ENVIRONMENTAL MANAGEMENT

Towards a Conceptual Framework for Environmental Governance

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Environment Division

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WORKING PAPER

This working paper is being published with the sole objective of contributing to the debate on a topic of importance to the region and to elicit comments and suggestions from interested parties. The paper has not gone through the Department's peer review process or undergone consideration by the SDS Management Team. As such, it does not represent the official position of the Inter-American Development Bank. Please direct your comments to Gil Nolet, Environment Division, 1300 New York Avenue W0500, Washington, D.C., 20577, gilbertn@iadb.org.

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Preface

At its Eleventh Meeting (Lima, March 1998), the Forum of Ministers of the Environment of Latin America and the Caribbean (the "Forum") confirmed strengthening environmental management as a priority area, stressing the importance of the environmental dimension of public policies. The Forum also adopted a Regional Environmental Action Plan in which a number of actions are set out to modernize environmental management institutions and mechanisms.

As a follow-up to the decision of the Forum, the Inter-American Development Bank (IDB) organized a Ministerial Consultation on Environmental Management at the Headquarters of PAHO in Washington, DC (September, 1998). Subsequently, the World Bank, with the participation of the IDB, held a workshop on institutional dimensions of environmental management in Santiago de Chile (October, 1999). The conclusion of these meetings was that there is a need to develop a new orientation on environmental management, including "a theoretical framework with an outline of the ideal cycle of environmental management. This cycle should consider the macro-conditions, environmental policy, and environmental priorities in government plans and programs, instruments and governance…".

This study is a first attempt to fill that need. Environmental management systems are subject to political changes, which can overrule the institutional settings required to establish the goals of environmental management. This is even true for institutions that are set up to be flexible to adjust to the rapidly changing political and environmental context. New tools can help us recognize that strengthening environmental management needs to go beyond establishing an institutional setting by dealing with a process of negotiation and bargaining with multiple actors and organizations.

This study helps to shed light on some of the tools and guidelines that enable us to assess such a process. It provides a framework of different criteria, key issues and requirements that are fundamental for an environmental management process and that can be used to develop country-specific action plans for improvement.

The document provides new ideas and approaches on how to assess efforts to strengthen environmental management in Latin America and the Caribbean and will hopefully contribute to the debate on these important issues.

CHAPTER 1: ENVIRONMENTAL MANAGEMENT IN A MODERN POLICY CONTEXT

1.1 Environmental Management in Latin America and the Caribbean

In Latin America and the Caribbean (LAC), environmental quality in both rural and urban areas continue to be under serious threat. Problems of deforestation, soil erosion, urban pollution and coastal degradation are among the severest in the world. These problems impose significant costs on society in terms of externalities and the inefficient use of the rich natural resources of many LAC countries. These costs also fall disproportionately on the poor, who are unable to protect themselves from the impacts. They strongly depend on natural resources for their livelihoods and have few alternatives or means to mitigate the effects. Apart from direct health impacts, environmental degradation may lead to other social problems, such as growing inequality and social unrest. In the medium and long term, environmental degradation threatens to reduce options for future generations.

In recent years, progress has been made in improving the management of natural resources and the environment. In his speech delivered during the Consultative Meeting of the Forum of Ministers of Environment of Latin America and the Caribbean on Environmental Management (Washington, DC, September 1998), the President of the IDB, Enrique Iglesias, mentioned the following recent achievements: increased awareness and understanding of the impacts and costs of environmental degradation, initiatives undertaken by the private sector showing their sense of environmental responsibility, and, most significantly, progress on the institutional and legal front.

However, institutional fragility is recognized to be a key barrier to improving environmental management. Several institutional constraints are related to the process of identifying environmental problems, defining strategies, and implementing and monitoring policies. This suggests the need for capacity building for managing the environmental management process, alongside the need to build and strengthen institutional structures.

Box 1.1: Institutional barriers to improving environmental management in LAC countries

- Weak national institutions in terms of human capital and political leverage
- Poorly articulated priorities
- The absence of a clearly identifiable domestic constituency
- Overlapping mandates of sectoral agencies
- Public institutions at the local level that lack structures and capacity
- Lack of opportunity for public participation in environmental reviews
- Lack of systematic and qualified monitoring
- Weak or poorly utilized information systems and lack of planning
- Inadequate and/or inappropriate environmental standards or procedures
- Weak environmental enforcement
- Insufficient access to information, particularly relating to trade and environment aspects

1.2 The Need for a New Orientation on Environmental Management

Earlier interpretations and applications of environmental management focused mainly on the following two aspects.

- Environmental management by economic enterprises: the assessment of the environmental externalities of economic production activities with the aim of controlling the environmental impact of activities, products or services (e.g. ISO 14000).
- Environmental management through projects and programs to assess and mitigate negative impacts and enhance positive ones (e.g. by IDB, UNDP, OECD, World Bank).

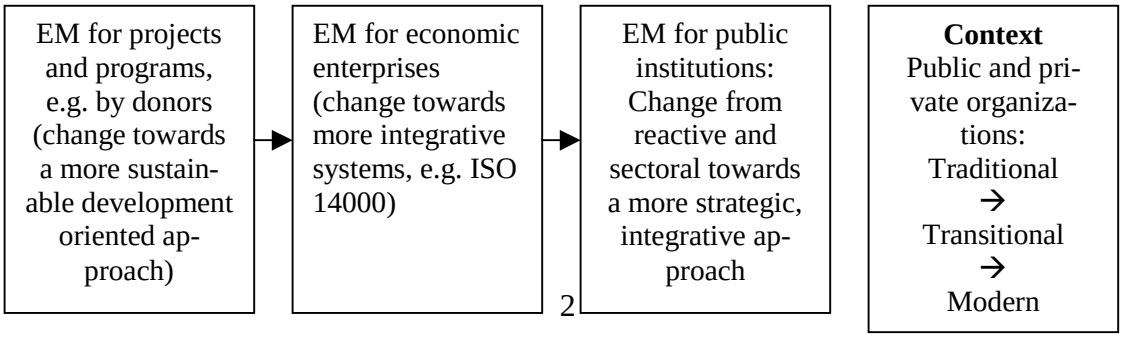
While the earlier, narrower, applications of environmental management retain relevance for their stated objectives, there is a need to develop a new orientation on environmental management as a key responsibility of public entities. At least three recent developments have contributed to this need.

First, the development model of 'good governance' emphasizes the role of competitive markets, government responsibility to manage the state (including environmental management), and the importance of civil society. Key attributes of pluralism, accountability and transparency must be integrated into the area of environmental management. Specific topics arising from the good governance model include economic incentives, citizen participation and new organizational arrangements for the implementation and enforcement of policies. In Latin America and the Caribbean, most countries need assistance in strengthening their environmental management institutions in line with the new role attributed to the state, taking into account the institutional problems of environmental agencies in the region (budget limitations, inefficient bureaucracies, the legal setting, limited monitoring and enforcement capability) (IDB, 1996).

