)
- . forms of environmental legislation (pages 31-33)
- . structure and design of organic environmental law (pages 34-55).

In this framework, incorporated here by reference, the principal tasks and problems of drafting can be outlined in a series of comments and suggestions. Their order corresponds roughly to their appropriate sequence in real life. The several headings under which they are grouped below are for the purpose of easier orientation, not to suggest clear demarcation lines. In reality, the process has a "webless" continuity and involves interactions and feedbacks (cf. para. 3.18) too diverse and subtle to permit any simple classification.

2. Drafting: Tasks, comments, suggestions

a) Legal data

4.60 Comparative law. Normally, the draftsman is oriented in the area of the intended environmental legislation before he prepares the appropri-

ate prelegislation inventory. This orientation is likely to have reference not only to domestic law (including the points of contact with,and the possible limitations imposed by, the existing private and public law), but also to comparative law, that is, environmental legislation and doctrine in other countries. Whenever possible, countries which have similar resources and problems and/or a comparable system of law and government should be chosen as first reference. From the comparative information, which can be gathered also when the inventory is being evaluated, the draftsman can cull ideas about policies, normative solutions, institutional arrangements, procedures, enforcement techniques and experience, and supportive measures.

4.61 Sources and assistance. Paras 6.04 to 6.12, and 6.17 below list some useful sources of this "de lege lata" information. It may be very helpful under circumstances of lack of personnel, time and resources. The same circumstances may, however, impede adequate adaptation of the foreign models to the specific legislative task. External project assistance is indicated. It will both broaden the information and facilitate its most appropriate application. See paras 6.18 ff. below.

b) Nonlegal data

4.62 Scope. Adequate environmental legislation, especially of the organic type, is likely to require a great deal of information which is "de lege ferenda"--for the purpose of the law that ought to be--but is mostly nonlegal. The main categories of these data are:

- Physical/environmental
- Economic
- Socio-cultural
- Technological (engineering, environmental-protection and social technologies)
- National development goals and planning
- Political opportunities and constraints

More detailed lists are available, some of them focused on resource and sectoral data, or on EIA (e.g., 6, Annex I; 18; 31, 27f.; 37). The convergence, on the level of data and policy, between environmental legislation and EIA has been noted (para. 4.30).

4.63 Types and quality. Not all the necessary data are available in a conveniently quantified, classified or systematic form. Although the most likely reason is that the information has not been collected and processed, it is not the only reason. The draftsman will soon realize

that any data, even apparently ready-made, become meaningful only as the problems and legislative tasks are defined. This is likely to become more evident when the system approach, as suggested in connection with the inventory matrix (paras 3.27 - 3.30), is used. Narrow sectoral data, integrated with other sectoral data, may have a different meaning and weight with regard to policy and management than they have per se. (This is also illustrated by Figure 7, page 60.

4.64 Data development. This process is likely to have the characteristics listed below, even if they are not so articulated, simply because the development of data for the purpose of policy and decision is only a particular variety of problem solving:

(i) What the necessary and available data are is not determined a priori, but only through the process of application of the data to the problem.

(ii) At first, the information available tends to be scattered and incomplete. It needs to be sorted out, ordered and supplemented in terms of the problem as then perceived. Some data become available through the mere fact of having been identified. Much information in any country is in a neutral statistical or narrative form. It is organized without reference to the needs of environmental policy and law, but it can be activated and reshaped for this purpose.

(iii) Information thus collected needs to be synthesized and converted into formulas which corresponds to the practical questions (Figure 3, horizontal column A, page 17). Two things are likely to happed in this process:

- As the "what do we know about the problem" increases, the initial perception of the problem will be refined or changed. The most frequent direction of the change is from a rather simple original view to the recognition of complexity and interdependence.
- When the first draft of the resulting policies and their intended legislative expression is circulated among the data generators and the administrators, it is likely to put the matter in a collective perspective. This fact may yield further questions, refinement of the problem and the proposed approach, and additional data. This information is likely to be much more focused than the earlier information was.

(iv) On the basis of this local work, it will be possible to complement the information base by the transfer, adaptation and interpolation of appropriate data from international and foreign national sources. These sources will be then integrated with the local needs, rather than adopt-

ed without a critical frame of reference.

(v) The information base which may have appeared narrow and inadequate at the beginning, is likely to become surprisingly enlarged and varied during the described process. Even so, a substantial part of the data may not be "hard" (quantified, statistical), but "soft" ("gross," order-of-magnitude estimates of quantities and trends; intuitive and impressionistic data). These must be interpolated and projected to complete the necessary information. At this stage, when the problem is reasonably well defined and alternative approaches are formulated for evaluation, the "soft" data are much less imprecise than they would have been by themselves. Any decision about future environmental management is essentially a social decision. Social decisions are always made under conditions of uncertainty. But there are degrees. The task of the data-to-policy stage in environmental legislation is to bring as much certainty into the inherent uncertainty as it feasible. The simple use of all relevant available knowledge will go a long way in that direction. (See also what has been said in para. 4.38 (i) with respect to EIA.)

c) Policy development

4.65 The preceding discussion highlights the multiple back-and-forth interactions between the "input" (data) and the "conversion" (problem definition and policy development). This fact makes it difficult to draw a line, even for analytical purposes. The closest one can come to some distinction is to say that "data development" is the first stage of "policy development." The policy stage itself overlapps with the process of the already political decision on, or selection of the legislative policy, that is, the form of the legislation, its normative content (rules) and how it will be carried out (implementation, management, enforcement, supportive measures).

4.66 The questions. The following list illustrates (without necessarily exhausting them) the questions of goals, form, scope and alternative choices with which the draftsman is likely to be faced during the combined stage of policy development and decision/selection.

(i) What are the realistic and yet sufficiently forward-looking goals in terms of the data, the state of national development and planning, the resource limitations, the priorities and permissible trade-offs, the existing and anticipated environmental impacts, the best available alternatives, the comprehensive cost/benefit analysis?

(ii) What is the principal objective:

- . Legislation dealing with one or more sectors/systems
- . Organic, enabling law
- . "Primary" environmental protection
  - . Focus on public health/human ecosystem
  - . Remedial/preventive measures for highly impacted resources
    - . What are the resources or impacts to be managed/controlled
- . Integrated management
  - . Use allocation among multiple demands
    - . Coastal zone management
    - . Metropolitan transportation
      - . Land use (direct; induced)
      - . Energy (appropriate technology)
      - . Air quality
      - . Noise
      - . Other impacts: on the users
        on adjacent human settlements
      - . Economic cost/benefit
  - . Waste control and management
    - . Solid
    - . Organic: Agricultural
      Human
    - . Effects: Materials
      Water: demand and quality
      Energy: conservation, generation
      Economy
      Employment: loss/gain balance

(iii) What resources and measures are necessary and available to achieve the objective(s)? What can law and regulations do? Preventive technology? Training and management? Public support? What will be the cost: to the user of the natural resources? the consumer? the general taxpayer? Will the emphasis be on prevention of environmental damage? on the payment for it? on incentives to reduce pollution through appropriate methods? On the administrative side, can the objective be achieved through existing institutions or does it require a reorganization or new organization? Can better coordination or integration reduce cost while improving agency performance? What will be the most adequate control and enforcement régime under the circumstances--the nature of the objective? government resources? general conditions?

d) Specificity of the recommendations

4.67 The policy recommendations are being formulated for incorporation in the law. In organic legislation or another kind of enabling law, policy should be preferably expressed in the form of directives, that is, fairly high-level, generalized propositions. Even in this form, they ought to be clear, consistent and susceptible of future adjustments dictatated by practice or by changes in the system being managed.

4.68 Policy for a particular resource system will be stated not in terms of principles, but of concrete management options, justified as far as possible by quantified data and evaluated as to their full cost and benefit estimates. Such policy models are highly country- and resource-specific. However, a simple schematized illustration can be offered.

Figure 7

Elements of a sectoral policy model:

Waste control and management

EXISTING POLICY	To dispose of waste with the least economic cost.	
	Approaches	Effects
	Do nothing	Pollution. Environmental and public health problems
	Burn it	Air pollution
	Bury it: Ad hoc	Very limited solution
	Sanitary landfill	Costly. Limits on available land area
	Liquify it (human wastes):	
	No treatment	Pollution. Eutrophication. Parasitic/contagious diseases.
	Effective treatment	High cost (sewers, plants)
	In either case	High freshwater consumption
NEW POLICY	(i) To control the generation of waste. (ii) To maximize the reuse or conversion. (iii) To dispose of the remaining fraction.	
	Reduce waste generation: Returnable food/beverage containers Standardized minimum packaging	Reduction of volume
	Reuse and recycle	Conservation of materials; production energy savings
	Human waste → Aerobic disposal	Water savings. No pollution. Cheaper than sewage collection and treatment
	Organic and agro-waste → Organic fertiliz.	Save cost of chemical fertiliz. Reduce run-off pollution
	Fuel for power plants	Save fossil fuel. Easier air pollution control.
COST/BENEFIT EVALUATION	Economic C/B.	Resource savings (cpr, materials, energy). Environmental health. Quality of life.
LEGISLATION	Indicated legal, fiscal (incentives) and administrative (management, control, enforcement) provisions	

e) Legal form and coordination

4.69 Selection of the most appropriate form must be made from among the basic forms or their combinations (paras 3.38 ff). One such combination (Philippines 1977) has been to promulgate comprehensive organic legislation in the form of three interlocking decree-laws.

4.70 Once the basic selection is made, questions of detail will suggest themselves almost automatically in such areas as:

- The detailed structure and design of the law. Again, numerous variations on the optimum model outlined in the first part of this chapter are possible.
- The particular needs may dictate attention to emergency situations before more comprehensive legislation can be attended. For example, it may be necessary to regulate petroleum transportation to reduce the danger to the coastal environment before the legal base for a full-fledged coastal zone management can be prepared. How to best apply the principles of environmental legislation to this limited problem, so as to produce a control system which will be appropriate also in the broader management framework?
- What is the best balance and coordination between:
  - the enabling legislation and the subsidiary one, such as
    - executory laws
    - regulations
    - sectoral and local rules/jurisdiction?
  - federal and state law and jurisdictions: what should be the make-up of the various "lists" (federal, concurrent, state) and why?
  - the new law and the existing or necessary (sectoral) laws?
  - how to best use the new law to provide appropriate legal and institutional base for effective sectoral management?
- How to provide the base for implementation, enforcement, remedies, sanctions? How to assure the priority of preventive measures, if this is the policy?

f) International standards and obligations

4.71 In areas where international standards and/or obligations exist, both the policy and the legislative expression need to observe them.

g) Justification

4.72 Whatever the scope, objective or form, the draftsman ought to facilitate the selection of policies and the normative instrumentation by presenting a clear statement of conclusions, alternative options and/or recommended priorities, justified by the relevant data, tabulated or expressed graphically where convenient. The draftsman should not try to

anticipate the decision. Rather, he should consider it to be his mission to make a decisive contribution to the adoption of the law/management system that is optimal in the given circumstances. This goal is stymied a priori if the information base is incomplete (or even slanted toward the expressed or assumed decisional preference), or if all the feasible alternatives have not been persuasively reasoned out and the best option(s) justified.

h) Law drafting proper

4.73 The relative position and importance. The selection or approval of the various policies (paras 4.66-4.70) is the decision about what will be. Law drafting in the narrow sense is the expression of this decision in executory terms. The policy of the law ought to be clearly and comprehensively stated at the beginning of the draft, together with definitions of specialized terminology. When the policy foundations are well prepared, the drafting proper is the relatively simplest part of the process. But, while a good law cannot be produced without such sound foundations, good policy intentions can be lost or blunted by poor draftsmanship.

