

Comparative Analysis of U.S. and EC Environmental  
Institutions and Policies to Proposed Lebanese Government  
Reforms

by

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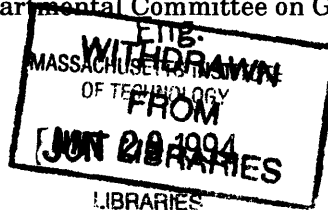
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**ABSTRACT**

Three major areas of environmental management were examined: Institutions, policies, and policy instruments. A general framework for each area was presented as were some evolving trends. A comparison between the United States and the European Community was used to determine the drivers of effectiveness. The three frameworks were found to be closely linked and a high level of effectiveness was achieved only when appropriate and compatible institutions, policies, and policy instruments were implemented.

The results of the review were used to assess the institutional recommendations made by Camp Dresser & Mckee (CDM) and the policy recommendations made by the Ministry of State for the Environment (MSE) to reform the existing Lebanese system. The following modifications were recommended to the CDM report: 1) use the more centralized CDM model, 2) add six more environmental sectors to the agency's jurisdictional scope, 3) require the use of environmental impact assessments. No substantive recommendations were made around the MSE report, but it was suggested that the following sectors take priority in policy development: 1) water, 2) solid and liquid wastes, 3) food and agriculture, 4) agricultural land use, and 5) air pollution. The following policy instruments were recommended for implementation as it is believed that they would be the most efficient initially: 1) design standards, 2) bans on products and processes, 3) collective facilities, and 4) deposit refund systems.

**Thesis Supervisor : Prof. Fred Moavenzadeh**

**Title : Director, Henry L. Pierce Laboratory**

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# 1.Introduction

*"The task of statesmanship is .. to attempt to guide the nations, with all their differences in interest, power and fortune, towards a new system more capable of meeting the 'inner limits' of basic human needs for all the world's people and of doing so without violating the 'outer limits' of the planet's resources and environment."*

..The Cocoyoc Declaration<sup>1</sup>

The 1980s saw the world wake up to the damage that humanity has inflicted on the planet since the race has been able to make fire. The problems brought to the forefront of our consciousness have ranged from seals dying in the North Sea due to pollution to the Exxon Valdez oil spill to the killing of whole lakes by acid rain and the hole in the ozone layer over Antarctica. Suddenly, the environment was no longer a receptacle that could absorb the products of human industrialization and development.

While nations have developed a substantive understanding of their mutual economic and political inter-dependencies, they are just now beginning to develop an appreciation for the potential social-political-economic impacts of a changing global environment. A new reality is emerging in which the environmental policies of one country can affect a whole region, and in some cases the whole planet. This new state of affairs in which jurisdictional boundaries are becoming irrelevant suggests that there is a new form of politics in the

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<sup>1</sup>The Cocoyoc Declaration, Cocoyoc Symposium on "Patterns of Resources Use, Environment, and Development Strategies," Cocoyoc Mexico, October 8-12 , 1974.

making, potentially called eco-politics, that will require students of political science to consider another variable in the examintaion of interactions among nations<sup>2</sup>.

Environmental concerns are relatively new in the world of politics, economics, and social sciences. They have only recently been elevated from the realm of academic obscurity and granted respectability in the worlds of economics, politics, and social sciences. Yet, with all the resources dedicated to understanding these problems, no clear dominant paradigm has yet emerged to provide a strong analytical framework and make these issues more tractable. The multi-dimensional nature of the problem posits that there is no unique view of the problem unless that view encompasses all independent dimensions. We have still not reached the stage where we can enumerate all of the relevant independent dimensions, or the results of interactions among them, yet we need to begin to tackle these issues.

While many simplified frameworks have been developed by institutions such as the US Congressional Budget Office<sup>3</sup> (CBO) (Fig. 1), they are tailored to understanding a specific aspect of a problem. In the case of the CBO model, the purpose is to understand the resource requirements and effects of various governmental actions on the participants in the solid waste generation and disposal value chain. It is specifically geared towards the reduction of solid waste by trying to understand the particulars of each of the players, their individual responses, and their system dynamic response to the federal incentives. This model may be well suited for dealing with solid waste on a regional basis, but lacks the linkages to external environmental decision variables.