Second, environmental management capacities need to be strengthened to address the environmental risks of private sector growth and free trade. In the LAC region, traditional comparative advantages lie mainly in natural-resource extraction activities. As a result, economic reform and free trade can be expected to result in an increase in the share of exports that is based on natural resources, especially for exports to OECD countries that are relatively less endowed with natural resources (Devlin and French-Davis, 1998). Strong, flexible and effective environmental management needs to be in place to mitigate the negative impacts of reform. Environmental management needs to adapt continuously to the changing social, economic and political reality (Nolet, 2000).

Third, there is need for environmental management to build bridges between public and private sector entities. In the LAC region, more and more businesses have come to view the environment as an opportunity to add value to investment, gain competitive advantage, achieve higher margins through eco-efficiency, maintain and increase sales through positive images, and make more efficient use of assets (Brugger et al., 1998). There are many potential win-win options in developing public-private partnerships in environmental management, such as increasing access to capital and technology for enterprises to raise the effectiveness of implementing environmental policies.

Figure 1.1: Environmental Management (EM) Concepts



These considerations indicate the need to develop a strategic concept of environmental management, in line with the concept of capacity development in environment (CDE) as applied by the OECD[1]. *Strategic environmental management* may be considered as a more pro-active approach that incorporates environmental protection and management issues into long-term economic and other sectoral policies (adapted from Muñoz, 1997). It can also be considered the third stage in the development of environmental management concepts (see Box 1.2). This parallels the development of government institutions in Latin America and the Caribbean, from 'traditional' to 'transitional' to 'modern' (Russell and Powell, 1996).

Box 1.2: Stages in the Development of Environmental Management Concepts

Environmental Management Public Institutions

- Environmental management responsibilities dispersed over sectoral agencies
- Environmental institutions at different levels but without sufficient co-ordination
- Central institution for integrated environmental planning with environmental units in sectoral agencies and decentralized institutions for implementation.

Environmental pollution control instruments

- Focus on technology specifications and banning certain products with only limited discharges
- Move towards technology-based permits (best available technology) and technology-based discharge standards
- Tradable discharge permits and strategic use of public information

Environmental impact assessments

- Environmental impact assessment (EIA) for public projects limited to mitigation of impacts
- EIAs for public and private projects in which alternatives are required and the objective is to raise quality
- Strategic EIAs to integrate environmental issues into strategic planning and address cumulative effects

Civil society

- Weak or non-professional environmental NGOs
- Strong and competent NGOs playing a consultative role in political decisions
- NGOs also playing a consultative role in industry; development of co-management initiatives and partnerships

Private sector

- Environmental interests are poorly articulated within the economic system
- Environmental interests limited to particular interested groups (e.g. clean technology)
- Environmental interests are articulated by a broader group of 'green' business organizations

(adapted from Janicke, 1997)

[1] The concept of *Capacity Development in Environment (CDE)* as applied by the OECD, is defined as "the process by which the capacity in the environment and appropriate institutional structures are enhanced (capacity in the environment referring to the ability of individuals, groups, organizations and institutions in a given situation to address environmental issues as part of a range of efforts to achieve sustainable development" (OECD, 2000)).

The development towards a more strategic environmental management entails an evolution from a centralized management structure into a more decentralized system in which management is reasonably integrated, both vertically and horizontally. The role of government has shifted from implementation, setting standards (norms) and regulations, towards creating an enabling context for others to act. This is facilitated by increased decentralization and by fostering participation from civil society and the private sector.

The challenge is to build an effective, transparent and accountable public administration that will serve the public needs regarding environmental concerns. There are strong links between environmental management by public and private organizations and the principles of governance, which in turn lead to the concept of *environmental governance* (EG). This is defined as "the exercise of economic, political and administrative authority to manage a country's environmental affairs at all levels. It comprises the mechanisms, processes and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences. EG includes the state, but transcends it by taking in the private sector and civil society" (adapted from Commission on Global Governance, 1994). The concept of environmental governance emphasizes the pluralistic role of the state in managing environmental affairs at all levels and during all phases of the environmental management process. Environmental governance deals with issues of externalities and public goods which the private sector might not internalize and involves principles of good governance, social justice and democratization, all of which, in the context of capacity building and institutional development, form the basis for achieving strategic environmental management.

Box 1.3: Challenges of developing a new conceptual framework for environmental management (EM)

- Integrating EM within sectoral and cross-sectoral plans and government policies to overcome sectorialization and fragmentation (interpolicy and intrapolicy integration)
- Developing a more *pro-active and strategic application* of EM procedures, i.e. at earlier stages of decision making, thus addressing political and institutional issues at higher policy levels that are fundamental for reforms (i.e. root causes of environmental degradation)
- Shifting attention from EM measures and decisions to *EM as a decision-making process* aimed at raising awareness, reforming policy, and achieving broad commitment through participation, capacity building and institutional development
- Developing solution strategies for *problem areas for which market mechanisms are inadequate*, and developing new organizational arrangements involving civil society and private sector agencies to mobilize financial resources and improve the enforcement of EM objectives
- Striking a balance between raising competitiveness and trade (and making use of new opportunities that markets provide) while *reducing the dependency on natural resources* and enhancing environmental quality
- Striking a balance between *specific aspects of EM* and generalities of governance and institutional development[2]

This document refers to environmental management but with a particular focus on the governance issues of the environmental management (decision-making) process.[3]

[2] Although sound environmental management can be characterized by general institutional and political characteristics, such as ineffective, inefficient or non-representative government institutions, it must also be specific to environmental aspects, for example addressing urgent environmental and societal problems (De Graaf, 1996).

[3] Regarding the relationship between environmental governance (EG) and environmental management (EM), Diamond (1999) states that EG embraces EM because it sets the fundamental parameters for environmental management. For the purposes of this study, the governance aspects are considered to be one component of environmental management.

CHAPTER 2: CONCEPTUAL FRAMEWORK FOR ENVIRONMENTAL MANAGEMENT

2.1 Functions and Mechanisms of Environmental Management

Environmental management is an intersectoral discipline with responsibilities within both the public and private sectors. It can be broadly defined as "the total of activities carried out by a particular society with the objective to protect the environment" (Rodriguez, 2000). For the purposes of this study, the following definition is used: "environmental management is a process in which (formal and informal, public and private) organizations apply mechanisms to develop and implement a set of cost-effective priority actions on the basis of well-articulated societal preferences and goals for: the maintenance or improvement of ambient environmental quality; the provision of environmentally derived or related services; and/or the conservation, maintenance and enhancement of natural resources and ecosystems." (based on Lovei and Weiss; 1998).