4.74 Communications and coordination. If the drafting proper is done by specialists (for example, a law drafting bureau of the legislature or the ministry of justice), they should have substantially participated in the policy development and selection, or should be adequately briefed. In any case, there should be a continuous communication between the draftsmen and the resource technicians and managers while the law is being written. This will assure that the verbal formulation is adequate for future regulations, management and enforcement. It may be also a good idea to maintain communications with legal counterparts in the relevant agencies, including circulation for comments of the successive drafts or their portions. Any tendency to keep the law making "under wrap" (for example, as between the ministry of health working on its code, and the ministry of environment preparing simultaneously a pollution control law) ought to be discouraged. The horizontal communication --a weak link in the present-day government-- is likely to make the environmental law more effective and to smooth the way for its enactment, implementation and budget support. It may also improve the overall environmental management even before the new legislation is in force (already stressed in para. 3.32).

4.75 Specific language and style. Much language will be dictated by established local terminology, form and style in public and private law.

This is likely to be true of the various generic formulas, such as enabling, saving or repealing clauses. This uniformity is desirable where the specific needs of the environmental drafting do not require a particular form or phrasing. Legislative drafting manuals, sometimes applicable to whole "families" of legal systems (e.g., 11), can also be helpful.

4.76 Beyond these general guides and constraints, the environmental draftsman should strive to project an appropriate particular style and terminology, as justified by the initial policy statement and definitions. Some widely applicable advice can be offered:

(i) Do not respond to the complexity of the subject matter by lengthy and involved definitions and formulas. The quality of a legal definition is the degree of precision with which the words generalize the facts which they are to govern. This comprehensivess of expression is achieved not on the verbal level (number of words) but on the conceptual level of policy formulation.

(ii) Environmental legislation is not a field where loose language with wide margins for legal interpretation is desirable. The changes in the applied scope of the legal rules must come not from manipulation of the words, but from changes in the data base (through monitoring or new information) and the corresponding policy adjustments. The wording of the law should be such as to accomodate, within reasonable limits, the changes which practice or improved knowledge indicate, and so to slow down the natural aging process of the legal text.

(iii) Vaguely drafted law may defeat the legislative intent. The legislator may find out after some experience that the operational agency or agencies have more leeway in decision making and programming than is desirable for effective implementation. Amendments are possible, but time will have been lost.

(iv) The rest is grammar, syntax and logical organization of items, paragraphs, sections and chapters. Haphazard sequences may indicate that the words are there, but the conceptual infrastructure is incomplete or shallow.

3. Community participation

4.77 Adequate community participation in the elaboration of environmental legislation is as useful as it is in the more specific case of EIA (para. 4.52). Where circumstances, tradition and institutional practices permit it, it should be elicited in the most appropriate way (public hearings, informal village or neighborhood gatherings, etc.) at some stage when adjustments in the policy and the draft law are still feasible, in the case strong public opinion tended to correct the draftsman on some point.

4.78 The vision of individuals and local groups may be too restricted for the purpose of comprehensive policy and law, but their input is likely to be useful in matters that affect the quality, economics and maintenance of the human (micro)environments.

4.79 Even more important may be the feeling of participation and the better understanding of the local environmental rules and measures in the broader frame of reference. A positive attitude of the citizens towards the interests pursued through environmental law and management is indispensable for the purpose of effective implementation. It is also likely to reduce sensibly the need of enforcement through sanctions. In fact, it may make the difference between effective and ineffective enforcement. These points are stressed again in the chapter on Implementation.

4. Educational role of preambles

4.80 The preamble to the law--organic or sectoral--was not discussed at the beginning of this chapter, although it may seem to be the logical place. For one, preambles are not considered in all countries to be part of the law in the sense of being legally binding. And they are often prepared at the end of the drafting process. This sequence is even recommended where a less systematic and policy-oriented approach is taken (45). A preamble should not be the substitute for an initial policy statement, commesurate with the object and scope of the law. But the traditional function of preambles--an introduction to and general justification of the law being enacted--can be converted to an important use which deserves a mention.

4.81 A major obstacle to environmental education is the lack of

country- or region-specific textbooks. The lead times to produce them are long. The expository form of preambles can be used deliberately to draft them as self-contained summaries of the policy purposes and principal provisions of the new organic and/or sectoral laws. The preambles of already existing laws, which may not be cast in a sufficiently elaborated form, can be appropriately expanded and reshaped. This would not normally require any legislative action in the formal sense.

4.82 A simple collection of such preambular statements represents a first textbook and handy reference on the problems and management of the national human ecosystem. Subsequent editions can be enhanced by additional text, comments, illustrations and other pedagogical tools. They can be increasingly differentiated to serve the various educational levels.

V. IMPLEMENTATION

A. INTRODUCTION

1. Law and implementation.

5.01 Implementation is widely recognized as the narrow profile of environmental legislation. Law which is not implemented in any of the various necessary forms listed below, or which is not enforced for any of several possible reasons, is not materially binding. Its existence may satisfy political and administrative conscience or a formal international obligation. It has no effective impact on the problems with which it is supposed to deal. It may have some initial deterring effect, but this will disappear as soon as it becomes evident that the law will not be enforced. Even a law that has been implemented through regulations can remain ineffective because of lack of funds, personnel and equipment.

5.02 For these reasons it is important to outline at least the principal problems and mechanics of implementation, including but going beyond executory regulations which are of direct concern to the draftsman of environmental legislation. To draft as effectively as possible, it is necessary to keep in mind the whole system. Political decision makers also need to be explicitly conscious of the fact that beyond the threshold decision to do something, which results in the preparation and passage of the law, there are other thresholds to cross if the law is to be made operational.

5.03 Assuming a legislative text which is appropriately comprehensive, clear, consistent and thus as easy to implement as it can be made, most implementation programs are likely to require that steps be taken in these areas:

a) Implementation in the narrow sense:

(i) timely, clear and realistic executory regulations;
(ii) institutional arrangements: new, coordinated, simplified;
(iii) administrative procedures (management, enforcement);
(iv) personnel (recruitment, transfer, training);
(v) material means and equipment;
(vi) budget assignments for the above.

b) Enforcement:

(i) determination;
(ii) specially trained personnel, where applicable;
(iii) special equipment, where applicable;
(iv) budget for special enforcement activities.

c) Education and training:
(i) implementation and enforcement personnel;
(ii) general information and education.

d) Supervision, monitoring and evaluation. This may range from conventional supervisory and statistical activities to technical monitoring and data processing. The latter may or may not require additional personnel and equipment, in addition to that available in areas a) and b). Institutional flexibility and efficiency may save the need for additional budgeting.

2. The elements and philosophy of implementation.

5.04 Implementation will reflect in each case not only the particular nature of the legislation, but also the unique set of local needs, government structure and style, development goals, cultural factors and various constraints. The basic elements of and approaches to implementation are, however, comparable, if not standardized, in many existing legislations. This common core, discussed below, is adaptable and improvable to reflect the particular needs and preferences of each country.

5.05 The style and effectiveness of implementation is also determined by emphasis on remedial or preventive approaches, or various combinations of both. The traditional legal inclination is to rely heavily on sanctions, including penal. When environmental legislation is understood and practiced as a function of ecomanagement, the emphasis shifts to prevention as the principal focus. Administrative and penal sanctions ought to be also always available as the ultimate weapon, but preventive implementation requires a more complete and sophisticated system of measures--legal, fiscal (incentives, disincentives) and technological. These combine the prevention of environmental impacts with the conservation of materials through more economic and environmentally benign processes, reuse and recycling. See also para. 5.30 (iii).

5.06 In addition to the administrative and managerial implementation measures and programs, prevention has inevitably a strong social dimension. To state this is to acknowledge the obvious: the scope of environmental implementation and enforcement is such that it cannot be managed unless the quantity of enforcement is reduced through active interest and participation of the community. Most often the citizen interest will be directed at the quality of their immediate human environment. Individual violators in all departments of social behavior have been traditionally kept best in check by their neighborhood peer group. Environmental interests, from improper handling of wastes to illegal poaching, are probably no exception, if they are understood as community interests.

5.07 Citizen participation beyond their immediate environment also needs to be recognized and fomented as an essential ingredient of effective implementation of environmental law. It usually takes the form of environmental interest groups. Almost by definition, they are the product of higher ranges of economic development and the corresponding deterioration of environmental resources. The targets of citizen environmental groups in the field of implementation and enforcement are mainly institutional violators. Frequent among them are government agencies, including those in charge of resource management and environmentalprotection. The violations may range from routine pollution to noncompliance with explicit or implicit obligations of environmental and technology assessment, before decisions are made.

5.08 Only citizens who are informed and sensitized can interact with the environment in a manner that will substantially reduce the burden of enforcement, if it does not also contribute to active environmental protection. The necessary information and education, where it can not take place in a more formal setting, can be tied in with rural and urban development, settlement and public health programs. In addition to its obvious purpose--the training of technical cadres, environmental education thus becomes also a vital social tool of implementing environmental law. This has been recognized in several more recent legislations (Colombia 1974, Venezuela 1976b, Papua New Guinea 1975, etc.).

5.09 This survey of the social aspects of implementation--the remainder of the chapter deals with the legal-technical aspects--would not be complete if it were not recognized that in some countries the compliance and

enforcement may be not a matter of environmental education, but of basic education or literacy. The problems range across the board. Some of them can or must be prevented by environmental or technology assessment. Illiterate farmers should not be given chemical pesticides or mechanized equipment they are likely to misuse and so to compound the environmental impact of their primitive agricultural practices. If nonalphabetized drivers are issued licences, they have an observable and predictable impact on energy consumption (largely because of poor maintenance), a consequent deterioration of air quality, and on accident rates--all of which are aspects of the growing problems of urban environments.

5.10 The prevention philosophy should be made explicit in the policy of the environmental law in question. Otherwise, the style of implementation will be determined on the basis of narrower, legal-type considerations by the regulatory and enforcement authorities.

B. THE MECHANICS

1. Administrative-regulatory arrangements

a) The implementing authority.

5.11 The enabling legislations defines the corporate agent of the government which will have the responsibility to implement it. It may be the council of ministers, an existing ministry or department, or a new agency the legislation of reference created for the purpose of regulatory activities and enforcement. The new agency may consolidate various existing jurisdictions and extend or supplement them according to the scope of the legislation. Whether the agency is new or whether an existing agency assumes new responsibilities, the process of organization will inevitably delay the implementation. Practical experience shows, however, that the length of the delay depends more on the determination to get ahead and on the overall operational tradition of the given government, than on the mechanics of setting up a new organization.

5.12 The task of the implementing agency is to issue regulations, rules, by-laws and orders. These are sometimes referred to as subsidiary legislation, carrying out the enabling legislation. The technical standards, permit procedures, schedules and other steps necessary to

make the legislation effective can be promulgated in any of the various forms, depending on the local administrative-law practice and terminology.

5.13 The implementing agency or body needs to be given sufficient range of authority. In addition to the usual corporate legal powers and attributes, it will need some or all of the following legal and management capacities, depending on the scope of the enabling legislation:

(i) to regulate, licence, set standards and rates;

(ii) to collect and process data for these purposes;

(iii) to plan and operate programs;

(iv) to enforce, with the assistance of general enforcement agencies where indicated;

(v) to monitor the results of these various activities; to process the information; to inspect for purposes (i), (iv) and (v);

(vi) to bring about administrative changes in the implementation mechanism, as indicated by the operational experience and results, as monitored;

(vii) to propose amendments in the enabling environmental and the related legislations, in the underlying policies, or in the structure and form of implementation, where such changes require legislative amendment or government decision on a superior level;

(viii) to have input in the national development planning, if the interrelation between the environmental and the socioeconomic sectors is recognized in the enabling legislation.

