THE LEGAL-INSTITUTIONAL FRAMEWORK FOR ENVIRONMENTAL RESOURCES MANAGEMENT (ECOMANAGEMENT) *

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I. SUGGESTED DISCUSSION FOCUS

1. The Brussels colloquium on "Man and his environment" in 1972 laid excellent foundations for this discussion. If I reconstruct and summarize my notes correctly, the discussion in Brussels started with the proposition that

- "Legal science must remain legal" (Chikvadze); but it turned inevitably to the
- "basic concepts" (Ancel), the necessity of "extralegal information" on the subject (Despax), the "translation of scientific data into legal norms" (Bocken) and the fact that we really had before us a "plat scientifique" with a "sauce juridique" (Despax).
- The task of "le droit devant l'environnement" (M'Baye, Szabo) was correctly identified as a double one: (i) to formulate policy; (ii) to develop techniques (Blanc-Jouvan).
- Consequently, it was stressed that the task of comparative law is an active one, not a more adaptation (Chikvadze). New thinking is necessary ("Law must know what to regulate" Malmström), not a simple transfer from the national laws to the international/comparative law (Sand).

2. Especially the last two sets of prescriptive tasks, which were emphasized and documented also in the principal discussion paper (see appendix note 10), are proposed as the necessary main focus for the discussion of our present topic.

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There are several reasons for this continued emphasis on *la science*, as distinguished from *la technique*—that means, on the exploration of *what are the problems*, the data, the resources, the restraints, as distinguished from that conditioned reflex of lawyers in general, and comparatists in particular, to be interested principally in *what the law is*.

• The prospects of mankind in terms of food, space, energy, raw materials, and the biological survival resources (air, water) are not improving. The critiques of the "limits to growth" concept are slide-rule skirmishes. On the time scale of humanity, it makes little difference whether some resource will run out in 25, 50, or 100 years, if this event should seriously affect survival capabilities. Much will be achieved by research and development. Ocean solar energy conversion is probably the brightest prospect (see appendix, note 17), with direct implications for food production. But a faith in scientific miracles and technical fixes to solve future problems, without maximum deliberate management from now on, can not be considered a basis for rational social and political conduct. In sum, this seems to be a call for the ultimate application of Abbé Sieyès dictum that "La politique est la science... de ce qui doit être".

• Despite some optimism about recent legislation (see appendix, notes 14, 15), there has been a painfully slow progress (see appendix, notes 18, 19, 23) toward the understanding of the concept of ecomanagement, the development of viable models, and of legislation based on them. The first and only practical application of ecomanagement to the drafting of national legislation is the contemporary environmental code for Colombia, not yet formally passed at the time of this writing.

• The emphasis in the recent legislation of various countries—e.g., in a chronological order, Norway (23.VIII.70), Zambia (22.X.70), Mexico (11.III.71), Denmark (13.VI.73), Belgium (12.VII.73)—is still on the "first generation" problems (see appendix, note 27), that is environmental pollution. At most, this limited concern is supplemented by traditional nature conservation measures.

Pollution is, of course, a dramatic problem everywhere, from Los Angeles to the Baltic and Mediterranean (see appendix, note 21), to Bombay and Calcutta, to Japan. But the solution is a *relatively* simple problem of installing the available abatement technology, to pay for it, and to monitor it. The United States will spend in the current fiscal year 1974-75 $ 4 billion on pollution abatement ($ 3.4 billion on sewage treatment plants, 0.6 billion on other pollution control—air, water, pesticides, solid waste). The Willamette River (State of Oregon) is an example of what can be done and how. In 1940, it was one of the dirtiest rivers in the

U.S. By 1970, it was restored to its pristine state, although during these 30 years the population of the river basin doubled (see appendix, note 22). All it took was to install secondary purification treatment for municipal sewage and industrial wastes; to build two dams so as to maintain sufficient flow during dry periods; and to pay the price, for the equipment and its operation, and for the continued controls.

Not all problems are such relatively simple issues of technology, budget, and monitoring. Most of them are socio-environmental syndromes which involve principally human factors, values, educational level, etc. (Consider, for example, the escalation from (i) the traffic syndrome (air pollution, noise, dangerous uses of technology), to (ii) ecologically-damaging practices of individual farmers, to (iii) population planning—the last so difficult because it is the most dependent on each individual and the most value-ladden!)