Some elements of this definition stand out: its use by and orientation towards public and private organizations, its strategic and proactive (anticipatory) character, and its focus on environmental management as a (decision-making) process in which different systems can operate. The definition includes both *environmental protection and natural resources management*. These are broad fields encompassing a multitude of sectors[4]. In the area of natural resources, environmental management should focus on the externalities of production activities[5] on public and private goods[6]. This means concentrating on maintaining the source and sink capacities of ecosystems through the various natural systems involved (e.g. regeneration, reproduction, regrowth, purification, decomposition, erosion protection, climate regulation, living space). Environmental management excludes the productive

[4] Environmental management aims to enhance *environmental sustainability*, or the management of environmental resources in such a way that their qualities are maintained according to societal norms and standards. Environmental sustainability is easier to translate into action than the more all-embracing concept of sustainable development, of which environmental sustainability is one component. Environmental sustainability means the maintenance of global life-support systems, which provide goods and services to human society. Source capacities of ecosystems provide material inputs (food, water, air, energy); sink capacities assimilate outputs and wastes. Both source and sink capacities are large but finite (Goodland, 1995). The main purpose of environmental management is the maintenance of *source and sink capacities* (natural capital) at desirable qualities.

[5] *Externalities* are social, economic and environmental effects that spill over to future generations (temporal trade-off) and beyond certain locations (spatial trade-off) and which bring costs and benefits to society that do not impinge directly on parties involved in the causal activity itself. Externalities arise because of the absence of economic values and markets for the natural capacities that are affected. These problems are particularly likely to occur for public goods.

[6] *Public goods* have three characteristics. First, their consumption has a low subtractability (non-competing consumption): their use by one person does not deprive others from using them. Second, they are non-excludable: if one person consumes them, it is impossible to restrict others from consuming them. Third, public goods are often non-rejectable: individuals cannot refrain from their consumption even if they want to. Non-excludability and non-subtractability mean that no market can exist and provision must be made by government, financed by taxation. However, in most cases some exclusion is possible and consumption is not completely non-competing, and thus one can speak of mixed or impure public goods. The distinction between private and public goods is increasingly difficult to make because environmental items are increasingly accounted in cost-benefit analyses, not only in economic terms (the costs to society), but also in financial terms (the costs to the individual user/polluter).

components of natural resource management (e.g. agriculture) but includes activities directly or indirectly affecting externalities or public goods.

While the *final objective* of environmental management is to protect or improve environmental conditions, the *purpose* of environmental management, being a further specification of the final objective, is either:

(i) to reduce negative (or enhance positive) environmental externalities
(ii) to provide environmentally related public goods
(iii) to improve sectoral or spatial natural resource allocation between productive, consumptive and non-consumptive uses to control environmental degradation, and/or
(iv) to reallocate natural goods and services across time for successive generations (IDB/SDS/ENV, 1999)

The environmental management functions can be considered as tasks to be performed as part of the environmental management process. In general terms, the functions can be summarized as follows:

- Normative and controlling, e.g. by setting norms and goals, defining a vision and a strategy of desirable change, applying control mechanisms
- Steering and influencing, e.g. by putting mechanisms in place, attributing responsibilities (and where necessary taking own responsibilities) for implementation
- Enabling and facilitating, e.g. by creating markets, opening up communication channels, making available information and financial resources
- Ensuring organizational learning, e.g. by monitoring, feedback, learning mechanisms and integration of lessons learned

In more specific terms, the following classification of *environmental management functions* can be listed (adapted from IDB, 1999).

Table 2.1: A classification of environmental management (EM) functions (the list of specifications is not exhaustive)

Functions	Specifications
Setting norms and goals	• Strategic planning • Setting environmental standards • Environmental legislation and enforcement
Facilitating the EM process (problem definition, defining policies, implementation, monitoring)	• Ensuring participation, information disclosure, communication • Education, awareness raising • Co-ordination and policy coherence
Developing an enabling context to implement defined policies	• Spatial / territorial planning • Financing, fund raising • Environmental capacity building, training • Infrastructure development
Ensuring implementation of policies in a cost-effective way	• Development of cost-effective instruments • Implementation of activities • Disaster preparedness • Control and enforcement
Ensuring continuous feedback of lessons learned	• Monitoring and early warning • Research and establishment of data banks • Learning mechanisms • Knowledge management

For stakeholders and institutions to perform these functions in a cost-effective way, they must have a set of *mechanisms* available (Table 2.2). The choice of mechanisms is context-specific and will depend on the relevant circumstances of a given country, such as the existing constitutional provisions, social and economic development, environmental problem areas, private sector involvement, and public preferences.

Table 2.2: A Classification of Environmental Management Mechanisms (the list of specifications is not exhaustive)

Category	Common Mechanisms	Innovative Mechanisms
Environmental regulations	Standards, regulations, zoning, conservation areas, bans, quotas, permits	Buffer zoning, bio-regional approach
Making use of existing markets	Targeted subsidies, subsidy removal, taxes, user fees, charges	Differential land-use taxes, 'polluter and beneficiary' pays taxes, tourism charges, international transfer payments
Creating markets	Property rights, tradable permits, tradable credits, land titling, resource ownership	Protection rights, product certification, carbon offset trading, bioprospecting deals, fair trade, tradable development rights, intellectual property rights
Engaging the public	Public participation, information disclosure, communication, awareness raising, education, training	Co-management arrangements, covenants (e.g. voluntary agreements between government and private sector organizations), partnerships, joint fact finding, participatory monitoring, private enforcement

Based on World Bank 1997

2.2 Environmental Management: System and Process

Environmental management is both a system and a process. The *environmental management system* can be defined as 'the institutional setting responsible for stimulating, supporting and implementing the environmental management process.' The *environmental management process* can be defined as 'the interaction between relevant stakeholders and organizations (including public entities, private sector and civil society, formal and informal organizations) to articulate societal preferences and goals and transform those into actions to influence environmental quality in a desirable manner.'