5.14 Specific sectoral legislation requires a scope and forms of implementation distinct from organic legislation or a comprehensive environmental code. In the latter case, the organization of the implementation mechanism may require an intermediate layer of subsidiary legislation, which must be authorized by the enabling law. The secondary legislation will often take the form of decrees which organize, for example, interagency executing or coordinating bodies (such as interministerial commissions in the areas of resources, health and industry, or environment, education and communications) or areas of special management (a major bay or urban area; Colombia 1978). The process of detailed regulation and implementation is then carried out by these special authorities. A general provision in the enabling legislation--for example, one establishing in principle the regime of environmental impact assessment--may be implemented in a piecemeal fashion in the sectoral decrees, rather than through a separate, general regulation. The former technique allows expe-

rimental development. For instance, the requirement of EIA can be limited initially to a special management zone, or to a specific sector of resources or activities. A general, rather than piecemeal, regulation is probably more favorable where sufficient experience from other countries can be drawn upon and adapted.

b) Institutional forms and coordination.

5.15 A major obstacle to effective implementation exists where responsibilities are split and/or operations overlap among several agencies or levels. It is not unusual for a dozen government ministries, departments and institutes (as specialized operational agencies or autonomous authorities are called in some countries) to have some responsibility within the environmental resources system as a whole. Their only coordination, besides the limits of their legal authority , may take place through the national budget. This leaves a wide margin for the overlapping or even duplication of some functions. Even the draftsman of the environmental legislation may not be entirely aware of this network, unless an initial institutional inventory is prepared.

5.16 Well-drafted legislation minimizes or eliminates jurisdictional duplication and conflict. It can do this by any of the following techniques:

(i) the creation of a new, single environmental agency, charged with implementation of the law and coordination of operations;

(ii) the assignment of the full responsibility for implementation of the new environmental legislation (we are, by definition talking about comprehensive, not sectoral legislation) to an existing agency;

(iii) coordination of operations,monitoring and future policy development among the various agencies which were not consolidated by the new legislation in one of the two preceding forms. Alternatives (ii) and (iii) require further comments.

5.17 The advantage of solution (ii) is that it may be less costly in monetary terms than to set up a new agency. But, in order to administer effectively the new comprehensive law, the existing agency may have to broaden its self-image and reshape its accustomed ways and priorities. Let us take, for example, a ministry of agriculture. It has been the choice in various countries. To accomodate the interests of agri-

culture proper, of fisheries, forestry and various related aspects of water and land management, it would in fact become a ministry of food production systems. Even this broadened base would leave out, for example, the management of water and land for other important uses. There may be a real conflict between agricultural and forestry practices that silt or pollute a lake which is a source of hydroelectric power, municipal water supply and tourist revenue. To deal with similar situations, which are frequent in practice, the originally sectoral agency needs to develop the capability of a comprehensive, trans-sectoral perspective. It must become in fact a two-level ministry: of environment, with emphasis on coordination, supervision and policy; and of agriculture (or, to refer to some other actual examples, mining and industry, science and technology, renewable natural resources), with emphasis on sectoral policy and operations. The difficulties of such a transformation should not be underestimated. It is done easier on an organogram than in reality.

5.18 Where the new legislation emphasizes environmental protection, a ministry of health and welfare may be the best existing agency to take over the consolidated implementation. Certainly under the concept of human ecosystem, this department of the government is the most indicated to develop and monitor the ultimate human and social indicators of the consolidated environmental management. It may be less subject to interdepartmental conflicts between the various resource sectors. But it, too, would need to broaden substantially its frame of reference, in accord with the scope of the new legislation.

5.19 Alternative (iii) above (para. 5.16) lacks a focal point in the sense of alternatives (i) and (ii). Adequate enabling legislation will have taken care of this by appointing an authority (often the head of state or the council of ministers) to set policies and solve conflicts. Considering the amount of business and the resulting priorities of such a high-level authority, only sharply defined issues are likely to get the attention environmental management may deserve. The structure of environmental issues may be distorted by a topical perspective, such as energy or inflation. On the other hand, correct political intuition on the high level may bring about coordinated policy not achievable through any amount of operational consolidation.

5.20 To assure the necessary coordination and cooperation, the new envi-

ronmental legislation may be signed by all related department heads, even when it creates a separate environmental agency. In a concrete, not untypical case, the law was signed by the ministers of the interior, defense, economic development, public works, education, health and welfare, agriculture and stockbreeding, communications, and mines and hydrocarbons. Particular implementation decrees may establish comparably broad coordinating or advisory councils. Where an organic law was implemented, inter alia, by organizing an area of special management in an environmentally deteriorated major bay, the following departments and interest organizations joined the lead agency (department of renewable natural resources and environment): the district governor, the commander of the navy, the national navigation and ports authority, the national planning office, the ministry of health, the national institute of hydrology and meteorology, and the local chamber of commerce (Colombia 1978).

c) The special case of federated countries.

5.20 Federated countries present some special problems of distribution and coordination of powers and responsibilities in the field of the environment. The objectives are most likely to be implemented adequately if some variation on this basic structure is selected:

(i) decision making on the policy level: centralized;

(ii) regulations and standards (within the agreed policy framework), and operations: decentralized on the appropriate levels, state to local;

(iii) monitoring: decentralized (local), but processed and interpreted on the state/regional and the federal policy levels.

5.21 When important economic resources--water, forests, mines and the like--were managed in the past by the states and a new federal environmental law is designed to correct the consequences in the light of national interests and policies, the implementation will take place in a complex situation of interdependence and conflict of the environmental-legal and the economic interests. Such a situation is likely to require the development of new concepts and goals of integrated national planning, rather than only the usual regulatory implementation of the environmental law.

5.22 It appears obvious that policy is the key also to successful implementation. Comprehensive and consistent policy will help to streamline a dispersed operational network; the lack of such a policy is likely to stymie a central environmental agency even if it has all the essential legal-administrative powers. (See also para. 4.16.)

d) Timing.

5.23 Since legislation is not enforceable until it is implemented, the timing of the regulatory process is crucial. Experience shows that the lead time in issuing regulations and other implementation instruments can range from several days to several years. Major environmental laws promulgated in the mid 1970s began to be formally implemented on the average 3-4 years later. The delay may be a matter of policy. The length of time needed to prepare the detailed regulations and standards is often not unwelcome as a transition period during which the new law is gaining public acceptance. It is convenient to keep in mind that even after the formal implementation instruments have been promulgated, further time will be needed to put them in effect--institutional organization, recruitement or training of personnel, divulgation, acquisition of material means, etc.

5.24 Where there is interest in speeding up the phase of formal implementation, the following considerations may be taken into account:

(i) Most of the technical data needed for the eventual elaboration of regulations and standards are likely to be collected and processed for the purpose of policy development prior to the drafting and passage of the new law. The use of the data for the purpose of implementation ought to be explicitly in the mind of the draftsman.

(ii) As soon as the draft of the enabling legislation is ready, and while it is in the stage of approval and promulgation, the attention of the draftsman can shift to the preparation of the basis for, and the first drafts of, the eventual regulations and standards. In this manner, only the fine tuning and adjustments to the legislation, as it was in fact approved, remain to be done.

(iii) If, as a matter of policy, the new legislation is to be put into effect gradually, the formalization and administration of the regulations can reflect it. But the time delays and sequences will be a part of an articulated system and process. In fact, experience with the early regulations will provide feedback information for the final drafting of the latter ones.

5.25 It may be convenient to stipulate in the enabling legislation the time limit or schedule with respect to formal and material implementation. Without such a provision, the legislation is in fact little more than a declaration of intent.

2. Implementation techniques.

a) Standard categories.

5.26 The various approaches and combinations of techniques found in the existing environmental laws can be reduced to several categories which illustrate the range of options:

(i) List of permitted activities.

(ii) Prohibition of:
. specific activities
. all activities not explicitly permitted.

(iii) Definition of limits on:
. activities by category
. location of certain activities (pollution zones, "black holes")
. environmental impact, most often in the form of limits on the discharge of pollutants.

(iv) Operation permits or licences, for the purpose of:
. prohibition of what is not licenced
. control of what is licenced.

(v) Grouping of activities by the kind and level of pollution (polluting substances, cumulative effects, chain/synergistic effects, e.g. smog) as the basis for definition of limits (item iii. above) or issuance of permits (item iv. above).

(vi) Standards of maximum permitted discharge per unit of time and/or cumulative.

(vii) Combination of discharge (emission) standards, licencing and the prohibition of certain activities or substances (toxic, hazardous, radiation, etc.).

(viii) Charges or taxes on polluting effluents or emissions.

(ix) Order to install generic or specific pollution control equipment (predischarge treatment, noise insulation, etc.).

(x) "Polluter pays principle" (PPP): the source of the pollution must take prescribed measures to control it, and pay for the cost.

(xi) Incentives to take or to accelerate the corrective measures without affecting substantially operations, production and/or reasonable profit. Incentives take most usually the form of:
. direct subsidies during a limited time period
. tax deduction, e.g. accelerated depreciation allowance on the investment in the control equipment.

(xii) An aspect of PPP is the proposed insurance against pollution damage claims (34). Strictly speaking, this is not an implementation technique but protection against low pollution control standards.

5.27 Incentives are the opposite of pollution charges or taxes. These are disincentives, that is measures to discourage discharge of pollutants into the environment. To be effective, disincentives must be more costly than the installation and operation of the control equipment.

5.28 Incentives are applicable not only between the government and the industry or trade, but also between various levels of government. For example, the central government may subsidize part of the cost of the installation of sewage treatment plants for which state or municipal governments are responsible under the law. In Europe (Western and Eastern) and in North America these subsidies range between 30 and 100 % (7, ch.V). The combination of PPP and incentives is another example of the close relations between environmental protection and economics. On the one hand, incentives have stimulated the installation of control equipment, the production of which represents in turn a considerable new industrial activity. On the other hand, incentives of this kind have raised question of possible unfair trade competition, e.g. within OECD (32) and EEC (3, 4).

5.29 The preceding list and discussion of the standard techniques reflects the existing legislation and the most pressing needs to increase environmental pollution controls. However, pollution is merely one form of improper use of resources; conversely, pollution control is part of the comprehensive effort to use and manage resources properly. Overexploitation by pollution discharges, which depletes a body of water by making it useless for other purposes, is analogous to overlogging or overhunting. Therefore, several techniques discussed above are common to pollution abatement and to the management of other resources. An example would be resource-use licencing in fisheries, forestry, hunting and wildlife management. Where a relevant international treaty is in force--for example, CITES--the national system of permits and prohibitions in fact implements the obligation of the state as member of the international convention. The licencing regime may, under circumstances, include export and import trade.

b) Evaluation.

5.30 In line with the favorable and desirable trend toward prevention, distinctions need to be made in order to evaluate and select the most appropriate techniques, their combination and gradual phasing in or out.

(i) Distinctions may need to be made between:

. Old activities
. New activities using established technology
. Introduction of new technologies

(ii) The relative emphasis on the remedial and the preventive, depending on the nature of the activity and the goals of the environmental legislation:

. Environmental protection (with emphasis on the human resources)
. Correction of the improper use of resources (see para. 5.26)
. Management of resources, by categories and problems. Management represents by definition a synthesis between the remedial and the preventive, with emphasis on the latter.