The task of developing analytical framework is very difficult but is ultimately a necessity in helping us understand the implications of our decisions as individuals, institutions, or states. North<sup>4</sup> proposed four interconnected levels of systems, decisions, and analysis that could be used as components in looking at socio-environmental interactions: (1) individual humans and their decisions, (2) major collectivities and social organizations, (3) a competitive international environment, (4) a global system and global components that encompass the previous three levels. This simple model highlights two of the major challenges that will be faced in developing any model dealing with interactions between

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<sup>2</sup>Nazli Choucri, "Introduction: Theoretical, Empirical, and Policy Perspectives," *Global Accord: Environmental Challenges and International Responses*, Ed. Nazli Choucri, The MIT Press, Cambridge, Massachusetts, 1993.

<sup>3</sup>U.S. Congressional Budget Office, *Federal Options for Reducing Waste Disposal*, Government Printing Office, Washington, DC, 1991.

<sup>4</sup>Robert C. North, *War, Peace, Survival: Global Politics and Conceptual Synthesis*, Boulder, Westview, 1990.

humans and the environment: (1) the linkage challenge, (2) the policy challenge, and (3) the institutional challenge (Fig 2).

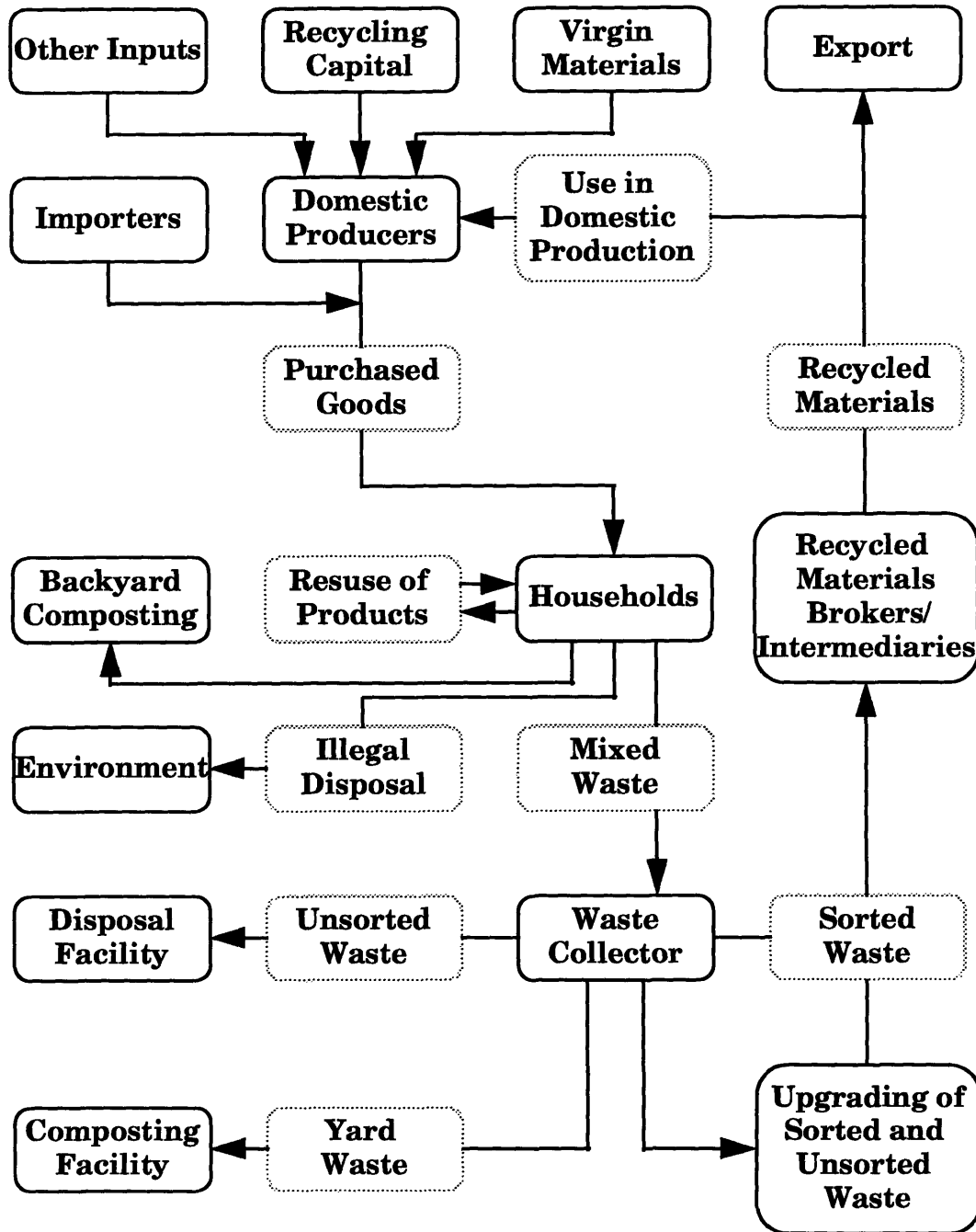
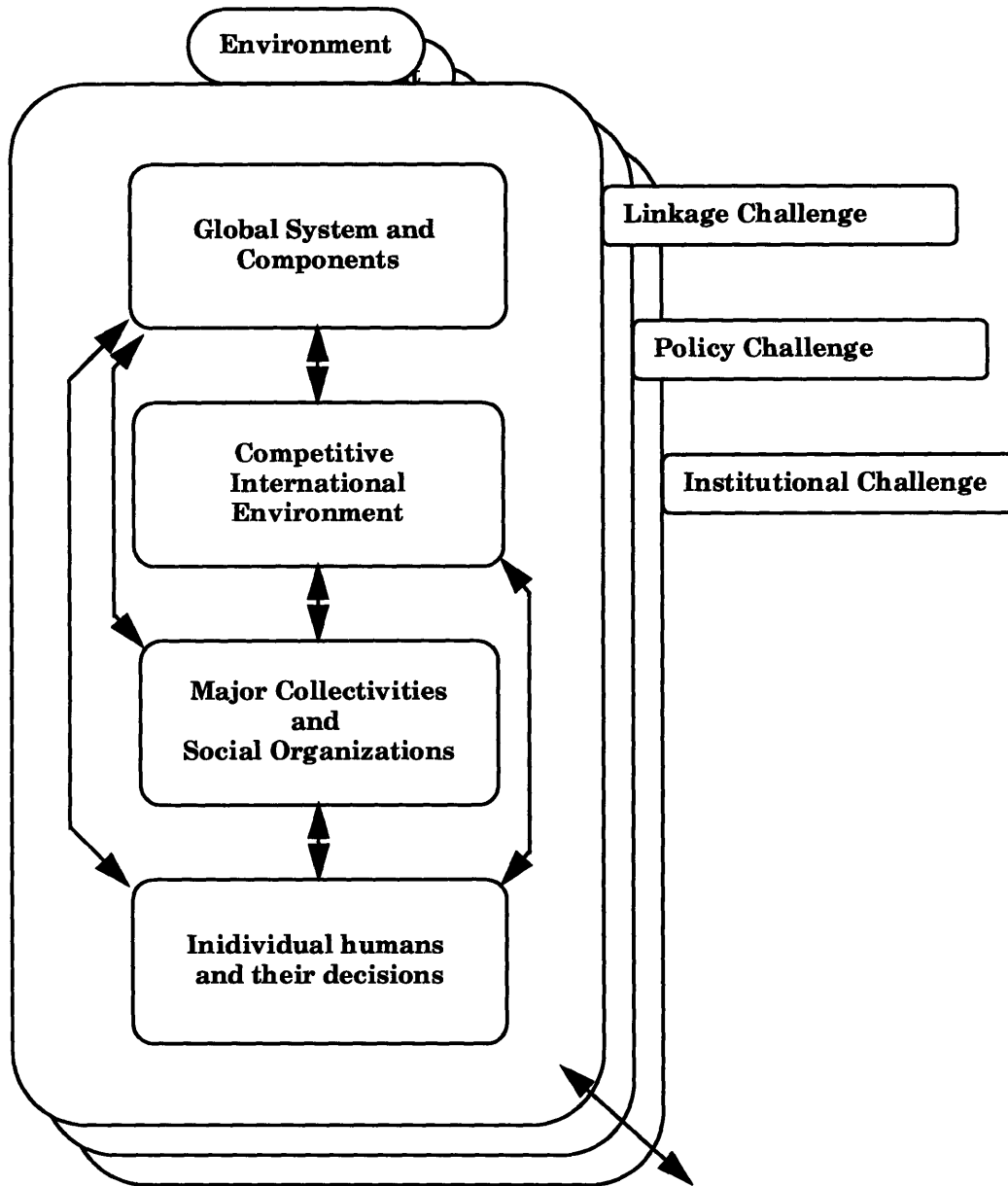