In the face of these data, the narrow-track legislation (pollution *cum* nature conservation in the conventional sense) reflects among the lawmakers the same technoculture which has been such a contributing factor to the development of these very syndromes which it now pretends to cure.

• Even in countries with advanced legislation, such as the United States, France or England (see appendix, notes 1, 5, 14), the sectoral approach in fact still prevails. With particular reference to the United States, which has the most advanced environmental science and technology, the best articulated policy and legal rhetoric, and the most active public movement, the development of effective, long-range policy models for ecomanagement is damped by institutional and political patterns (e.g., the development of policy is controled by the same government agents who will have to carry out the policy) the continuing supremacy of economic considerations, and the lack of liaison between the world of knowledge and the government—note the time gap involved in the education on the job of the chief U.S. environmental officer (see appendix, note 19).

• In all countries—some of them "softer" (see appendix, note 13), but most "soft" enough—the narrow policy making profile is accompanied by poor enforcement (see appendix, note 14) and social monitoring. Since enforcement depends very much on political will (including the budgetary assignments), and political will can never exceed (frequently will not even match) the understanding of the problems and consequences, there is at least some connection between the lack of systemic understanding on the policy level and the poor enforcement of the legislation, which may be scattered and incomplete, but even so would mitigate and prevent some of the environmental damage.

4. Two propositions would appear open to discussion:

First, that the over-developed countries (ODC) have any models to pass on to the less developed countries (LDC). ***

Second, that the LDC have developed so far any really integrated approach to environmental resources, on the level of policy development or of actual resource management (see appendix, note 15).

5. With regard to the first proposition, the lack of available model lies not only in environmental policy and law proper, but also (and even more) in the pattern of technoeconomic development which is, besides population growth, the main source of pressures on environmental resources.

On the other hand, the reaction to the first major "awakening"—the repercussions of the oil price increases since October 1973, combined with a "sudden" realization of the limits of this cheap energy—has been articulate and creative, especially in the United States. This reaction is likely to be the source of some socio-technological models worth looking at in those LDC which have considered the ODC as paradigms of development and power.

6. With regard to the second proposition, let me offer these minimal suggestions:

• Even in such an advanced situation as the drafting of the environmental code for Colombia —and *speaking now purely clinically*— the "integrated approach" was in the initial stages more apparent than real, more due to an existing institutional structure than to advanced integral concepts. E.g., the enabling act (Law 23/1973) used some very narrow language (emphasis on remedies rather than on prevention; acceptance of contamination as a necessity); concentration on industrial pollution to the exclusion of other serious sources (municipal, traffic, heating); emphasis on pollution, but not on numerous other forms of environmental impact). The extremely important management concept of "coastal zone" was absent. The Code and the integrated management based on it will not include non-renewable sources.

*** The term ODC —not the usual term of reference— is in line with the ecosystemic thesis developed below. These countries are *over*-developed because their economies require an input beyond the production and barter capacities of their own resource base (e.g., the United States needs 30% of the world raw materials for 6% of the world population; this is excessive even if such American resources as science and technology are calculated in the barter equation).

I use the term LDC, rather than some diplomatic euphemism *all* countries, as long as they exist, are "en voie de développement"! —because by virtue of the same ecosystemic analysis the "less" stage in the development is likely to be an advantage in the longer-range ecomanagement perspective.

Let me repeat that these remarks are clinical and for the purpose of discussion only. The actual drafting committee represented a sophisticated and environmentally conscious élite, as demonstrated by the quick acceptance and sharing of these and other corrective concepts.

• It seems also that the many variables make it very difficult to sustain almost any generalizations as to these countries —even to the extent of placing them clearly in the LDC category! With this serious reservation, let me make some comparisons between two neighboring countries, Colombia and Venezuela, both relatively rich and of comparable culture.

First, as a general proposition, the environmental resources of many LDC are severely damaged or exhausted. But it seems difficult to connect the cause generally to their colonial past. To take our two Latin American examples, Colombia suffers of serious soil erosion and deterioration of river basins (as basic ecomanagement units), although it has been independent for over 150 years. Venezuela reduced its forest area by 25% as late as between 1960 and 1970 (see appendix, note 6), with predictable effects on its ecology.

Second, as to population —an increasingly important environmental parameter— Venezuela is relatively less populated than Colombia (by approximately 50%, by inhabitants per unit of territory); both countries have a comparable rate of population growth (about 3.4%, representing a doubling rate of 18 years). But the institutionalized conscience of the problem appears much higher in the more sparsely populated Venezuela.