(iii) Emphasis on remedies projects into environmental legislation and implementation traditional legal-administrative thinking. It depends primarily on established procedures and sanctions of administrative and penal nature (see below: 3. Enforcement). The preventive approach requires a wider range of ways and means, among them:

. Information and education.

. Technology assessment.

. Design and selection of alternative methods to achieve the same results with lesser or no environmental impact.

. Incentives to prevent (rather than to correct), especially to collect, reuse and recycle; to save materials; to minimize the generation of any waste.

. Comprehensive planning, instead of the limited physical or technoeconomic planning that is current. Thus, for example, the development or upgrading of an urban transportation system, instead of being limited to questions of technical design and cost of construction and operation, will be planned as a system of resources (land, energy, time, economic cost, etc.), with the goal to allocate them as well as possible (mobility, economy, enhancement of human settlements and environment) and to reduce social and environmental cost (air pollution, noise, disruption of neighborhoods, etc.)

5.31 Specific problems, such as air pollution from stationary sources, may require a sequence of remedial and preventive measures:

. Land use planning, zoning, siting.

. Control over installation and operation.

. Discharge limits.

. Pre-discharge treatment to meet the limits.

. Fiscal incentives or disincentives.

The implementation of this relatively simple sequence of environmental protection measures will require various permits or licences, standards, investment in control technology, and subsidies or charges/sanctions.

c) Sectoral implementation models

5.32 Legislation dealing with various resources and with public health has longer history than general environmental legislation. It can serve as a guide also in the phase of implementation. For example:

(i) Codex Alimentarius (53, Agenda it. 8) proposes the following "food-control infrastructure":

. [Comprehensive legislation]
. Regulations (ideally in one document)
. Control service administration (ideally centralized)
. Field inspection staff
. Control laboratory staff
. Education and training
. Coordination
. Penalties (are stipulated in the comprehensive law)

(ii) Toxic substances. The following elements of implementation were suggested on basis of ECE country survey and the inventory of problems to be solved (47, 19-23):

. Information on the scope of the problem
. Definition of "toxic wastes"
. Definition of technical problems, cost, public acceptance
. Evaluation of appropriate programs:
  - quantitative reduction
  - recycling and reuse
  - treatment, detoxification
. Regulations
. Controls; penalties; prohibition of specific activities
. Central collection of statistical information
. International harmonization of national legislations

(iii) Water legislation guidelines, e.g. ESCAP (10) and UN/ESA (50, ch.III-IV).

3. Enforcement

a) Problems and obstacles.

5.33 Enforcement is a test of environmental legislation and implementation in two ways:

(i) A well-functioning system of environmental management, with emphasis on prevention, needs little enforcement, although it will have adequate means available.

(ii) If enforcement is necessary, the results are known to be mixed. To what an extent is enforcement in this area the mirror of enforcement in general, of the so-called "soft state"? How much can environmental law

be better fashioned and administered? The answers must be found in the root problems. Some of the most frequent are these:

- The enforcement of certain aspects of environmental protection is made difficult by population pressures, adverse socioeconomic conditions, the need for food, fodder and fuel.
- There is a correlation between inadequate environmental policy, poor enforcement and the absence or insufficiency of monitoring. The last defect deprives the decision makers of information that could alert them to the need for more adequate policy and enforcement.
- Enforcement is limited by inadequate funds for the training and employment of enforcement personnel. Lack of integrated policy and planning prevents an evaluation of this budgetary item in terms of the whole national environmental and economic infrastructure and of the damage it suffers.
- If enforcement is selective or arbitrary, it can lead to abuses. This may create a climate adverse to any enforcement at all.
- Environmental concern is lacking in the government departments that cause substantial impacts: public utilities, works and services. This is often justified on budgetary grounds or the cost to the consumer in the form of higher rates. Again, no cost-benefit calculation is made that would include the external costs.
- Last, but not least, the economic sector has systematically resisted environmental regulations and enforcement. This has been the case irrespective of whether the economy is centrally planned or is of the market type.

b) Administrative penalties.

5.34 The first level of sanctions, and probably the most frequently needed and used, is administrative. It is usually specified in the implementing regulations; it corresponds to noncompliance with, or violation of, prohibitions, permits, licences, discharge limits and other administrative standards and orders defined in the regulations. These sanctions usually fit into the established system of administrative law in the given country.

5.35 The severity of administrative penalties ranges widely. Two examples can illustrated it. In the Soviet Union, the maximum penalty for noncompliance with the obligation to install or to maintain properly an antipollution device in a stationary source is 50 rubles (2, 332). In the United States, a mechanic who disconnects or otherwise makes ineffective an antipollution device in a motor vehicle, can be fined as much as $2,500 (66).

c) Judicial remedies and sanctions.

(i) Penal

5.36 Penal sanctions are prominent in many environmental laws enacted in the last decade. They include considerable range of fines as well as imprisonment (15; 7, ch.VI). Where penal provisions in the environmental law are inadequate to deal with a particular situation, especially in procedural aspects, they may be supplemented from general penal law. In a place where escape from the jurisdiction was easy, persons "suspect of illegal logging and destruction of natural resources" were detained under the respective article of the general penal code (Thailand, mid-1978).

5.37 Typical penal violations are:

- "Intentional," "knowing," "wilful," "negligent" violation of the environmental law (Sweden 1969; USA 1970);
- specified forms of water or air pollution (USSR/RSFSR 1960);
- disobedience of [resource conservation] order (Zambia 1970);
- "every omission or neglect to comply with, and every act done or attempted to be done contrary to" the environmental law and regulations or licences issued under it (Malaysia 1974);
- "discharge of substances which adversely affect the health of persons, including substances that become hazardous when accumulated in human bodies" (Japan 1967).

5.38 There are no sufficient data which would make it possible to judge comparatively the effectiveness of penal sanctions in the various countries. Commentators disagree among themselves. One recent comprehensive environmental legislation contains no penal provisions at all (Colombia 1974). In various countries it is difficult to draw a line between penal and civil monetary penalties. Imprisonment appears to be an extreme remedy. There is no known record as to how often and with what effect it has been in fact applied. The best balanced collective judgment is probably this: Penal sanctions are a necessary complement of environmental law to deal with extreme cases which endanger present or future life and health, or threaten to undermine the integrity of the system--for example, when a major dischargerignores the obligation to apply for a licence. Due to the nature of the objective, which is to protect environmental management from adverse interference, penal sanctions should be considered only as the ultimate reinforcement of administrative measures and sanctions (15; 25, 478-9).

(ii) Civil

5.39 There are three main categories of civil actions:

- Violations of environmental law. Actions are available for violations similar to those exemplified in the preceding section, where the law either does not provide for a penal sanction or where it leaves the choice open. An option to proceed on the basis of a penal or a civil complaint can facilitate the action against a violator, since civil action usually requires less rigorous proof of intent or negligence. The task of the prosecutor is facilitated in some countries by a system of presumptions which lessen or shift the burden of proof (e.g., Japan, Malaysia).
- Injunction. This action seeks a judicial order to cease and desist with respect to an environmentally noxious activity in violation of the law. It may supplement the government's power to issue such an order administratively; but, in the main, it is a remedy for the benefit of nongovernmental plaintiffs.
- Damages. Action in damages is available to nongovernmental plaintiffs--individual or corporate--as a remedy for losses caused by alleged violation of law and regulations. This action can be based either on a specific provision in the environmental legislation or, in its absence, on general tort law (e.g., the nuissance doctrine).

5.40 The penalty asked for in an action for violation of the law is made dependent in some countries on the length of time, usually counted from the moment an administrative order was issued or a judicial injunction was obtained. Under this astreintes-type provision, the penalty is due for every day or other time unit of violation. The accumulated amount is sued for. To keep the penalties in line with changing monetary value, it is possible to tie them to an economic standard that is being periodically adjusted (e.g., minimum salary, State of São Paulo, Brasil), rather than to express them in absolute amounts.

5.41 With respect to injunction or action in damages, the threshold question is the standing to sue of the nongovernmental plaintiff, that is his/her right to complain directly to the court. This standing to sue is provided for expressly in various environmental laws. Another possible solution is to establish the office of an environmental procurator (public attorney) to represent public interest in all civil and administrative proceeeding against alleged violators of the environmental law and regulations (Venezuela 1976). Any aggrieved party can present the complaint to the environmental procurator who investigates it and, where indicated, initiates the administrative, civil or penal action. The penal action is, however, available only to the government.

d) Duty to denounce.

5.42 To facilitate enforcement, some countries have provided for the duty of citizens and/or officials to denounce violations of environmental laws and regulations.

4. Other means and conditions of implementation.

5.43 The legal-administrative instruments and techniques discussed in the preceding sections need to be supplemented by administrative-managerial and educational means and processes. These can be only listed here, for the sake of completeness. Even the mere listing indicates their importance and the attention they merit for the benefit of effective implementation.

5.44 The main components of the nonlegal part of the implementation system are:

a) Material means

(i) Government budget. Other funding.
(ii) Planning of programs, projects and operations.
(iii) Technical equipment. Assessment. Appropriate technology.
(iv) Integrated supervision, controls, evaluation.

b) Personnel training

(i) Environmental education.
(ii) Technical/professional education.
(iii) On-the-job training.
(iv) ITCA as input in the development of local capabilities (para. 6.37f.).
(v) International-aid funds for technical training abroad.

c) Citizen education and participation.

5.45 While technical education and training is more subject to standardization, basic environmental education, whether it aims at the school population or at the community at large, cannot be effective if it is not closely adjusted to local needs and educational approaches. Even so, education as distinguished from specific training, is a long-term effort to provide the base for technical/professional capabilities and citizen support of implementation. A comprehensive approach has been pioneered in the form of a one-year "national environmental service" as part of the educational system (Colombia 1974, implemented by subsidiary legislation

in 1978). Other more conventional approaches can also be effective. One important experience ought to be kept in mind by those who deal with education as part of the implementation system. This experience is that, even in highly industrialized countries, with corresponding educational levels, environmental education is the least effective means of implementation in shorter term, especially where the environment-damaging behavior is widespread. Education cannot substitute for enforcement, but it can, and ought to be, combined with it. One such technique is to substitute environmentally beneficial activities for monetary fines--so many hours of conservation work, urban afforestation, etc., corresponding to the amount of the fine according to a set ratio.

5.46 d) Information base. Adequate data base is as important for implementation of the law, as it is for policy development. It was already pointed out that, and how, the data gathering for these two stages can be combined. Implementation can start even if complete data are not available or if other uncertainties exist. Too low initial standards can be adjusted when more detailed monitoring data are available (e.g., Singapore 1972, 1978). Even when implementation starts with adequate data, they need to be kept up to date by monitoring and processing, and applied to adjust the standards and procedures.

5.47 The following operations represent, in a schematized form, an adequate information system for the purpose of environmental legislation:

(i) Centralized data gathering and processing.

(ii) Development of environmental performance indicators; their coordination with other social and economic indicators.

(iii) Monitoring and feedback:
- To control implementation
- To develop data
- To correct policy and operations
- To correct the formal base of implementation (law, regulations, standards).

(iv) Availability and processing of data for special purposes (research and development, education, public information).