Figure 1: Flows of products, waste, and recycled materials in CBO model



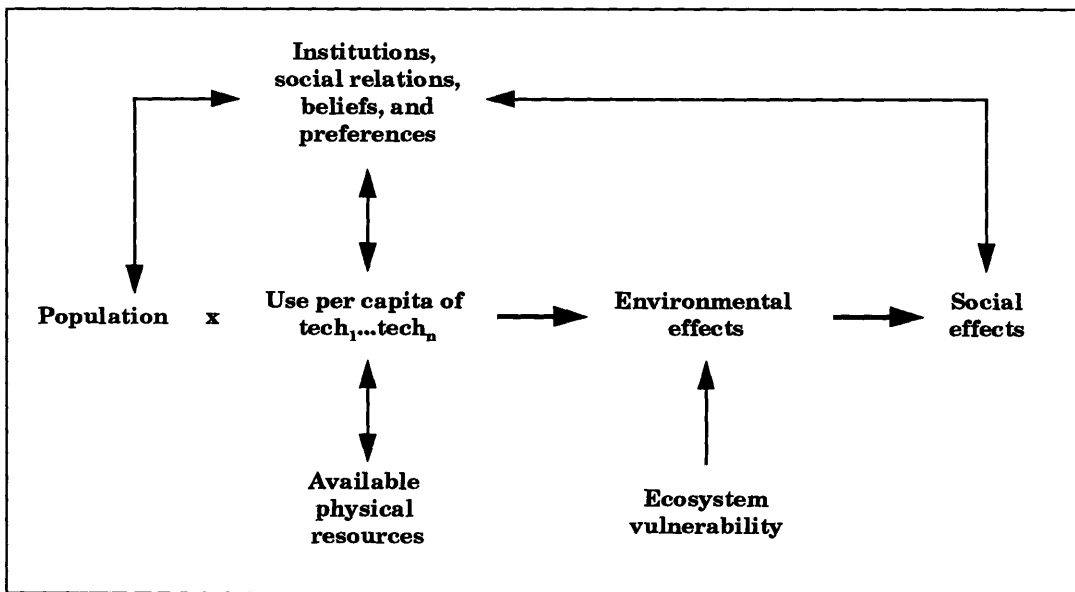
**Fig 2: Levels of analysis and associated challenges in Choucri model**

**1.1.The Linkage Challenge**

The issue of linkage exists along two dimensions: intra-disciplinary and inter-disciplinary. The intra-disciplinary challenge reflects the development of the individual disciplines in understanding the causal relationships that govern our environment within their area of focus. The inter-disciplinary challenge deals with the processes that occur at the border of those areas of focus, where the causal relationships can span multiple

disciplines. We must move forward along both dimensions if we are to develop the knowledge to create the policies and institutions needed to address this issue from a holistic point of view.

This weakness in formulation of causal environmental relationships limits our predictive abilities. While the issues striking at the most intimate links of man with his ecosystem seem intractable, one must avoid the instinctive oversimplification that could be attempted. Homer-Dixon<sup>5</sup> coined this over-simplification as "simple-minded environmental determinism," and proposed a localized level model that would take into account the numerous intervening factors that permit great variability, resilience, and adaptability in human-environmental systems (Fig. 3). The basic assumptions of the model are that the effect of human activity on a specific ecosystem is a function of (1) population, (2) use of technologies by that population, and (3) the responsiveness or vulnerability of the ecosystem to those activities. Technology use is further affected by the availability of resources, the institutional context, social relations within the region in question, beliefs, and a slew of other social factors. The simplicity of this model is deceiving, as much of what makes it attractive evaporates once we realize that we have no mechanism to quantify the causal relationships.



**Fig 3: Main variables and causal relationships in Homer-Dixon model**

<sup>5</sup>Thomas F. Homer-Dixon, "Physical Dimensions of Global Change," *Global Accord: Environmental Challenges and International Responses*, Ed. Nazli Choucri, The MIT Press, Cambridge, Massachusetts, 1993.