On the other hand, and third: Colombia has had for several years a modern and dynamic semi-autonomous institution for the management of renewable resources (INDERENA—Instituto para el *Desarrollo de Recursos Naturales Renovables*, a dependency of the Ministry of Agriculture), whereas Venezuela has only a Directorate for Natural Resources in the Ministry of Agriculture and Husbandry (MAC).

Fourt, both countries suffer of comparable maldistribution of their GNP, which is not a negligible defect of any human ecosystem.

As a final example, Caracas has a much more tolerable traffic air than Bogotá, which has a smaller number of cars. (This also illustrates the need to support environmental protection laws by economic incentives). Gasoline is so cheap in Bogotá (10-12 cents, as compared with $ 1.25 to 1.50 per gallon in Europe) that there is no incentive for engine maintenance and tuning, even if the altitude itself (2650 m) reduces the efficiency of internal combustion motors by 25-30% (and the lack of maintenance by another 20-30%).

7. There is one thing which both of these countries-examples, and many other, have in common: the awareness and sophistication of small,

but important academic and governmental élites (see appendix, notes 6, 16, 25), and recent initiatives of political leaders. The fact of life is, however, that any really effective environmental legislation and ecomanagement in the LDC —just as in the ODC— is being and will be directly or indirectly opposed by vested economic interests, as well as by conservative groups in general. This has already happened with agricultural reforms. Contemporaneously, it is the case with the promising Colombia environmental code — note, e.g., the effort by the ANDI (National Association of Industrialists) to delay the approval of the Code. (See appendix note 3.)

The difficulty of political leaders in the face of such pressures is considerable. Even the best intentioned politician is likely to waver and, probably fall back on that fallacious dichotomy between environment and development. (The Colombian President-elect was quoted as saying, not in direct response to the ANDI statement: "It is inconceivable that a government could be based in 1974 on patterns other than economic ones.") (See appendix, note 2.)

The only effective counterpressure in favor of rational environmental protection and management, is to develop and make widely understood a complete model for ecomanagement. This model must be based on empirical data and scientific knowledge; it must be expressed in the language of politics, law, and administration; and it must offer to the decision —makers concrete medium— and long-range vistas (the technical term is "decision vectors").

Since even the best model will be only partly quantified, the decisions will still be essentially intuitive and, therefore, sometimes wrong. The purpose is to make the intuition as educated as possible —something great judges have practiced on their scale for a long time. The assumption must be that, with the probable unfavorable balance spelled out in a "box" (most likely computer printout) at the end of the particular decision vector, it will be quite difficult to make this choice (at least where the government is forced to operate in the open), no matter what short-term political advantage it may offer.

Moreover, conceptual models are also didactic devices. People, including politicians, are likely to be educated by them if they can be persuaded to expose themselves.

II. Toward a common framework and ecomanagement model

1. It appears convenient to outline first some of the grounds for a *separate* model for the LDC —to some extent at least the apparent rationale for our colloquium topic.

It has been a widely accepted point of departure, consecrated by the Founeux Report (1971) and some rhetoric of the Stockholm Conference (1972), that there are two focal concepts —environment and development— and that any conflict between these two processes (environment understood as ecosystem is a process!) in a LDC ought to be slanted in favor of development.

The dichotomy between environment and development, although papered over in the Stockholm Declaration, has become in fact the ordering premise for international dialog. This was demonstrated at the recent International Symposium I ("The dilemma facing humanity"), convened in connection with the EXPO '74 in Spokane, State of Washington (USA). (See appendix, note 4.) The hope for Symposium II ("Environmental accomplishments to date: A reason for hope" — July 1974) was, to quote from the invitation, that "it will provide positive evidence that the goal [of harmony between man and the total environment] is relevant today, *even in view* of the enery crisis and other resource needs and allocations" (emphasis added).

2. The environment-versus-development model and all its implications, including a separate model for LDC, can stand only if one accepts certain premises. (To advance the argument, I shall comment on each premise, in parentheses, immediately after stating it.)

- Economy is the central purpose of national life; it is limited essentially only by the available capitalization. (Economy is, in fact, only a social function, as essential as it may be; it is limited principally by ecosystemic resources, local or imported, and by the carrying capacity of the given natural and human ecosystem.)