VI. INTERNATIONAL TECHNICAL COOPERATION AND ASSISTANCE

A. INTRODUCTION

6.01 Need for international technical cooperation and assistance (ITCA). Many countries have correctly assigned high priority to drafting assistance in the field of environmental legislation. No matter how specific or detailed it may be, a manual is not likely to substitute for such a direct assistance, at least not with regard to major aspects of environmental legislation. The proper task of a manual is rather to help to achieve two goals:

(i) To provide information about the various sources and forms of ITCA available to governments throughout the whole process of environmental legislation.

(ii) To facilitate ITCA and make it as effective as possible by:
- helping to provide common language for improved communication and definition of problems,
- describing alternative ways and means at the various stages of policy development, law making and implementation, and
- proposing methods that can be adapted under various circumstances in different countries.

A manual is in this sense the first stage of ITCA.

6.02 The content of this chapter. The subject of ITCA in environmental legislation is dealt with in three complementary categories:

1. Collection and supply of information about other countries:
   a) General country data
   b) Legislative information
   c) Sectoral-technical data sources
   d) International and global legislation that requires national implementation
2. Technical assistance:
   a) Information assistance
   b) Preparation of national legislation
   c) Implementation of national legislation
3. Education and training of national cadres.

6.03 Scope of sources. Since the Manual is addressed directly to environmental legislation on national level, the sources listed below are limited to those useful at that level (with the exception of para.6.13). In addition to sources already in existence, others are being developed. These are also listed for future reference. The scope of sources is limited here for practical reasons. It does not imply any sharp lines of separation.

6.04 National and international information is interrelated and complementary. Information about national environmental legislation can be often useful also on regional level with regard to legislation dealing, for example, with shared natural resources such as an international river basin or a closed sea, or with transfrontier impacts. It has been expressly recommended that States sharing a natural resource should, when appropriate, jointly seek ITCA services with regard to conservation and utilization of such resources. Joint policies and law embodying them may result. International and global data and models are, in turn, relevant to national ecomanagement and environmental legislation. These sources are being developed within and outside the United Nations system, for example, by UNESCO, FAO, WHO, WMO, ECE, UN/ESA, IUCN and IIASA, often in cooperation with UNEP. The development of technical assistance capacity in relation to general environmental policy, legislation and administration is among the express objectives of UNEP (57,paras 609,612,631,654-5).

B. SOURCES OF INFORMATION ABOUT OTHER COUNTRIES

1. Country data

6.05 UNEP International Referral System for sources of environmental information (IRS) is an electronic data processing system. It uses a directory of organizations and organizational units to provide the inquirer with a list of sources willing and able to give him specific environmental information. Data are stored in the following categories:

1. Atmosphere and climate
2. Oceans, seas and estuaries
3. Fresh water
4. Energy: resources, supply and use
5. Non-renewable resources
6. Chemical and biological agents and substances
7. Physical energy phenomena
8. Disasters
9. Renewable resources
10. Land use and misuse
11. Food and agriculture
12. Wildlife: animal and plant
13. Recreation
14. Population
15. Human settlements and habitats
16. Human health and well-being
17. Transportation
18. Technology and industry
19. Monitoring and assessment
20. Management and planning
21. Socio-economic aspects
22. Education, training and information
23. Subject disciplines
24. Geographic references
25. Pollution
26. Wastes

6.06 Subjects are arranged in a numerical sequence from 1000-Quality of life to 7200-Enzymes. They are also arranged alphabetically in the 26 categories listed above. These and other codes (source of information; characterization of countries by name, region, ecosystems and economic development; languages; availability of information, restrictions and fees; output form and format) serve to match the requirements of the inquirer to the description of the source. To facilitate requests for information, an operations manual and a list of national focal points have been prepared.

6.07 The following useful categories of data about various countries are not available at this time in a consolidated form, but can be retrieved through conventional library search:

- Background and history of environmental concerns
- The structure of national administration relevant to the environment
- The relations between government, industry and nongovernmental organizations
- The state of implementation and enforcement.

2. Legislative information

6.08 FAO/UNEP Catalogue of legislation on environment and natural resources is designed to make available to IRS users full legislative texts from the FAO collection. This collection numbered in 1977 some 130,000 texts. The estimated annual increment is 5,000 texts. Only environmentally relevant segments of this legislation are catalogued. They are listed in numerical and alphabetical subject indices. The country and language codes are those of IRS. The index of sources lists also texts available in the United Nations libraries in Geneva and New York. These are identified by their library call numbers. An IRS user service by the FAO and United Nations libraries is envisaged (54).

6.09 IUCN Environmental Law Information System (ELIS). This system is processing some 19,000 texts dealing with environmental legislation, court decisions and literature. It is based on a thesaurus of key words which counts over 300 pages (5). About 8,000 texts were processed by mid-1978.

3. Sectoral-technical data sources

6.10 (i) IUCN library (Morges, Switzerland); contains some 20,000 catalogues items;

(ii) WHO library and International Digest of Health Legislation (Geneva);

(iii) UNIDO, Technical Information System;

(iv) IAEA, International Nuclear Information System

(v) ILO, International Occupational Safety and Health Information Center; ISIS system;

(vi) UNDRO, information on natural disasters;

(vii) UNESCO/IOC Marine Environmental Data and Information (MEDI);

(viii) WHO/UNEP International Register of Potentially Toxic Chemicals (IRPTC).

6.11 UNEP plans a technical assistance clearing house facility, as well as a collection of existing and planned environmental legislation, initially in the areas of air and water pollution (including marine waters), soil fauna, flora and energy (57, paras 607, 630). Country files are to be compiled in collaboration with IUCN and other institutions, and expanded

and updated periodically.

6.12 EEC directives and OECD decisions, directed at the harmonization of environmental legislation of member States, contain some interesting comparative information which may be useful on the national or regional levels elsewhere.

6.13 4. International and global legislation.

The controlling collection will be the UNEP/IUCN Register of International Conventions and Protocols in the Field of the Environment. It is being prepared on the basis of the yearly report to the UNEP Governing Council and the United Nations General Assembly on "International Conventions and Protocols in the Field of the Environment." This report is available in English, French, Spanish, Russian and Chinese. The Register will assist in the implementation of international environmental legislation through national enactments, as well as reflect the status of this implementation.

C. TECHNICAL ASSISTANCE

1. Information assistance.

a) Definition.

6.14 Information assistance is directed at the discovery, facilitation and interpretation-at-distance of the various sources listed in the preceding section B.

b) Limitations.

6.15 Information assistance can alleviate the scarcity in many countries of useful documentary materials on environmental legislation, such as legislative texts and comparative law journals. It is, however, not without difficulties and limitations.

(i) Costliness of data processing. The integration of various data banks (FAO, ELIS, etc.) with IRS for the purpose of efficient information assistance requires that the processing of the data be standardized. This is a long and costly process.

(ii) The transmission of the required information, if it is at par with the storage-and-retrieval technology, requires printout or readout facilities. These are also costly. The farther from the main data centers the user is, the more likely he is to need information assistance; but for the same reason, the more he may have to rely on slow and unsatisfactory communication channels to get the answers.

(iii) Interpretation of the information. Local scarcity of information is often caused by the dearth of legal specialists and of research and training facilities in the field environmental legislation and eco-management. It is not infrequent that the lead agencies in charge of the development of environmental legislation--even of the general, organic type--are sectoral operational departments. They are likely to lack legal services with skills beyond the enforcement of existing regulations and general legal-administrative advice. This may limit the usefulness of external information which needs to be interpreted and adapted to the particular circumstances and tasks.

c) Changing requirements.

6.16 Pre-legislation research. As the scope and quality of environmental legislation improves, users tend to require information or drafting advice on broad subject categories rather than legal texts or formulas which deal with a specific, limited problem (54). The search for a quick solution is replaced by pre-legislation research, as it is discussed in III.B above. Combined with an improved access to environmental laws enacted in the developing countries, the research approach lessens the risk that inappropriate models will be copied. It also broadens the information requirements.

6.17 Sources of interpretative material. Most collections listed in paras 6.07 ff. deal exclusively with legal texts. A draftsman engaged in pre-legislation research is also interested in comparative interpretation, critical evaluation and new ideas. The most important and up-to-date sources are journals specialized in natural resource law and environmental legislation. In addition to ELIS (para. 6.08), several manual indexes facilitate the search. Leading among them are:

(i) Index to Foreign Legal Periodicals (London; worldwide). As of 1978, this index does not list two journals of interest:

Environmental Policy and Law (Bonn/Lausanne) and Revue juridique de l'environnement (Paris/Strassbourg).

(ii) Index to Legal Periodicals (USA, common-law countries).

These sources may raise the same problems of local interpretation and adaptation as legal texts do.

2. Preparation of national legislation.

a) Reasons for external project assistance.

6.18 It is possible to conclude that the goal to put at the disposal of developing countries a range of policies and techniques of environmental law and management from which they could select according to their needs and preferences cannot be achieved through information assistance based exclusively on legislative texts. Any apparently useful idea and pattern should be investigated, especially if it is backed by favorable experience elsewhere. The adoption of any external idea is a form of technology transfer. As distinguished from transfer of engineering technology, policy and law require normally extensive interpretation and adaptation. Otherwise there is a danger of mechanical copying of models, which may result in verbal sophistication, but have little practical relation to the natural, human and governmental environment of the receiving country. Where the foreign materials are not in a language that is directly accessible to the local draftsman, the availability or quality of translation may be another obstacle. Apart from the critical sense of the local lawmakers, the main insurance against improper interpretation or mechanical application of foreign models is direct personal collaboration with external specialists provided through ITCA.

b) Sources, availability and selection.

6.19 The ITCA agency with the most extensive past experience in national resource management and environmental legislation is FAO. More recently, UNEP has assumed the function of the central clearing house for technical assistance. Traditional technical assistance functions requested by national governments are also performed by UNEP. Assistance in the field of environmental legislation has been rendered by several other agencies, such as UNDP, World Bank, US/AID, and regional organizations and banks. This assistance has been often incidental to development projects or economic studies. Such a context is not always ideal

for the purpose of environmental legislation. But it fosters interaction between development planners, resource managers and environmental lawyers. Thus, it brings to light the existence of environmental problems which ought to be taken into account in the planning and implementation of development projects.

6.20 Various ITCA agencies may cooperate in giving assistance to the same project. For example, technical assistance was rendered in connection with major legislation in Colombia in 1974 in the following manner:

(i) The Government requested and received from FAO a brief staff planning mission;

(ii) an initial external consultancy, which focused on the policy framework and the general part of the proposed code, was financed by US/AID;

(iii) the bulk of the drafting and redrafting was done by a local committee with the assistance of a small international team, under the UNDP/FAO regional program of resource management and environmental protection (41).

c) Definition of the task(s).

6.21 The task or tasks for which assistance is being requested ought to be identified and defined as clearly as possible. For example: new framework legislation; environmental protection statute; a particular sectoral law; coordination of existing and planned legislation; institutional reorganization; general implementation assistance; drafting of regulations or subsidiary legislation; implementation of resource management under a new statute; the implanting of a new procedure, such as environmental impact assessment; etc. Help with the definition of the task(s) may be available from the appropriate ITCA agency. The agency may then provide from its staff, or by contract, the best indicated special consultant.

6.22 More than one expert will be needed where

(i) several specialized sectors are involved;

(ii) the legislation is made or remade in the form of a code which combines general enabling legislation with sectoral laws, procedural provisions and/or an institutional reorganization;

(iii) the project requires legal as well as nonlegal skills.

A task-force concept was pioneered in the ESCAP region in 1976-77, to deal with the last-mentioned case. Since mission needs change, task forces ought to be assembled ad hoc rather than institutionalized.

d) Timing.