There is great uncertainty associated with our predictive abilities regarding each variable and its components. In the case of technology use, the variable itself is amorphous and thus difficult to measure, forcing us to use a surrogate variable, which in this case is energy consumption per capita.

**Table 1: Factors contributing to unpredictability of environmental variables in Homer-Dixon model**

	Quality of theory	Quality and quantity of data	Uncertainty about capacity for human response	Chaotic processes
Population size				
Energy consumption	X		X	
Climate change	X	X	X	X
Ozone depletion	X			
Deforestation		X	X	
Degradation of agricultural land		X		
Reduction in water supply and quality		X	X	
Depletion of fish stocks				
Decline of bio-diversity		X	X	

Population and energy consumption are clearly identifiable variables, while the "environmental effects" variable encompasses multiple components, from climate change to the decline of bio-diversity. Closer examination of this model should cause us to worry as the last four variables in Table 1 directly impact mankind's ability to provide for its basic survival needs: water and food.

These models bring up a point that is best expressed through the rewording of an old dictum: Think locally, act globally. All global changes are driven by local actions, which drive global changes, which are again felt at a local level. It may be time to refocus our attention at the local level as the intractability of global human-environment dynamics may paralyze our actions, otherwise known as "paralysis by analysis." The Homer-Dixon model

becomes manageable when we consider it within the context of a country, or a small set of countries that can be considered as part of the same ecological system. This refocusing also facilitates the ease with which the linkage, policy, and institutional challenges can be dealt with. While our understanding of the global causal linkages is key to the development of a global policy, our understanding of the local linkages is sufficiently advanced that it is not a major impediment (Table 1). Policy and institutional/organizational issues are much more relevant at the local level.

Quality of theory does not seem to be an issue with localized variables such as deforestation, depletion of fish stocks, etc., all of which can potentially be addressed by adjusting existing policies and institutions at a country or region level. It is to the latter two factors that the rest of this thesis will be devoted.

## **1.2.The Policy Challenge**

Choucri<sup>6</sup> viewed the policy challenge as that of "defining appropriate concepts for, and approaches to, decisions about managing the global environment." Replacing the term "global environment" with "local or regional environment" would not significantly affect the nature of the challenge. The policy challenges occur along closely linked spatial and temporal dimensions. The decisions that policy makers take at the local, national, or global levels affect the relationships that exist between the people living within this generation, as well as affecting this generation's relationship with the coming one. Presently, the only broadly accepted framework used to help structure these issues, given that we cannot quantify them, is "sustainable development" (SD)

The concept of sustainable development has emerged in the absence of a rigorous predictive analytical model to determine the consequences of existing behavior patterns. It is not easy to come up with a concise definition of sustainable development, as its conceptual boundaries are still being defined in some cases, identified in others; what is clear is that this is the first broadly accepted approach that seeks to integrate economic growth and development with environmental concerns, and acknowledges the intrinsic links that exist between them. The challenge here is therefore not to manage the environment in and of itself, but to manage it, along with growth and development, in a systemic fashion.

The concept of managing environment, development, and growth in a holistic mode is relatively new. Western civilization's initial approach to environmental management can be best described as "frontier economics." This is the view that mankind took in the early

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<sup>6</sup>Nazli Choucri, *ibid*

stages of exploring the planet, where behind every horizon lay more abundant resources to be exploited. This perspective would ultimately drive over-exploitation on a local and global level, the extinction of species, and potentially, the large-scale climatic changes that come from driving the global ecosystem to its limits. SD represents a shift from "frontier economics" to a "spaceship earth" view of the planet. It is the view that an astronaut in orbit would take, when looking down onto the planet, where he would see an enclosed system, with a limited amount of resources to be exploited, as well as a supporting biosphere that is directly affected by the manner of exploitation.

The two views represent the opposite ends of the policy choice spectrum. From a "frontier economics" perspective, there are no environmental policy dilemmas to face because the resources to be exploited are unlimited. The only policy issue to be dealt with from a governmental perspective is that of property rights, more specifically land rights. This scenario is very similar to the development of the western part of the US in the eighteenth and nineteenth centuries. The number of policy issues increases exponentially the further we move along the spectrum to the "spaceship earth" view. Issues such as inter-generational and intra-generational equity, developed versus developing country rights, sovereignty over water streams, etc., emerge. Inter- and intra-generational issues are at the crux of the sustainable development concept as they clearly reflect the implications of our lack of temporal concern.