Obviously, both are related. An environmental management institutional system[7] is needed to perform the various functions and guide and steer the environmental management process. Such a system contains both formal and informal roles of the different organizations involved (government, civil society and private sector), rules (agreements and regulations) and relationships (networks, coalitions, partnerships). Since environmental management is an intersectoral discipline, the system includes a large group of stakeholders and organizations in society—political, economic and social. Environmental responsibilities are shared between agencies in the various branches of public administration as well as between various vertical levels of government. All of these are part of the system and play their role in relation to a desirable process. When assessing the environmental management from the

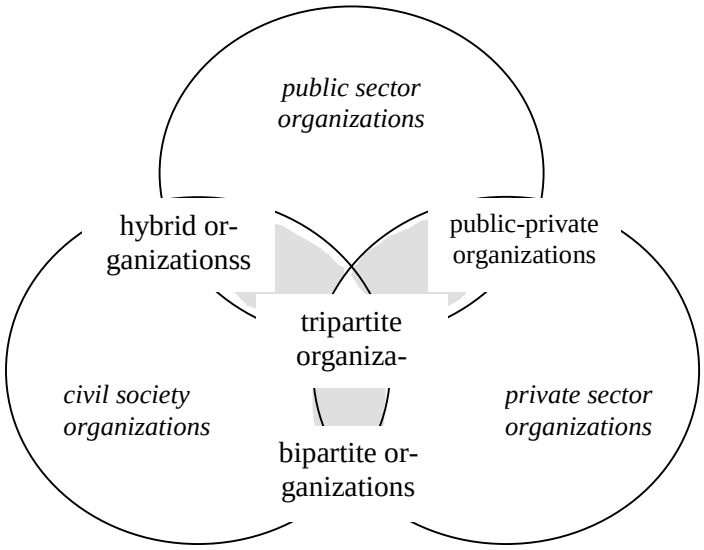
[7] In this respect, *institutions* are defined as "the organizations, linkages between organizations, and the framework of law, policy, convention and culture within which they operate" (DFID, 1995).

perspective of a system, one looks primarily at the organizations structures, functions and roles, legal arrangements, financial and human resources, and the political setting.

It is a general management principle that 'structure follows strategy'. In daily practice this is not always valid (more so in the public than in the private sector) because the strategy becomes partly determined by the existing institutional structure. Apart from the dynamics of an environmental management process being reflected in the institutional structure, the (political, institutional, economic and socio-cultural) context and processes influence the institutional structure as well. In general, when environmental management develops from its 'traditional' and 'transitional' stages towards its 'modern' stage, the mechanisms and functions become more complex and the institutional system also increases in complexity

For instance, management based on predominantly legal instruments requires an entirely different institutional structure than management based on stimulating self-regulation and self-steering at local levels (the latter emphasizing higher intensities of co-ordination and collaboration, leading to 'co-production'). Because it's country-specific, there is no 'ideal' environmental management system, but there is a correspondence between desirable functions for managing the environmental management process, according to defined criteria, and the institutional system (capacities, organization, funding, etc.).

Conceptually, the environmental management system is the reflection of the organizational arrangements made in society. These organizational arrangements can be subdivided into three categories: the public sector, the private sector and the 'middle ground': the civil society. These categories are not strictly exclusive and separated from each other; various 'blends' exist, as indicated in the following scheme.



The existing relations between these three main categories are mainly determined by the specific political organization of the country concerned[8]. Most of the public sectors can be characterized as pluralistic in relation to the civil society, with some corporate remnants in their relations to the private sector (although the rapid process of privatization has reduced the importance of public enterprises). Most environmental goods and services consist of a mixture of public and private goods for which the different sectors each have certain responsibilities. As a consequence, environmental management

[8] See Appendix 4 for examples of environmental organizations at various levels.

functions can conceptually be allocated to the three different categories of societal organization as indicated in the table below.

Table 2.3: Allocation of Functions to Each Category of Societal Organization

Public sector	Civil Society (claimed functions)	Private Sector (claimed functions)
- Legislation and justice regarding international/supra-national issues - Co-ordination and policy coherence (international, national and inter-sectoral) - Disaster preparedness - Legislative framework, regulations and quality standards - Control and enforcement - Development and application of economic and market instruments - Finance for environmental programs and investments to support private sector - Strategic planning, mainly at sectoral and national levels, and research - Spatial planning - Information supply (public disclosure), environmental education and research - Environmental capacity development - Implementation of environmental activities, e.g. environmental infrastructure	- Advocacy (international) and (political) lobbying; getting issues on the political agenda - Awareness raising and education - Monitoring and early warning (watchdog function) - Co-ordination and networking (international, national inter-sectoral) - Fundraising for environmental objectives - Implementation of (innovative) environmental activities - Research and provision of environmental expertise - Co-management (with private and/or public sector) and co-decision making (e.g. in norm setting and legislation)	- Research and development of environmentally sound technologies - Technical implementation of environmental regulations and activities - Provision of environmental expertise (e.g. control) - Co-management and co-decision making (covenants and codes) - Monitoring and environmental auditing

Environmental management systems are subject to political changes, which can overrule the institutional settings required to establish the goals of environmental management. This is even true for institutions that are set up to be flexible to adjust to the rapidly changing political and environmental context. To mitigate these risks, there is a need to develop new conceptual and methodological tools for assessing environmental policy processes (Keeley and Scoones, 1999). Such tools should recognize that environmental management not only involves an institutional setting but also consists of an on-going policy and decision-making process of negotiation and bargaining with multiple actors and organizations.

An environmental management process can be viewed as a conscious, goal-oriented process driven by normative principles. The process needs to be iterative or recursive to keep environmental management adjusted to the changing dynamics of human society and the environment. A good process results in the improvement of environmental qualities in line with societal preferences. Indicators for environmental qualities can be used to assess to what extent the environmental management process has been effective in attaining defined goals. Assessing environmental management from a process perspective includes aspects such as negotiation, conflict resolution and consensus building, participation, information disclosure, accountability, and organizational learning.

Environmental management as a decision-making process can be logically divided into four phases (adapted from Lovei and Weiss, 1998 and Winsemius, 1986):

1. Recognition and definition of environmental problems and potentials
In this phase environmental problems are signaled, analyzed and defined according to the views and perceptions of the various stakeholders. The aim is to reach political recognition of the environmental problems. This can be achieved by providing information, political pressure, and solution strategies, and demonstrating how environmental potentials can serve societal development goals and relate to other sectoral policies. Priorities must be set and interrelations demonstrated.

2. Formulation of environmental policies for achieving environmental goals
In this phase policies are defined to solve the priority environmental problems. These include short-term measures to solve urgent problems and measures that provide long-term structural solutions. Policies will be based on a long-term vision and strategy on environmental management within a changing society. The definition of norms and standards is part of this phase. During formulation of concrete measures conflicts often arise between proponents and opponents; the focus is on win-win options and strategic partnerships between different interest groups.

3. Implementation of and compliance with environmental policies
In this phase the various organizations involved are enabled to implement the policies through the provision of support in terms of means and capacities. This phase generally receives less political attention than the previous one as the major political debates have been concluded.

4. Monitoring of outcomes: achieving environmental targets
In this phase the implementation of the environmental policies must generate the expected results: solving the perceived problems and improving environmental quality. Adjustments are also made to improve the efficiency of implementation. Monitoring is essential for providing feedback to the policy levels and generates insight into the relevance, effectiveness and efficiency of the environmental management system.