6.23 The task for which external assistance is required will determine the best timing. Past field experience tended to indicate that assistance was often requested later than at the optimum time. This was due in great measure to lack of information about what ITCA was available; in other instances, communication failure between the higher government echelons and the operations level, where the initiative toward environmental legislation often originates, was at fault. The methodology explained in the Manual indicates that direct expert assistance should be requested and available already at the stage of policy development. The usefulness of an external consultant is limited, for practical as well as psychological reasons, if he arrives only after the local draftsmen have spent great time and effort on the proposed legislation. The situation is even more delicate where external assistance is sought only after the draft had been submitted to higher authorities and returned by them for relatively minor amendments, whereas the external consultant finds that a more thorough revision, beginning with data and policy, would be advisable. Professional conscience on both sides and diplomatic sincerity may solve the problem.

e) Length of the mission.

6.24 This variable depends on considerations similar to the timing of the mission. The central question is: Where is the assistance task situated on the scale which ranges from comprehensive policy development and drafting assistance to a review of a technical legal text, which deals with a specific resource or problem? A quick expert visit is sufficient in the latter case. It is also useful where the preceding information assistance and exchange was successful in clarifying the concepts and method; the personal visit then serves to focus the continuing work on the legislation or to refine the draft.

6.25 Depending on local circumstances and the state of the project, the preparation of comprehensive legislation for environmental protection and resource management is likely to require six to twelve man/months of assistance by senior consultant (team leader) and sectoral experts.

Even smaller-scale missions may require time consuming preliminaries before the work on environmental policy and law proper can start. For example, with regard to a proposed water quality control legislation, there may exist no single point where all the relevant statistical, legal and administrative documentation would be available. It is necessary to collect it from the various ministries, departments or authorities, such as public health, aqueducts and sewers, water resources department, public works, the planning office, the municipal authorities, etc. The external expert, instead of focusing on the law, may be at this stage an agent of liaison, which was not previously established through normal administrative channels, and a catalyst. The resulting sense of a system is likely to produce more realistic law, eliminate costly duplications or jurisdictional conflicts, and thus help the implementation to be more effective. The opposite of such an approach is a routine consultancy relying on "prefabricated" patterns and formulas. It can be done more quickly, but it will not necessarily correspond to the local circumstances and needs. The result may not be superior to simple information assistance.

f) Terms of reference for the consultant

6.26 The heart of the agreement between the host government, the sponsoring ITCA agency and the external consultant is the definition of the goals of the mission, usually called terms of reference. The importance of the terms of reference is not only contractual. It is also an opportunity for the local agency or committee, with whom the consultant will work, to define for itself what it expects and to determine how best it can prepare the way for a successful assistance mission.

6.27 Concrete stipulations of the terms of reference reflect the great variety of tasks and their combinations. Often they contain variations on the following points and formulas, paraphrazed below from actual documents:

(i) Definition of the consultant's local counterparts: specific ministry or its subdivision; inter-ministerial task force, technical-legal drafting committee, etc.

(ii) Specification of the legislation in question.

(iii) Existing legislation, prior drafts, prior or related consulting reports, etc. to be taken into account.

(iv) Definition of the task(s): to outline the draft law; to review,

integrate or coordinate existing drafts; to prepare a work plan for the task force; to help in the drafting of policy recommendation concerning the planned legislation, including scope and method, and strategies for implementation; to help to decide between the alternatives of a unified legislation (code-type) and other legislative and institutional arrangements, which would assure the consistency and functional coordination of several separate environmental and resource statutes.

(v) Statement of the policies to be expressed in the prepared legislation; their relation to the conditions and needs of the country, as they may be expressed in a national development plan.

(vi) Instruction to draft specific regulations or to propose other techniques for the purpose of implementation of existing or proposed legislation.

(vii) Work on interagency or intersectoral coordination.

(viii) Conduct briefings or seminars on the prepared legislationn, in cooperation with the local academic, scientific or technical communities.

6.28 The preceding list does not express any order of priorities. Further variations and additions may be necessary, depending on the scope and timing of the technical assistance to be provided.

g) Some practical problems and advice.

6.29 The following suggestions, distilled from experience in the field, are directed at consultants. They may, however, also help the recipients of ITCA to understand and anticipate some aspects of the expert intervention. In line with the main focus of the Manual, these points of advice refer primarily to assistance with comprehensive or cross-sectoral legislation.

6.30 The professional profile of the consultant. Ideally, the external expert will have a broad comparative background, open eyes and that characteristic quality of a trained legal mind— the capacity to assimilate quickly new information and synthesize it with reference to the local conditions and style. This will contribute to a climate of confidence and easy communication with the consultant's local counterparts; it will make him a more effective mediator and catalytic agent.

6.31 Experience in policy development. The consultant needs to have sufficient capabilities and experience in policy development. This includes especially (i) interest in and easy communication with nonlegal technicians, (ii) capacity to conceptualize controverted points so that differences or alternatives are made clear and arguments are met head on, (iii) facility in expressing technical data and goals in the language of law and administration.

6.32 Degrees and forms of intervention. The most favorable climate for external assistance exists where the consultant can help his legal and technical counterparts to shape and refine ideas that are already in their minds. His mission will be to assist in selecting the best alternative under consideration and expressing it in the legislation. But the consultant must be ready, if it appears necessary, to argue in favor of new, different concepts and approach. Finally, he must be ready to start from scratch. In any case, the interaction between the consultant and his local counterparts will be most effective if it is not only technical, but frankly, mutually educational.

6.33 Interagency coordination. Even a sectoral consultant is likely to face problems of interagency coordination. The water system, the quality of which is to be improved and protected by the proposed legislation, may also be subject to multiple uses and jurisdictions, such as power generation, transportation, industrial and municipal water supply, recreation and tourism. When a watershed or river basin is involved, the quality of water is also affected by agriculture, forestry, rural settlement patterns, etc. The situation is proportionately more complicated when comprehensive, multisectoral legislation is involved. The consultant will be well advised to start out with the assumption that most contemporary governments are better organized in the vertical direction (powers, responsibilities) than in terms of horizontal operational coordination. The appropriate organogram will help him to identify all the departments that have some substantive, jurisdictional or other relevant interest in the area of the proposed legislation. He should attempt to contact them and, where indicated and possible, bring about an ad hoc working/information group. In this process it might be possible to discover information and documentation not previously known or accessible to the draftsman of the proposed new legislation.

6.34 Particularly on drafting assistance. The combination of the consultant's expertise, experience and a new perspective on the proposed legislation may create a need to take the existing draft completely apart with regard to logic, structure, sequence of sections, consistency, clarity or terminology. The redrafting may even have to start with the title of the legislation which may be too narrow, redundant or contradictory in terms. Personal diplomacy on the part of the consultant is presumed. The more persuasive factor is likely to be his quiet mastery over the subject matter, and his capacity to respond to the local style and preference without sacrificing the precise policy and legal concepts. The pragmatic nature of the text is not incompatible with appropriately sophisticated concepts and method. These are admittedly relative indicators. The important concern is that they be well adapted to the particular situation and sufficiently forward-looking so as to prevent the legislative product from aging too fast.

6.35 Interpretation of the terms of reference. In all feasible situations, the consultant is likely to be more useful if he interprets his instructions broadly rather than narrowly. Especially, he should inject into the legislative process the following elements, even if not explicit in the terms of reference:

(i) coordination of the new legislation with the existing international environmental law, even if it has not been ratified by the host country;

(ii) ecomanagement principles and concepts (such as water- and airshed management; multiple use, reuse and recycling of resources and materials; appropriate technologies, especially those which save energy and materials; local ecodevelopment planning) so that the basic legislation would foreshadow the necessary future measures, including economic incentives and disincentives;

(iii) integration of public health concerns with environmental protection, and the coordination of both with national development planning.

3. Implementation assistance.

6.36 In the perspective of ITCA it is difficult to draw a sharp line between the phases of law preparation and implementation. Implementation assistance tended to be downplayed in the past. It is listed here separately to put it on par with law making assistance in terms of importance. Beyond that, it is possible to simply incorporate here by reference the information and suggestions contained in the preceding subsection 2 (paras 6.18 ff.), with whatever obvious adjustments apply.

D. ITCA AND THE EDUCATION AND TRAINING OF NATIONAL CADRES

6.37 Integration of external assistance with the development of local capabilities. As the term ITCA indicates, and as it was emphasized in the preceding text, external assistance should be a cooperative venture. In this form, it will be more successful than the "law for development" efforts were in the 1960s and early 1970s. The cooperative nature of the assistance will consciously favor the integration of the specific project assistance with the development of local capability to respond effectively to the broad range of environmental problems.

6.38 The longer perspective. External assistance is a convenient and useful shortcut. In the longer run, the proper management of the environmental resources depends, on both the legal and the technical levels, on the local cadres and the educational process which continuously produces and updates them. It ought not to be overlooked that even the best-intentioned and effective consultant comes and goes. Those who stay are the interested and specially competent local citizens. The desirable interlocking of ITCA and of the development of local expertise requires that those who request ITCA and those who render it be expressly aware of this additional dimension. And, of course, the educational aspect of ITCA is closely related with the general efforts to establish and maintain adequate environmental education on all levels.

6.39 Technical cooperation among developing countries (TCDC). The new concept of TCDC promotes the horizontal flow of knowledge and skills among the developing countries. This will no doubt also include technical assistance of the kind discussed above. It adds further urgency to the proposed interaction between ITCA and the development of national cadres.

E. THE ROLE OF RESIDENT REPRESENTATIVES OF ITCA AGENCIES

6.40 Local intelligence. The complications that may arise if external assistance is requested later than it would have been advisable, were mentioned earlier (para 6.23). Appropriate local contacts by the resident representatives of ITCA agencies will enable them to provide current general information about available assistance; in turn, they will be informed about environmental legislation projects in the thinking stage. This will make it possible to offer specific forms of assistance at the best time.

6.41 Advance preparation. The effectiveness and time economy of most assistance missions is likely to be enhanced if the resident representative of the respective ITCA agency is made aware ahead of time of the needs and requirements of the consultant, and is able to respond to them. The first request is normally going to be for an information dossier, consisting of such items as:

- Relevant background, institutional and economic information
- Organogram of the government and of the agency preparing the legislation or requesting the assistance
- Development planning information in a manageable size
- Relevant prior mission reports, by sectoral consultants, international survey teams, etc.

6.42 Contacts and coordination during the assistance mission. Almost any assistance mission that goes beyond a very narrow technical focus will require or benefit from contacts beyond the specific office to which the consultant is attached. Major legislation projects encompass considerations of policy and implementation. The consultant may be working mainly with a middle-level division or drafting group. His contacts should, however, extend preferably to the highest decision levels in the environmental-administrative hierarchy; to related jurisdictions--health, planning, public works, transportation--all heavy users of environmental resources whose understanding and cooperation will co-determine how the proposed legislation will be implemented; and to the national development planners. Finally, contacts with local academics and educational decision makers may determine whether the technical assistance will have any impact on the local technical advancement. Judicious mediation by the resident representative is essential in all these endeavors. He can help

to determine their convenience and sequence, and prepare the way.

6.43 Usefulness of standing instructions. The various supporting activities and initiatives by the resident representatives could be promoted by means of basic standing instructions elaborated and issued by the head offices of the various ITCA agencies on basis of past experience. Future consultants could then be made aware of the range of support they could expect as a matter of routine.