- Use of resources (positive: economic growth; negative: environmental contamination, or even "imported pollution") equals elimination/disminution of poverty. (Puerto Rico is an outstanding example of great development over the last 25 years, accompanied by social-humanistic rhetoric, without any substantial effect on poverty —e.g., 50% of housing is substandard— and on unemployment —official rate 12-13%, real rate over 30%. The key is obviously not development, but distribution of the products and services, and control of population growth.)

- The model of the economic development of the ODC —its energy and consumption patterns; its external (environmental) costs; its impact on the social systems— is a model worth following by the LDC. (The implication is that the LDC ought to go through the whole cycle: first, overexploitation of the environmental resources; then their rehabilitation, already shown to be more costly than the benefits derived from the original abuse, instead of aiming as directly as possible at an operational

balance based on the present state and potential of their ecosystems in the broader regional or international resources context.)

3. These premises and their implications, especially also for the LDC, are not only debatable; they can not be sustained in any real policy perspective. Their basis is a *political, economic and intellectual reductionism,* not "la nature des choses". The dichotomous, one-or-the-other conception, is *contrary to modern scientific method,* no matter its distinguished aristotelian origins (as I have already argued in more detail in my report for Brussels, 1972), (see appendix, note 10), nor the fact that in the binary formula "either-O-or-l" it is the base of our computer technology! (In a gathering of distinguished jurists it should not be left unmentioned that there is a strong resemblance between the enviroment/development conflict and the "eternal name calling" between the jusnaturalists and the positivists, which has delayed for so long the development of a modern, empirical theory of law.)

The natural, organic principles and premises for ecomanagement are not based on a *dichotomy* but on a *system.* They are —and can not be rationalized in any other way— a superstructure based on its infrastructure. *This infrastructure is the natural system, the ecosystem or biosphere,* which we must rehabilitate and manage as if our life depended on it. In fact it does, at least generically and in its civilized form.

The organic nature of the model is, indeed, the main reason why it *can not be anything but common.*

4. Shortly after our Brussels colloquium I concluded, my remarks as a panelist during the Technical Meeting of the International Union for the Conservation of Nature were reproduced by a paragraph which seems to be a useful summary of the thesis I shall develop for discussion in the following sections:

> The goal is to take out as much impressionism as possible from environmental policy and decision-making For instance, instead of thinking wrongly in terms of dichotomy between (over) developed and less developed countries, we ought to strive at a model of upper and lower limits of environmental tolerance in the face of human technological interference, to govern further development in *any* country. (See appendix, note 9.)

(The emphasis as well as the text are original, thus showing both the conception and, in comparison with what follows, the intervening refinements, if any.)

5. The following list of premises and principles to guide a synthesis of a common model for ecomanagement are based on my notes for the "exposé des motifs" prepared for the Colombian environmental code (June 1974).

A. The principles of *any national environmental policy* are *subject to, and limited by,* a set of *empirical data, factors, and trends,* of *scientific knowledge* and method, of *technological limitations.* ("Technology" includes also the crucial social, "soft" technologies-education, policy development, planning, decision-making, public administration, law, enforcement, etc.)

B. *Rational management* of human affairs requires that these *factors and limitations be projected as far as possible.* Fifty years would appear a reasonable minimum. That means that concrete planning for *1975* should be based on at least the most obvious trends and limitations projected to *2025.*

C. During these future 50 years (and probably another 50 years beyond that), the *worldwide trend* will be one of *rapid population growth* combined with *slight,* eventually perhaps leveled off, *growth in food production.* This requires, as a cardinal policy principle, that countries which can expand and intensify the production of foodstuffs, must aim, first, at *complete self-sufficiency* and, second, *export capacity* where possible. The goal of self-sufficiency must be coordinated with the countries' inevitable population growth, even if effective effort at ZPG (zero population growth) begin at once. (The demographic dynamic is such that a given population continues to grow for 60 years or more after it has attained a balance between births and deaths [a fraction over 2 children per family]).

The goal of being able to feed own population and contribute to less productive countries, requires the *maximum effort* toward maintenance, rehabilitation and development of all *food production systems* (land, water, climate, labor, technology, etc.)

D. The impact of the "homo economicus", already before modern techno-economy and so much more during this last phase, confirms the hypothesis of Vernadsky (see appendix, note 26) that man has become a geological force. This impact (a bulldozer is obviously the technological version of a glacier) has been exponential. It has also obeyed the natural law of synergism. (Synergism is a term which refers to the well-known phenomenon that the total impact of several inputs can be greater than their arithmetic sum. For instance, certain chemical pollutants increase the damaging effect of others by an exponential factor.)