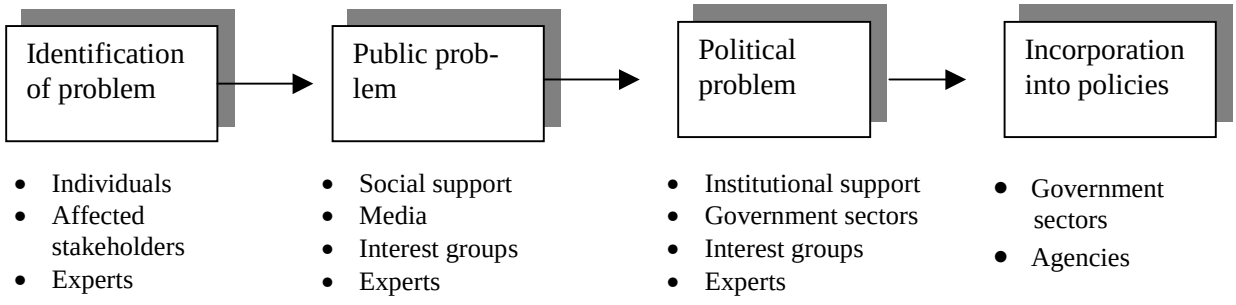
The four phases can be considered as necessary tasks in an iterative process of identifying and solving environmental problems, and of identifying opportunities for change. There are logical interrelations between the different phases in at least two ways: as a forward process from problem identification to implementation, and as a backward process to evaluate results. In practice, organizations can work simultaneously on different phases for any given environmental problem. Weaknesses in one phase are often related to weaknesses in other (earlier) phases (e.g. weak enforcement due to poor problem identification).

During the environmental management decision-making process, objectives are defined and policies formulated on the basis of a logical analysis of available information and data. This refers to the objective and knowledge-based perspective on decision making. It can be referred to as the *'logic of consequence'*. However, decisions are not only taken on the basis of rational thinking (e.g. Rodriguez, 1999). The rational knowledge-based decision-making process does not dwell on the question of whose knowledge prevails when policies are decided, how and where knowledge has been co-produced and to what ends. Therefore, during the different phases of environmental management adequate attention should be given to aspects of social intelligence. This can be referred to as the *'logic of appropriateness'*. It addresses the subjective, creative elements of decision making (when does it become appropriate to take action). A sound environmental management making process must therefore address these two complementary perspectives on decision making, and must be transparent to the two forms of knowledge involved (Table 2.4).

Table 2.4: Two Perspectives on Environmental Management as a Decision-Making Process: Logic of Consequence and Logic of Appropriateness

	Logic of Consequence	Logic of Appropriateness
Key words	Objective, structural, rational, logical, positivist	Subjective, cultural, normative, interactive, constructivist, creative, intuitive
Elements	✓ Indices of effectiveness, efficiency ✓ Economic analysis, cost-benefit ratio ✓ Legal setting, law and order ✓ Linearity and logical sequence in cause-effect and stimuli-response chains ✓ Predictability, extrapolation of trends, modeling of goal-seeking behavior ✓ Measurements of risks, externalities, cumulative effects ✓ Hard systems, scientific facts	✓ Perception and normative value judgements of problems, risks, effects ✓ Non-linear dynamics, unpredictability of cause-effect chains and stimuli-response ✓ Modeling as a dialogue to assess common understanding ✓ Soft systems, social networks and knowledge systems ✓ Socio-cultural setting, acceptability ✓ Conflict resolution

Initial identification of an environmental problem takes place by stakeholders and experts directly involved in the process. Whose (environmental) problem is it and how did it appear on the public and political agenda (Dunn, 1994)? The next step is the recognition of the problem as a public problem (e.g. through events, information disclosure, media coverage). Once it has become a public problem it may be placed on the political agenda (e.g. through political action, public pressure). After that it becomes part of wider policy concerns. The stakeholders in each of these phases vary, as shown below.



In order to understand how this decision-making process works, it is useful to analyze a stream model (Kingdon, 1984). This model refers to efforts to match the stream of problems with the stream of solutions (or opportunities for positive change). Such matching is not always successful and problems may disappear from the political agenda without having encountered the solution. The matching process is not 'random', but depends on (i) organization, (ii) the interested party (who takes the lead), (iii) time, and (iv) coincidence. The periods during which problems are placed on the public/political agenda may be anything from very short to persistent. The advocacy of solutions may precede the appearance of compelling problems or of events on the political agenda. The moments when openings between the stream of problems and solutions appear are often very brief, and are referred to as 'windows of policy opportunities'.

The analytical advantage of the stream model lies in its consideration of a wide variety of actors and its recognition of coincidence. In line with the statements on the problem definition, the stream model pays attention to 'getting subjects on the public and political agenda' and 'opening windows of policy opportunity'. Apart from the sequence of the four phases—generally leading from problem definition to finding solutions, strategies, etc.—the process should stimulate the creation of a 'stream of solutions'. This can be stimulated by research, education, awareness raising, networking, lobbying, creating partnerships and communication platforms. These activities, which are similar to what happens in the environmental management process as a whole, should also be based on the combination of ra-

tional thinking as well as receptiveness to societal dynamics, unplanned events and opportunities for change. The latter element of decision-making processes may be described as ‘riding the waves of societal change’. As complexity and uncertainties increase, this may become a more effective strategy.

ANNEX

TOWARDS AN ANALYTICAL FRAMEWORK FOR ASSESSING ENVIRONMENTAL MANAGEMENT PROCESS

Introduction

In this annex, the conceptual framework is used as a basis to develop elements of an analytical framework for assessing the environmental management process. The following assessment criteria capture the main characteristics of a sound environmental management process. These criteria can be considered suitable 'starting points' for an assessment and are classified according to the two perspectives on a desirable environmental management decision-making process: its rational/analytical angle ('logic of consequence') and its subjective/creative angle ('logic of appropriateness').

Assessment Criteria for the Environmental Management (EM) Process

Assessment criteria that capture the priority rational/analytical requirements of a sound EM process

1) Analytical soundness, reliability and consistency (e.g. between the EM phases)
2) Coherence (between the components), focus on key issues and efficiency
3) Integration (between sectors, policy levels and other decision-making processes)

Assessment criteria that capture the priority subjective/creative requirements of a sound EM process

4) Responsiveness of the public sector, recognition and anchoring of social and political diversity
5) Citizen participation and legitimacy (e.g. involvement of minority groups)
6) Accountability for the process by the leading agencies, including the quality of debate, communication and transparency, transfer of information and access to communication channels

The framework consists of an assessment of these six criteria through a review of key issues and requirements for each of the four phases of the environmental management process. On the basis of this review, existing gaps and opportunities for change can be identified.