ANNEXES

A. BACKGROUND AND REFERENCE NOTES

1. The idea of the Manual: Origin and development

In September 1972, the IALS convened in Brussels, with the support of the UNESCO, a colloquium on "Man and his environment." This colloquium was planned as a sequel to the United Nations Conference on the Human Environment (Stockholm, June 1972); its focus was law as the instrument of environmental management, broadly defined. The idea of preparing a "repertoire of model environmental legislation and policy principles" was proposed in a discussion paper presented at the Brussels meeting (20).

Subsequent experience with international technical assistance made even more manifest the fact that a common body of information and concepts could enhance the growth of national environmental legislation and management. Technical improvements in law and implementation obviously required a better applied theory and integrated policy. In various forms, these thoughts were voiced or implied in such meetings of experts as these:

- Two follow-up colloquia of the IALS on the topics of "Legal protection of the environment in developing countries," México City 1974 (63); and "Pollution of coastal waters and harbours" and "Citizen participation in environment planning and control," London 1975;
- Regional Conference of Experts on the Environment and Development, FAO/Government of Colombia, Bogotá 1976;
- Interregional Symposium on consideration of environmental quality in the policy and planning of developing countries, WHO, Geneva 1977 (62); and
- ESCAP/UNEP Expert Group Meeting on environmental protection legislation, Bangkok, December 1977.

Several discussions in, and decisions of, the Governing Council of UNEP have dealt with these issues since 1974. Of particular importance was the request to the Executive Director, made in Decision 66 (IV),1976, to continue "the provision of technical assistance and appropriate guidelines to countries which may request it for the development of their legislation for the purpose of environmental planning and control." This policy directive was implemented in the form of a distinct activity within UNEP concentration areas under the heading "Environmental law"(57, paras 628-631). The preparation of environmental legislation was given high priority at the Fourth International Parliamentary Conference on the

Environment (Kingston, Jamaica) as well as the meeting of the U.N. Task Force on the Human Environment in Bangkok, both in 1976.

The first design of the Manual was prepared at an IALS workshop hosted by FAO in Rome, in December 1975. The project was carried out in 1978, after the outline and methodology were discussed at the already mentioned ESCAP/UNEP Expert Group Meeting.

2. The jurisprudence of environmental legislation

The term jurisprudence is used here in the sense of empirical theory of law, that is, one derived from the analysis of observed and measured facts, including social values and behavior. This is a relatively recent conception which replaces more than 2000 years of speculative-philosophical and mechanistic orientation (26, 103-116).

Any legal system or subsystem (such as environmental law) operates on three levels:

(i) Law as a formal system: the collection of authoritatively promulgated words which define rights, duties, powers, sanctions, procedures for interpretation, application, conflict resolution and reform.

(ii) "Living" law: formal rules as (or to the extent) they are in effect interpreted, applied and enforced; or customary law outside the formal system.

(iii) Law as an instrument of social management. (With regard to environmental legislation, "social" refers to the human ecosystem.)

Many lawyers and nonlawyers, in and out of government, have tended to see law as a combination of levels (i) and (ii), with emphasis on the first. This is the origin of the rule-orientation and of the related faith in solving problem by law rather than through law. The myth of le texte, based on the great codifications of the 19th and the early 20th centuries and the priestly features of their administration, lingers on in the civil law. A parallel doctrine of rigid precedent was repealed only in 1966. In spite of the dogmas, good practice has always known how to achieve the necessary. New rights and remedies were developed piecemeal, in the pretorian or common-law fashion, to accomodate the needs of life and equity in the face of static legislation. But the gap between the official dogma and the actual practice was not without effect on the role and quality of law on level (iii).

Several long-standing features of law as a pragmatic event are so

obviously relevant to environmental legislation that it appears convenient, as well as sufficient, to list them with only minor comments.

The conception of law as a continuous process. The classical dictum is by Portalis, the chief architect of the Code Napoléon--the direct or indirect model of numerous codifications worldwide: "Les codes se font avec le temps...; à proprement parler, on ne les fait pas." Law codes are not made; they keep on making themselves.

The role of educated intuition in decision making. Educated intuition, as distinguished from a simple hunch, is a "system synthesis" of the facts, the applicable rule (if any), social policy considerations and the equities (the "concrete justice") of the case. Good judges have always proceeded in this manner, even if the "best option", although verbally justified with reference to the existing formal law, was often (and properly) outside or against it.

Empirical methodology. Good law making starts with material facts, uses empirically derived concepts and method to reduce the myriad variables to manageable categories, define the problem(s), identify practical solution(s) and express them in legal-administrative form. The analogy between this sequence facts-policy-decision-law, and the sequence data-hypothesis-scientific principle/theory-applied technology, is as natural as it is striking. It is particularly interesting with regard to environmental legislation, given the multidisciplinary interaction between science and technology (management) on the one hand, and law/government/society on the other.

The most obvious and complained-about defects in many existing environmental law systems are at the institutional level--poor implementation because of uncoordinated separate agencies with overlapping or inadequate powers. There is, however, a lack of coherence also in other phases of environmental legislation, from the information base to performance monitoring. A comparison with the state of pre-Einstein physics suggests itself: The law model is similarly mechanistic, based on separate particles/laws and forces/government agencies. A general jurisprudence, akin to the field theory in physics, is yet to be constructed and applied (26,97 ff.). However, with specific reference to environmental legislation, such a field conception exists and is outlined in the following note.

3. The ecomanagement paradigm

The term "paradigm" is used here in preference to "model," "prototype" or similar terms. By analogy with the current use in the theory of the sciences (17;16), paradigm not only states the concepts and method to follow, but also defines the field of action and establishes criteria for the evaluation of the problems.

The paradigm which underlies the Manual draws on the conception of ecomanagement. The term--an abbreviation of "ecosystemic [social] management"--indicates that the idea of ecomanagement grew out of an analysis of precisely the problems of the environment with regard to human needs, which are the subject matter of environmental legislation (19). The ecomanagement approach has two salient characteristics:

(i) Scope: a unified field view of the environmental and human resources for the purpose of management (as defined in para. 1.30). This integrated, holistic conception is not only proper to modern ecosystemic ecology (principles of unity, complexity and interdependence); it also parallels the traditional social philosophy of "harmony and unity between the human order and the natural cosmic order" professed under various labels in many nonindustrial countries.

(ii) Method: a systematic analysis and application of data from the relevant disciplines and technologies for the purpose of decision making at the various levels of action--from general environmental legislation to specific resource management or projects. It was this aim of transforming all the relevant information into integrated terms useful to decision makers that led to the emphasis on policy development as the proper transmission belt between facts/problems and law/management.

Since the original formulation in 1967, various aspects of, or similar to, ecomanagement have been reflected in:

- the language of national legislations (e.g., United States 1969, German Democratic Republic and Norway, both 1970, etc.) and of international organizations (59, Recom. 14, pp.227-8; IUCN, 10th Assembly, New Delhi 1969: redefinition of "conservation" as management; 51: "ecological management"; MAB: various reports, 1974-);
- national planning and research documents (e.g., 9;48, para.11: elaboration of a methodology for environmental protection management [in Czechoslovakia], based on multidisciplinary system analysis intended to assist in formulating comprehensive policy measures so that individual problems can be treated as part of the broad system;
- the movement toward an integration of environment and development, from 1970 on (49; 1); and the recognition of the "fundamental

socio-economic causes" of environmental problems (58a, para. 53), with far-reaching consequences for analysis and approaches to solution;

. the progressive development of the scope of environmental management, including the "use and application of system analysis and methodology" (57, paras 649ff., among other).

The sum of the two last-mentioned concepts amounts to applied social system analysis, which is another descriptive name for the method of ecomanagement. The basic sequence Problems/Data - Policy - Decision - Action (Law/Management) is, in fact, a social algorithm--a prescribed series of steps from problem to solution--but is schematized more realistically with the addition of feedback loops to close the primary and secondary cycles (see Figure 4, page 19).

4. Human ecosystem as the object of environmental legislation

This note expands on the definitions in paras. 1.21 to 1.23, and their implications. The convenience and relevance of the concept of human ecosystem as the framework for environmental legislation and ecomanagement can be suggested by the following propositions:

(i) The natural and human resources form an integrated system of components and processes which are normally in a state of dynamic balance. The fact that people are an integral part of the system, not an external factor, is a truism ("anthropophysical," man-in-nature mode--19), but needs to be repeated (58b, para. 51).

(ii) Human communities depend on the natural resources (components of the biosphere/lithosphere) and human resources (physical energy, intelligence, social organization) for survival, economic welfare and development, and physical, psychological and cultural well-being. Only economic and energetic resources can flow into a given system from the outside, with obvious longer-term limitations for many of these resources.

(iii) The human/resource systems are ultimately subject to ecosystemic principles and limitations. Applied human intelligence in the form of various technologies has pushed back many of these limitations. This has been a positive impact factor. But technology used for the purpose of economic exploitation and production (technoeconomy) has been also one of the main negative impact factors on both renewable and nonrenewable resources. The other major negative impact factor has been population growth --in the main also an effect of improved technologies in medicine and nutrition.

(iv) The progress in the scientific and technological base of economy

was made possible by high specialization. It has, in turn, fomented a set of values, attitudes and operational modes characterized by a narrow "engineering" approach to problems, short-term perspectives and fragmentation, in and out of government. This technoculture still dominates contemporary education. It is, by definition, unfavorable to a comprehensive and integrated perception of environmental problems.

(v) The growth and accumulation of negative environmental impact raises the question of effects on the human ecosystems of the well-documented natural process of homeostasis: After having been seriously disturbed, a natural ecosystem stabilizes on a new level, often with a different quantity and mix of populations. There is empirical evidence that the same law of changing balance applies to human ecosystems. For example:

- When the food production system is overexploited because of population pressure, this pressure is often reduced by increased mortality due to malnutrition and famine. Economic overexploitation --overloading the environment with residuals--also sets into motion balancing mechanisms (increased environmental cancer and other ills; control technologies; legal and management norms).
- Depletion of materials or energy resources on which a particular civilization is based, forces a new equilibrium in the human ecosystem that may or may not be critical, depending on human intelligence (invention of new technology based on other resources, e.g. solar energy) or organization (the maintenance of a comparable state of civilization through a more economic use and reuse/recycling of materials).

(vi) In this frame of reference, ecomanagement in general and environmental legislation in particular are social technologies, the purpose of which is to protect or restore the ecosystemic balance within the human ecosystems, and to assure that the inevitable changes in the balance will be largely noncatastrophic.

(vii) In sum, the understanding of environmental legislation as a function of the human ecosystem helps to reconcile the different perspectives and interests of ecology and of law. While recognizing that the various components of the biosphere/lithosphere are resources for the purpose of legal regulation only to the extent they benefit man, this conception emphasizes also the ultimate ecosystemtic imperatives they are subject to. And, since benefit is more than economic utility, it is also a proper objective of environmental law to protect appropriate environments solely for their scientific or genetic value.

The term "human ecosystem" (22; 23) appears to be more analytically useful to describe this conception of human society within (and as a part

of) its environmental resources than the earlier terms "human ecology" and "human environment." Without any direct reference, it is in fact a social version of bionics--technology copying nature. A narrower but germane conceptualization has been applied to human settlements (43; 4 ;60); it apparently underlies the legislative concept of the "living environment" (Japan 1970); and it is similar in principle to the fashioning of water management and law on the hydrological cycle (52).

The main components, flows and feedbacks which constitute a human ecosystem, as defined for the purpose of ecomanagement and environmental legislation, are schematically expressed in Figure 8 on the next page(24). The symbols R (natural resources), H (human resources), I (impact factors), N (negative impacts) and E (ecomanagement) can help to illustrate in rudimentary terms the purpose of environmental law and management. The purpose is to replace an incomplete "shortcut" cycle R-H-I-N-R, by the full cycle R-H-E-[N]-R, where the proper management, expressed in and supported by law, partly eliminates ("circumvents"), partly reduces the negative impacts. As a result, the human uses and activities remain within the carrying capacity of the given ecosystem.