E. Considering the capacity of man to change or destroy natural ecosystems, it is essential to identify, minimize, or prevent changes in ecosystems (environmental resources) which are considered irreversible (i.e., not reparable at all, or at least not within practical time frames). Among these are the following classes of changes and environmental impacts (see appendix, note 11):

- Local or global contamination with nondegradable chemicals.
- Physical degradation of critical subsystems (dredging and damming of streams, filling of coastal mangroves, extraction of sand from beaches, deforestation which cauces top soil erosion, etc.)
- Use of critical environmental sources (e.g., good agriculture land) for noncritical purposes, especially those involving high capital (e. g., high-cost shopping centers) or short-sighted planning (urban sprawl through low-density housing).
- Depletion of critical concentrated resources by their dispersion in the form of waste, rather than recycling.
- Introduction of exotic flora or fauna.

F. Economic development, especially the accelerated *technoeconomy* of the last 25 years, was made possible by two factors:

First, economic development has been planned and evaluated only in terms of the so-called internal costs (capital, production, services), not also of *external costs* (see appendix, note 12) (externalities: the use of common resources, with no calculation of their value, limits and deterioration [through disposal of wastes, etc.], including the impact on human health and quality of life). This is leaving aside the lack of adequate, socially just, distribution of the gross national product, achieved at these environmental and social costs.

Second, the technoeconomy has been made possible, and has in turn stimulated *technoculture* in education and popular attitudes, and *technocracy* in government. (One of the roots of the modern technoculture is indeed ancient: The idea of the supremacy of man over nature.)

G. The principal characteristic of the technoculture have been *reductionism, sectoral thinking, and "engineering" approach*, short perspectives, concentration on the material world conceived in economic terms. Technocracy, far from being the ultimate in efficiency, has become the typical *crisis government* of today. To close the vicious circle, the technoculture not only contributed principally, together with the exploitative technoeconomy, to the present socio-environmental syndromes, but *has critically*

delayed —is still delaying— *their effective understanding* and total approach to their solving.

H. The key to the correction of this situation lies in the understanding of the problems, not as separate and separable phenomena, but as composite pathologies and socio-environmental syndromes; and in policies, planning, law, institutions, programs derived from this conception. In other words, *the key is a systemic philosophy, analysis for understanding, and synthesis for action.*

I. *The system* involved is *environment conceived as a human ecosystem* (HES), that means the biosphere and the various natural ecosystems which compose it, viewed as the base for *human life support* and for *social welfare* (including of course, principally, the *economic basis* of this welfare; thus *economy and development* appear in their organic context: not in conflict with environment, but as an *essential function of the human ecosystem*).

J. The concept and understanding of human ecosystem (and its various subsystems) is based on the increasing refinement of the *concepts and models of general ecology* (macroecology). Its principal characteristics are *unity, complexity and interdependence of the operational ecosystems.* Natural scientists are demonstrating the capacity and limits of the ecosystems, and the *fragility* which results from changes (usually *simplification,* i.e. elimination of some important components) close to, or beyond, the state which permits *auto-regeneration.*

K. These data and models of general ecology are not only indispensable for the *development of environmental policies and ecomanagement.* They are imperative. The most critical and important effect of ecosystemic thought applied to human society is the realization of *analogies between the functioning of natural and human ecosystems.* Although the complex mechanisms of interaction may not be understood to the full satisfaction of the natural scientists, nor the limits of linear application of the natural to the social defined (see appendix, note 18), some *important working hypotheses* impose themselves:

- The *breakdown of environmental, social, and service systems in contemporary cities,* as a function of a too-simplified and, hence, fragile artificial human ecosystems. (See appendix, note 7.)
- The understanding of *major societal crises* as *negative feedbacks,* analogous to the automatic corrective mechanism which reestablishes (speaking grosso modo) the balance within a functioning natural ecosystem, if it had been seriously disturbed. *Hunger, epidemics, violence,*

occuring within a human ecosystem where the *balance between population numbers and environmental resources* has been seriously disturbed, would be such a negative feedback mechanism to establish some new functioning equilibrium.