The iterative nature of the phases implies that the actual assessment process does not necessarily start with phase one and proceed from there, but can start where priority problems occur and then move forwards or backwards. Using the analytical framework is part of a learning process for the stakeholders and organizations involved. Therefore, the framework should be considered as a starting point for stakeholders and organizations to develop their own assessment, including guidelines and identification of priority issues according to their own experiences.

Assessment Tables for the Environmental Management Process

The following table shows the key issues and requirements for each of the six assessment criteria. These are applicable to the overall process. The next four tables (2 to 5) illustrate the specific issues and requirements for each phase of the process.

Table 1: Key Issues and Requirements for Assessing the Overall Environmental Management (EM) Process (not specified per phase)

Assessment criteria	Key issues and requirements applicable to the EM process
1. Analytical soundness, reliability, consistency	√ Makes strategic choices based on analytical insights of root causes, environmental impacts and societal consequences √ Adopts efficient (or net benefit maximizing), appropriate and effective approaches and measures √ Continuously updates and improves the quality of the data and information base √ Maintains consistency between the environmental management phases
2. Coherence, focus	√ Ensures coherence between elements and priority setting (e.g. per EM phase) √ Defines actions within the framework of a coordinated policy √ Focuses on critical social groups, environmental functions and ecosystems √ Focuses on win-win options, coalitions, innovations, and creating policy windows √ Stimulates synergy between approaches and measures
3. Integration	√ Stimulates integration of key issues of sustainable development √ Stimulates integration of the EM process within spatial planning processes, and within political decision making processes √ Stimulates integration of sectoral policies within a goal oriented strategy
4. Responsiveness, anchoring of social and political diversity	√ Builds onto and strengthens social action and available social forces, and economic initiatives of civil society and the private sector √ Responds to the diversity and dynamics of the development context as an ongoing process of adaptation √ Addresses diversity of norms, perceptions and values among social groups and at different levels
5. Citizen participation and legitimacy	√ Ensures legitimate representation during the EM process √ Generates ownership among all parties involved √ Stimulates social networks for exchange, interactive learning and conflict resolution processes
6. Accountability, communication, transparency	√ Is carried out with responsibility, professionalism, rigor, fairness, impartiality and balance √ Documents and provides transparency on decisions taken, results achieved and the state of the environment, e.g. through the media, information centers and forums √ Ensures active communication between decision makers and civil society

Table 2: Key Issues and Requirements for Assessing Environmental Management (EM) Phase 1

Environmental Management Phase 1: Definition of Environmental Problems and Potentials	
Assessment criteria	Issues / requirements for a sound EM process
1. Analytical soundness, reliability, consistency	✓ Explicitly defines the environmental problems (e.g. with indication of urgency, complexity, risks and uncertainties, proximate and root causes) ✓ Provides insight in main impacts of environmental problems on society (health, security, autonomy, equity, productivity), winners and losers, costs and benefits, risks and externalities for future generations and off-site effects ✓ Addresses the multi-functionality of the environment (production, regulation, cultural functions), ecosystem fragility, carrying capacity, biodiversity hot spots ✓ Documents societal pressures and emerging threats (demography, economy, consumption patterns), and responses (solutions, opportunities, technologies, promising initiatives) ✓ Indicates the reliability / uncertainties of the data base and information used, identifies gaps of knowledge and stimulates studies for improvement ✓ Is based on experiences and results of monitoring and evaluation studies
2. Coherence, focus	✓ Sets priorities and focuses on key issues based on interrelationship between problems, spatial aspects (relationships upstream-downstream, urban-rural, transboundary issues), temporal aspects (impacts on future generations) and relationship with global issues
3. Integration	✓ Addresses the interrelationships of biophysical, social and economic aspects ✓ Addresses relations between different political levels and sectors, in terms of impacts of environmental problems and their causes ✓ Provides linkages with decision making and planning processes in relevant sectors ✓ Generates acceptability of problems and promising potentials, and commitment to work out integrated strategies
4. Responsiveness, anchoring of social and political diversity	✓ Captures and responds to societal change, views and needs ✓ Captures problem perception by multiple social and functional groups, vulnerable, gender, minority, impoverished and ethnical groups (Whose problem is it? What are the norms, attitudes and standards involved?) ✓ Addresses conflicts, controversial and overlapping interests, particularly with respect to open access and common property goods ✓ Captures problem perception by different institutional and political levels, and by different sectors, and addresses diverging perceptions
5. Citizen participation and legitimacy	✓ Stimulates processes to put the problem on the public and political agenda ✓ Ensures legitimate political control of process of problem definition ✓ Ensures legitimate representation of stakeholders (e.g. through joint fact finding, workshops, forums, etc.) ✓ Generates ownership of the problem by public sector, civil society and / or private sector
6. Accountability, communication, transparency	✓ Ensures accountability by the leading agency responsible for EM, e.g. to get the identified environmental problems on the political agenda ✓ Is pro-active in identifying problems, raising awareness and developing solutions ✓ Ensures access to information by all social groups, public disclosure, transfer of information on nature of the problem, adequate media coverage to inform citizens ✓ Provides transparency on conflicting views and interests, and stimulates exchange ✓ Stimulates feed-back on information basis and decisions taken

Table 3: Key Issues and Requirements for Assessing Environmental Management (EM) Phase 2