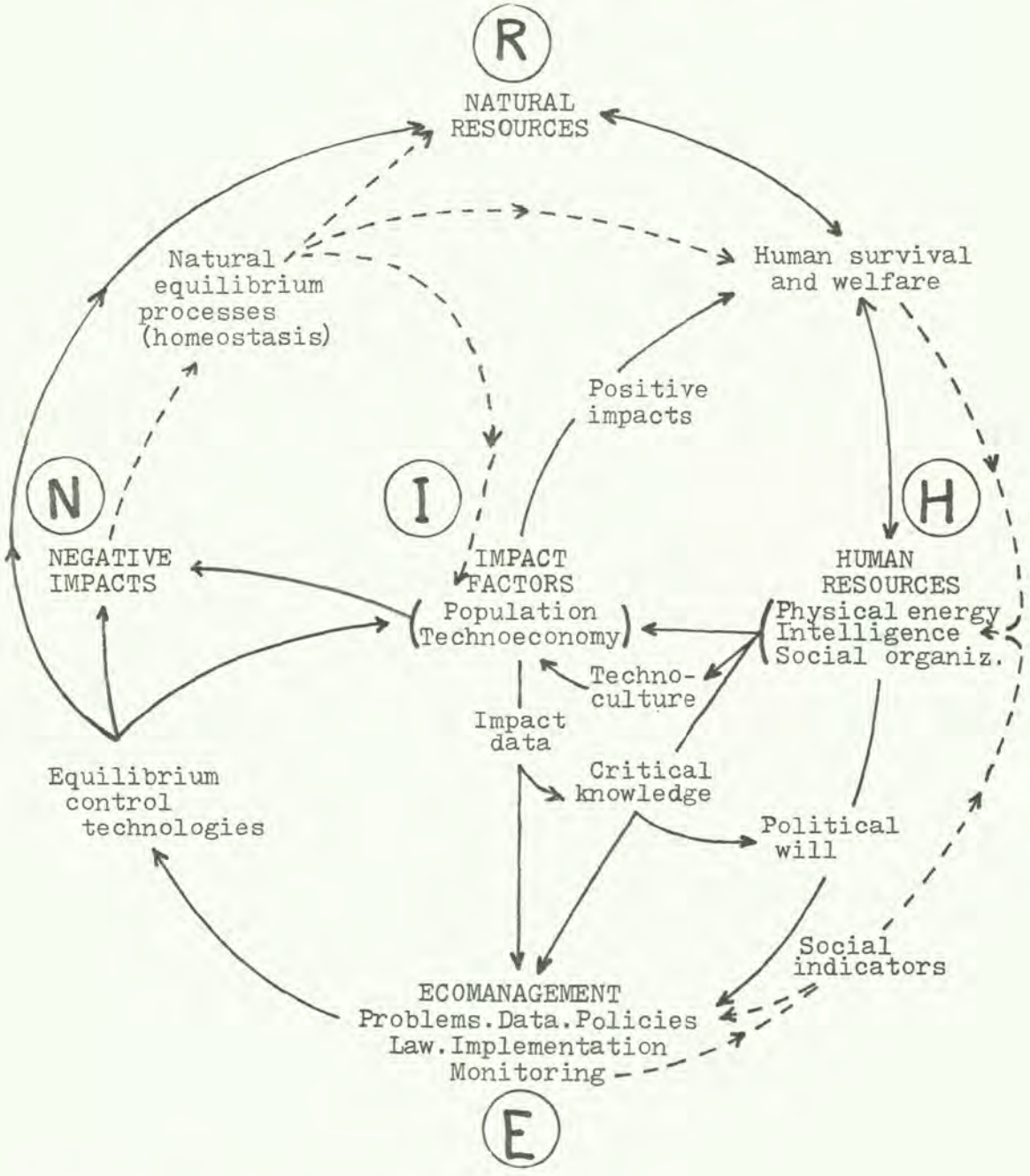
To view human society as an ecosystem rather than only as an organization characterized by political and economic processes, has wide-ranging implications for environmental legislation:

- It gives the legislation the scope and dimensions needed to serve into a fairly distant future.
- It gives the legislation an adequate structure and organization, as distinguished from the traditional conservation and other sectoral statutes.
- It helps to define the standing and jurisdiction of the various agencies charged with the implementation of the environmental laws.
- It helps to integrate and coordinate the various management mechanisms.
- It justifies the constitutional-level rank of the basic rights, duties and policies related to the environment--as already spelled out in various countries.
- It is the conceptual basis for a genuine integration of environment and development, because it helps to justify the assumption that environmental policy and law must be a part of national development planning.

Figure 8 →

Figure 8

Human ecosystem
as the object of environmental legislation (24)



Broken lines indicate feedback

5. Ecodevelopment: A comparative definition

The term eco-development was first used in 1973 to describe the proper development of rural communities within their own natural and human resources (55a, para. 10). This was a specific application of the idea of human ecology or human ecosystem. Later, ecodevelopment became the term of reference for the integration of environment into development planning ("environment as a dimension of development, not as something apart;" 38). As a rubric in UNEP programming, ecodevelopment has become the key word in recurrent calls for an improvement of the theoretical basis for "environment and development," such as:

- to fuse multidisciplinary views in a clear concept; and to develop new criteria for analysis as well as methodology (UNEP/GC/30, para. 101 [1975]);
- to develop a new and total concept (International Development Review IV (1976) No.4);
- ecodevelopment should be a part of national and development strategies (37); etc.

These and similar formulations seem to aim, in fact, at an ecomanagement-like conception. Their orientation is largely economic (see also 39). Thus they are, by definition, less comprehensive. They do not aim at environmental legislation for management.

Ecodevelopment has been most appropriately defined and applied as "a concept which aims at making the best use of the resources of a given region...through innovative and self-reliant approaches and technologies [it] attempts to change ecosystems in the direction of...sustainable development at the local level...(58b, para. 103). In this sense, ecodevelopment is an important aspect and application of ecomanagement.

6. Changing perspectives and methods in development economics

The prevailing concepts and practices in development economics were in the past among the major obstacles to effective ecomanagement; new, emerging trends converge with it. They are, therefore, important to the aims of environmental legislation and deserve a brief listing:

(i) The sharp dichotomy between "development and environment" (Founex Report 1971) became increasingly blunted from the Stockholm Conference (1972) on. Nevertheless, exclusively economic indicators continued to determine the line between "developing" and "developed" countries long after it became evident that the further development of any country ought to be governed essentially by the available resources and the limits of environmental tolerance in the local and regional context (21). The emerging

national trend is toward "long-term rational management of resources...to prevent them from setting boundary limits to socio-economic development" (Poland,48); and toward "administrative models of environmental management by means of which all the activities within a region can be ordered having regard to the interdependence of renewable resources...which are the substratum of all economic activity...so that sustained productivity can be assured" (Colombia; Draft regulations establishing the Integrated Management District for the Plain of Bogotá, 1978).

(ii) The measurement of development by economic indicators led to "growth without development" (58b,11). This pattern is being questioned (8;28;29); "radical changes" in development approach are being made (71,9).

(iii) Overreliance on econometrics tended to omit factors and concerns that could not be quantified. An example of the new breed is the UNITAR model of Basic Needs Strategies--"highly aggregated" and "relatively sophisticated in terms of its theoretical content" so as to facilitate the "exploration of alternative strategies" ([U.N.] Development Forum, March 1978). This is saying that empirical data must be generalized with the help of a conceptual model for the purpose of policy development (paras 3.20ff. above).

(iv)"External costs" of economic activities (27) such as damages to resources, human health and property, are beginning to be considered either in overall planning (e.g., Bulgaria, 48), or as part of environmental impact assessment.

(v) Economics in general is increasingly seeing itself as a policy science rather than a "positive" (descriptive-analytical) discipline (42).

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Cited as:	Full title:
Australia 1975	Administrative procedures under the Environment Protection (Impact of Proposals) Act 1974-1975
Barcelona Convention 1976	Convention for the Protection of the Mediterranean Sea against Pollution
Belgium 1973	Loi sur la conservation de la nature
Canada 1973	Cabinet Decree on environmental assessment and review
China 1978	The Constitution of the People's Republic of China
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora 1973
Colombia 1974	Código nacional de recursos naturales renovables y de protección al medio ambiente
Colombia 1978	Decree 1337 (Environmental education) Decree 1415 (Joint Commission on the Environment - Ministry of Health/INDERENA) Decree 1741 (Special management area, Cartagena Bay and Canal del Dique) Draft decree on the Integrated Management District for the Plain of Bogotá
Convention on endangered species: see CITES	
Convention on migratory species	Convention on the conservation of migratory species of wild animals ("Bonn Draft," 1977)
Denmark 1973	Environmental Protection Act, No. 372/1973.
Draft principles of conduct 1978	Draft principles of conduct in the field of the environment for the guidance of States in the conservation and harmonious utilization of natural resources shared by two or more States (UNEP)
Founex Report 1971	Development and environment. Report submitted by a panel of experts convened by the Secretary-General of the United Nations Conference on the Human Environment
German Democratic Republic 1968	Constitution of the German Democratic Republic
Idem 1970	Act on the planned management of the socialist environment in the German Democratic Republic - National Environment Act
Hungary 1976	Environment Protection Act, Law No. II/1976
India 1950	Constitution of the Union of India
Indonesia 1945	Constitution of the Proclamation of the Republic of Indonesia
Iran 1974	Environmental Protection and Enhancement Act
Japan 1967/1970	Basic Act for Environmental Pollution Control (1967, as amended in 1970)

Malaysia 1960	Constitution of the federation of Malaysia
Malaysia 1974	Environmental Quality Act, No. 127/1974
México 1971	Ley Federal para prevenir y controlar la contaminación ambiental
New Zealand 1973	Commissioner for the Environment. Environmental Protection and Enhancement Procedures.
Norway 1970	Law on the Protection of Nature, No. 63/1970
Pakistan 1973	Constitution of the Islamic Republic of Pakistan
Pakistan 1978	[Draft] Pakistan Environmental Protection and Improvement Ordinance
Papua New Guinea 1975	Constitution of Papua New Guinea
Idem 1978	Environmental Planning Bill Environmental Contaminants Bill Conservation Areas Bill
Perú 1976	Ley para prevenir la contaminación ambiental
Philippines 1977	Presidential Decree No. 1121, creating the National Environmental Protection Council Presidential Decree No. 1151. Philippine Environmental Policy Presidential Decree No. 1152. Philippine Environment Code.
Romania 1973	Law 9/1973 on the protection of the environment
Singapore 1971	The Clean Air Act, Act 29/1971
Singapore 1972/1978	The Clean Air Act (Standards) Regulations, 1972; amended 1978
Stockholm Declaration 1972	Report of the United Nations Conference on the Human Environment: Declaration on the Human Environment
Sweden 1969	Environment Protection Act
United States of America 1969	National Environmental Policy Act
Idem 1970	Clean Air Act Amendments of 1970, P.L. 91-604
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USSR 1977	Union of Soviet Socialist Republics. Constitution.
Venezuela 1976a	Ley orgánica del ambiente
Venezuela 1976b	Ley orgánica de la Administración Central
Zambia 1970	The Natural Resources Conservation Act, No.53/1970

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