L. The *principal goal of any rational policy* and action dealing with the HES must be to prevent such a growth or accumulation of factors interfering with the system that the mechanism of negative feedback would take over. The purpose is *controlled maintenance of balance to prevent out-of-control redress through crises.* The control is only to a lesser degree the function of technical technologies and "fixes". Principally it is the *function of social technologies,* from intelligent understanding through political will to implementation (legislation, budget, enforcement).

M. Seen in the preceding perspective, *ecomanagement* can be defined in two complementary forms:

First, as a *positive feedback,* that is a *rational-philosophical reflex mechanism,* triggered by the perception of the growing unbalance in, and the danger to, the HES.

Second, as a *system of social technologies* designed to rehabilitate and *maintain the HES functional* within an unlimited time frame. (The rehabilitation is, of course, principally the function of technical-remedial technologies, but the decision to develop and apply them is social-intelligence, politics, budget.)

N. Another way of conceptualizing the present crisis in the HES, using the preceding analysis, is to view it as the result of *rapid development and application of technical technologies without the corresponding development of social technologies* (assessment, planning, norms, controls) and the updating of the underlying value system(s). For instance, the *population "explosion"* is the combined result of new technologies in the field of *health* (reduction of infant mortality, duplication of life expectancy in many areas of the world in the last 50-75 years) and *nutrition,* without a corresponding response on the social side: the *continued pattern of big families* (which originated and was justified in other societies at other times), the *low educational level, cultural obstacles,* and *lack of government imagination* which combine to impede aggressive population control programs.

O. *One of the basic social technologies is law.* (To follow the preceding example, legal systems such as tax laws, welfare laws, military draft rules, etc. contain numerous wrong incentives for early and/or big families.) The *systemic conception* as exposed above *does not change the status of law*; it merely *defines its sources* and puts it in the *correct*

operational sequence. Law is the indispensable mechanism for making the rules for the ecomanagement of the HES authoritative for the purpose of administration and enforcement.

P. The dictum of Portalis —"Les codes ... se font avec le temps ...; à proprement parler, on ne les fait pas"— applies even more to a matter so dynamic and fluid as environment law. *Neither the legislation, nor the underlying scientific and social models are ever made.* Only if the principles of the environmental policy and the normative provisions which express them are informed by a sufficiently comprehensive conceptual system, can the *organic law* serve as an adequate base for future *legal amendments* to accomodate needed *administrative or operational changes.* Otherwise, it will put into a legal straightjacket a subject matter which is inherently and exponentially dynamic. *The comprehensive and unifying concept of HES gives the organic legislation the necessary scope and dimensions to serve all future needs* which can be imagined at this time.

Q. The HES framework for environmental legislation has several other implications and consequences which may be lost or at least would remain unconnected without the systemic conception. E.g.:

- The *constitutional rank of the basic human environmental rights,* and the corresponding duties of the State.
- The *structure and organization of the comprehensive code,* as distinguished from traditional conservation legislation.
- The make up and jurisdiction of *institutions* to implement the code and to keep it operational.
- The *development and operation of ecomanagement systems* which combine flexibly *ecological principles, environmental quality standards, technologies and administrative regulations* to achieve *multiple purpose solutions* (e.g., energy and materials saving production/transportation/marketing systems — economic/tax/tariff incentives — recycling — reduced pollution and solid waste), all of which ought to have a legal base in principle in the code.
- To integrate economy in the HES concept, governments need *performance indicators* to replace to purely economic GNP index. ****

**** One such index, tentatively styled "real progress index" (RPI) is being developed in the Institute for Policy Studies and Law, at the University of Puerto Rico. The purpose of the RPI is to correct the GNP by developing criteria to determine which products and services have negative impact on the IIES (an obvious example are the costs of traffic accidents of the value of productive or leisure time spent in traffic jams) and to discount them from the GNP aggregate.

Some of these operational corollaries of the HES are illustrated in the concrete legal texts in the next section.

III. Legislative expression of the common model

1. The following excerpts from the draft of the *Introductory Book* of the Colombian environmental code (definitions; principles of national environmental policy; rights and duties; institutional arrangements) show a concrete normative application of the policy model outlined above. (The subsequent books of the Code deal with *environmental quality and protection*, (biological environmental resources, environmental health, planning for HES); and with *ecomanagement of economic resources* (water other than for human consumption; soil, forests, flora and fauna, special management areas). There are, of course, also the usual technical provisions concerning procedure, interpretation, transitory provisions, etc.

APPENDIX

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