Environmental Management Phase 2: Formulation of Policies for Achieving the Defined Environmental Goals	
Assessment criteria	Issues / requirements for a sound EM process
1. Analytical soundness, reliability, consistency	✓ Outlines a vision on the future desirable state of the environment, and a strategy and process to bridge the strategic gap between current and future situation, aimed at solving urgent problems and addressing root causes for structural solutions (outputs of EM phase 1) ✓ Defines norms and standards, progress indicators associated with the EM process ✓ Reflects a strategic analysis and planning process, e.g. aimed at emerging opportunities, building integrated development scenarios ✓ Addresses a suitable mix of measures aimed at restriction, regulation and stimulation, appropriate to implement short and long term goals of the strategy ✓ Defines regulatory, market oriented and public involvement instruments, selected on the basis of clear criteria (e.g. costs and benefits, risks, adaptation to existing knowledge systems, human and capital resource requirements) ✓ Defines an appropriate research policy and agenda and monitoring system
2. Coherence, focus	✓ Focuses on win-win options, strategic partnerships (e.g. between opponents and proponents, different interest groups), benefits from policy windows ✓ Attributes adequate attention to fragile ecosystems, environmental functions and vulnerable social groups ✓ Stimulates synergy between selected measures and approaches, coherence between development sectors, coherence with policies of neighboring countries ✓ Defines appropriate and applicable principles for environmental management
3. Integration	✓ Takes into consideration the cognitive-informational and socio-economic context ✓ Positions an environmental strategy within a sustainable development perspective, indicates its relevance for development sectors, addresses socio-economic trade-off (using as criteria equity, health and security) and institutional consequences ✓ Indicates linkages with and consequences for sectoral policies and spatial planning, inter-regional and international policies and conventions ✓ Generates commitment to work out integrated strategies at different policy levels and within different sectors, including private sector
4. Responsiveness, anchoring of social and political diversity	✓ Ensures that the strategy is based on interests, norms and views of different social and political groups, builds on and strengthens existing societal dynamics, institutional and political change, initiatives and interests, e.g. of the private sector ✓ Defines approaches and measures tailored to the environmental and socio-cultural context (acceptable and sufficiently adapted) ✓ Stimulates innovations, and generates sound and appropriate solution strategies and ensures that these become part of formal policies ✓ Specifies responsibilities for normative, implementation and enforcement roles and collaboration between societal organizations and organizational levels, aims for devolution of management responsibilities to lower levels where possible
5. Citizen participation and legitimacy	✓ Informs and involves citizens, applies participatory methods during the process of defining environmental goals, ensures feed-back on proposed strategy ✓ Takes into account the development visions of minority groups ✓ Ensures legitimate representation of stakeholders ✓ Ensures participation in setting environmental goals and defining solution strategies, by civil society, public sector, private sector representatives ✓ Ensures that the environmental strategy features on the public and political agenda ✓ Ensures legitimate political control of process of defining environmental goals
6. Accountability, communication, transparency	✓ Ensures that decisions are taken and policies are formulated on the basis of sufficient information on the actual impacts ✓ Stimulates commitment to implement the strategy within government, civil society and private sector ✓ Ensures active communication and transparency on the data base, criteria used, targets set, norms, views and interests, rights and duties for different actors

Table 4: Key Issues and Requirements for Assessing Environmental Management (EM) Phase 3

Environmental Management Phase 3: Implementation and Enforcement of Environmental Policies	
Assessment criteria	Issues / requirements for a sound EM process
1. Analytical soundness, reliability, consistency	✓ Makes efficient use of available capital resources (and incentives) to enable effective implementation and enforcement by the various assigned organizations ✓ Makes efficient use of available human capacities, including those of partner organizations, in terms of technical, organizational and management skills ✓ Provides funds in line with the urgency and extent of problems to be solved ✓ Provides support for capacity development in organizations responsible for implementation where this has been clearly justified ✓ Ensures resources to provide adequate co-ordination, between implementation levels, between sectors and between public and private sector ✓ Is consistent with the defined environmental policies and goals (EM phase 2) ✓ Promotes adoption of principles of strategic environmental assessment principles, and of environmental management (precautionary principle, polluter pays, best technical means, prevention at the source, stand-still, responsibility of impacts)
2. Coherence, focus	✓ Provides mechanisms to adjust implementation and enforcement measures to the changing context, to enhance effectiveness, efficiency, coherence and focus ✓ Adopts mechanisms to identify, stimulate and take advantage from policy windows, to encourage innovations and promising initiatives ✓ Stimulates the use of innovative incentive mechanisms to capture public good values ✓ Enhances feed-back of priorities from research and education to policy makers ✓ Focuses on indigenous and vulnerable social groups, critical environmental functions, fragile areas and biodiversity hot spots
3. Integration	✓ Addresses inconsistencies between sectoral policies (e.g. effects of economic subsidies and structural adjustment policies on environmental qualities) ✓ Focuses on the integration of trade and environment policies, aimed at striking a balance between increasing competitiveness and reducing environmental pressure ✓ Attunes policies based on administrative and ecological spatial frames ✓ Stimulates internal and external learning processes to enhance co-ordination and collaboration between sectoral agencies and organizations involved
4. Responsiveness, anchoring of social and political diversity	✓ Adopts an approach that allows development of tailor-made approaches and measures ✓ Adopts an approach to adequately and rapidly respond to environmental and societal dynamics, social action and private initiatives, at different levels ✓ Provides mechanisms to place new issues on the public and policy agenda
5. Citizen participation and legitimacy	✓ Adopts mechanisms to enhance public awareness and 'early warning' ✓ Enhances participation and interaction during the project cycle ✓ Stimulates public involvement and voluntary agreements, e.g. between private sector and Government ✓ Proposes mechanisms to address conflicting interests
6. Accountability, communication, transparency	✓ Is implemented and enforced with professionalism, rigor fairness, impartiality and balance ✓ Guarantees independent checks and verification ✓ Ensures documentation and justification of successes, failures, lessons learned and changes made ✓ Ensures information exchange and two-way communication with all layers of civil society, and between different levels of environmental management

Table 5: Key Issues and Requirements for Assessing Environmental Management (EM) Phase 4

Environmental Management Phase 4: Monitoring of Outcomes: Achieving Environmental Management Targets	
Assessment criteria	Issues / requirements for a sound EM process
1. Analytical soundness, reliability, consistency	✓ Defines a strategy for formal monitoring and early warning, and responsible agents ✓ Defines environmental indicators, base-line surveys, reference situation and benchmarks ✓ Is pro-active by providing predictions on environmental problems and potentials, updates and informs about uncertainties and risks ✓ Monitors key targets of the defined environmental policy and defined goals and indicators (EM phase 3), and performance of organizations involved in the EM process ✓ Evaluates costs and benefits of strategy implementation, including accounts on environmental and social impacts and costs ✓ Ensures gradual improvement and optimal use of data and information base ✓ Aggregates data to derive useful indices and insights to inform decision makers
2. Coherence, focus	✓ Focuses monitoring on key issues, for efficiency purposes ✓ Includes monitoring of relevant institutional change, environmental and social impacts, and relevant context (socio-economic and environmental) dynamics ✓ Draws lessons from successes and failures and expands relevant successes
3. Integration	✓ Integrates monitoring results in decision making processes, including enforcement ✓ Stimulates coordinated efforts of monitoring by sectoral agencies, within a framework of sustainable development ✓ Stimulates joint efforts to define policy decisions based on analysis of changes
4. Responsiveness, anchoring of social and political diversity	✓ Attributes monitoring responsibilities at different societal organizations and organizational levels ✓ Ensures a review and evaluation of defined norms and standards: are they up-to-date, statistically reliable, and acceptable by different social groups?
5. Citizen participation and legitimacy	✓ Involves a variety of actors in monitoring activities and analysis of data ✓ Adopts a variety of monitoring mechanisms and tools ✓ Strengthens the independence of agencies to enforce, judge and sanction ✓ Strengthens active participation as a means to raise awareness ✓ Adopts mechanisms and approaches to stimulate self-evaluation within organizations involved, and to draw lessons from experiences
6. Accountability, communication, transparency	✓ Ensures continuous feed-back and exchange between society and decision makers, e.g. for early warning goals ✓ Ensures public disclosure of information and feed-back to organizations and key actors ✓ Draws relevant lessons and informs the public, emphasizing successes and stimulating measures for expansion ✓ Defines mechanisms to stimulate the dynamics between monitoring and education and awareness raising.

REFERENCES

Brugger, E. et al. (1998). *Challenges for the new millennium in Latin America. Sustainable development, competitiveness and second generation reforms.* Andean Development Corporation (CAF). Santafé de Bogotá. Colombia.

Commission on Global Governance (1994). *Our Global Neighbourhood*. URL http://www.cgg.ch/econtex5.htm#environ

De Graaf, M. (1996). *How To Do It? Tools and challenges for donors in the implementation of CDE initiatives.* Theme paper for the OECD/DAC International Workshop on Capacity Development in Environment. 4-6 December 1996, Rome, Italy

Devlin R. and French-Davis R. (1998). *Towards and evaluation of regional integration in Latin America in the 1990s.* IADB. Integration and regional programs Department. Occasional paper #1.

DFID (1995). *Technical Note nr. 14.*

Dunn, W. (1994). *Public Policy Analysis.*

Espinoza G.G. (1999). *Análisis de la Gestión Ambiental en Chile.*

Funtowicz S.O. and Ravetz J.R. (1993) *Science for the post-normal age.* Futures 25 (7): 739-755.

GEF (1997). *Framework and Work Program For GEF's Monitoring, Evaluation and Dissemination Activities.* GEF/C.8/4/Rev.1 GEF Council. April 30 - May 1, 1997.

Goodland R. (1995). *The concept of environmental sustainability.* Annu. Rev. Ecol. Syst. 26: 1-24.

Hajer M. (1995). *The politics of environmental discourse.* Oxford, Clarendon.

Hemerijck AC (1998). *Analyse voor beleid.* Erasmus University, Rotterdam.

Holling C.S. (1995). *What barriers? What bridges?* In: Gunderson L.H., Holling C.S. and Light S.S. (Eds.) (1995) Barriers and bridges to the renewal of ecosystems and institutions. Columbia University Press, New York, Chichester. 593 pp.

IDB (1996). *1995 Annual Report of the Environment and Natural resources.* IDB

IDB (1996). *Environmental Management in the Southern Cone.* IDB

IDB. (1999). *Renewing the commitment to development. Report of the Working Group on the Institutional Strategy*. Internal document GN-2077-1. Washington. 24 August 1999. [5.10]

IDB (1999). *Environmental Management: a Strategy Profile.* Sustainable Development Department / Environment Division. IDB, Washington, D.C.

IDB (2000). *Toolkit para analisis institucional de los gobiernos locales.*

IDEM Consult (1995). *Indicators for capacity development in the Environment.*

IDB/SDS/ENV (1999). *Suggested definition for determining inclusion criteria for projects and non-lending products in the SDS project tracking system and the 1999 annual report on environment and natural resources.* IDB.

Jänicke M. and Weidner H. (Eds.) (1997). *National environmental policies.* A comparative study of capacity building. Springer Verlag, Berlin.

Keeley J. and Scoones I. (1999). *Understanding environmental policy processes: a review.* IDS Working Paper 89.

Kingdon J.W. (1984). *Agendas, alternatives and public policies.* Little and Brown, Boston.

Lovei M. and Weiss C. (1998). *Environmental Management and Institutions in OECD Countries.* World Bank Technical paper no. 391. Pollution Management Series. The World Bank, Washington. Section 2.1

Malhotra Y. (1996). *Organizational learning and learning organizations: an overview.* URL http://www.brint.com/papers/orglrng.htm.

Munoz, H. (1997). *Free trade and environmental policies.* In: Latin America Environmental Policy in International Perspective.

Nas, M. (1997). *Maatschappelijke organisaties, publieke opinie en milieu.* Sociaal en Cultureel Planbureau. VUGA. Den Haag. The Netherlands.

Nogueira R.M. (2000). *Institutional reform and management of the public agricultural sector*. Progress and tasks ahead. Working paper for the Conference on Development of the Rural Economy and Poverty Reduction in LAC, New Orleans, March 2000.

Nolet, G. (2000). *Institutional co-operation on trade and environment.* In: Environmentally Sound Trade Expansion in the Americas: A Hemispheric Dialogue. Edited by Robin Rosenberg. 2000. University of Miami.

OECD. (1997). *Environmental Performance Reviews - A Practical Introduction.* OECD, Paris.

OECD. (1999). *Compendium on Good Practices for Operationalising Environmentally Sustainable Development in Development Cooperation.* OECD, Paris.

OECD (2000). *Donor support for institutional capacity development in Environment.* Evaluation and Effectiveness. OECD, Paris.

Rodriguez, M. Becerra (1999). *La gestión ambiental en Colombia: estado y tendencias*. Paper prepared for IDB. Not yet published.

Rodriguez, M. Becerra (1999). *Gestión Ambiental en América Latina y el Caribe.* Paper prepared for IDB. Not yet published.

Russell C.S. and Powell P.T. (1996). Choosing environmental policy tools. Theoretical cautions and practical considerations. IADB, Washington.

Schön, Donald A and Martin Rein. (1994). *Frame Reflection. Toward the Resolution of Intractable Policy Controversies*. Basic Books. New York.

UNDP (1992). *Handbook and Guidelines for Environmental Management and Sustainable Development*. Environment and Natural Resources Group, UNDP. New York. See also: Brown. 1997. Environmental Overview. In: *Impact Assessment*. Vol. 15 No. 1.

UNDP (1997). *Environmental Programs in Latin America and the Caribbean: an Assessment of UNDP Experiences*. Office of Evaluation and Strategic Planning, UNDP, New York.
UNDP. (1997). *Capacity Development*. Technical Advisory Paper 2. Management Development and Governance Division, Bureau for Policy Development, UNDP.

Winsemius P. (1986). *Gast in eigen huis.* Beschouwingen over milieu management. Samson Tjeenk Willink, Alphen a/d Rijn, the Netherlands

World Bank (1997). *Five years after Rio.* Innovations in environmental policy. Rio+5 edition. World Bank, Washington.

World Bank. (1999). *Environmental Management Plans.* Environmental Assessment Sourcebook Update. Number 25. January 1999.

World Bank (1999). *Greening Industry: New Roles for Communities, Markets, and Governments.* Oxford University Press.

Zerner (1999). *Justice and Conservation.* The Rainforest Alliance, New York.