If we can accept that the resources of the planet are not going to increase in the foreseeable future, that future generation have certain rights, then we must also accept that we need to manage the environment in a manner that does not infringe upon these rights. The Organization for Economic Cooperation and Development (OECD) feels that the only type of development that is sustainable over the long term is one that integrates environmental concerns, and more importantly from a policy standpoint, the "only environmental policy sustainable over the long term is one in harmony with economic objectives<sup>7</sup>." The challenge then becomes how to define those policies that do not force us to make choices between a healthy economy and a healthy environment, and that integrate our concern for future generations into this context. There are situations where this approach may be considered a luxury and intertemporal issues seem irrelevant. These situations reflect the state of most developing countries trying to survive.

While sustainable development is a holistic concept, with global implications, its translation into practical terms in developing countries has serious social, political, and

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<sup>7</sup>Bill L. Long, "Managing the Environment," *OECD Observer*, February/March, 1991.



economic implications. Developed countries have passed a threshold whereby they have built the necessary legislative, institutional, and political structures to minimize environmental degradation tremendously. These institutions have developed very extensive regulatory frameworks that mimic some aspects of SD on a regional level but not on a global level. Their positive actions may be quickly translated into negative actions in developing countries that seek to fill a perceived demand at the expense of their own future<sup>8</sup>. The questions that developed nations are facing do not deal with how to achieve a minimally acceptable living standard, but address concern about how to maintain and enhance the present state. No major changes may be required to pursue this goal.

In developing countries, the situation is very different. They are now reaching the point of large-scale industrialization, but western nations are telling them not to pursue the same path that they have. These countries' economies, which are heavily dependent on the exploitation of natural resources, face a potentially large disaster if they do not take a longer-term view with sustainable development in mind. These countries will face the impossible situation in which the commodities upon which their economies are based will at one point no longer be there to contribute to their development. In order to survive, they will have to borrow, with debt leading to further debt, forcing them to further push their exploitation of natural resources, forcing surpluses and declines in prices<sup>9</sup>. While their creditors will benefit, these countries have, through this circular process, mortgaged not only their long-term future, but their short-term one too. The Philippines is a case in point, reflecting the short-term tradeoff that these countries will make to survive.

At the 1972 Stockholm Conference, a spokesman from a developing country made the statement that industrial smoke looks like money to him. In the last twenty years, not much appears to have changed from a practical perspective in the developing areas of the world<sup>10</sup>. Instead, the change has occurred in the West, where the developed nations have realized that without their help, the less-developed countries are going to trade off long-term sustainability for short-term benefits, causing irreparable global environmental damage, as with the loss of bio-genetic diversity in the Amazon basin. This is causing the emergence of situations that are more suited to complex game theory analysis than to environmental policy-making. Examples of this newly found awareness are the debt-for-environment swaps that have become somewhat common. These have become more

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<sup>8</sup>Roger A. Sedjo, "Global Consequences of US Environmental Policies," *Journal of Forestry*, April, 1993.

<sup>9</sup>OECD, *Strengthening Environmental Co-Operation with Developing Countries*, OECD, Paris, France, 1989.

<sup>10</sup>Bill L. Long, "Managing the Environment," *OECD Observer*, February/March, 1991.

accepted as the international community began to understand that third world countries were suffocating their economies to satisfy their external debts, which they used in the development of low-value-adding industries.

Developing countries still need to figure out what policies they or their creditors deem necessary to sustain long-term economic and environmental health. They will usually look to the West for guidance as to the types of appropriate policies and on the ways to implement them. The policies they will find are not consistent, and change with the scope of application and the country in question. Some of the countries, such as Norway, have a very high level of environmental awareness, while others like Greece and Spain do not view the environment as an area of primary concern. Germany is attempting to lead the European Union in its environmental regulatory framework but is facing issues of implementation and pressure from its trading partners. The US is focusing more on issues of contamination and remediation, but it is beginning to consider other issues such as waste minimization and market-based policies to implement its regulations.

The policies developed in each country are the product of local social, legislative, institutional, political, and economic frameworks. The policies were developed to satisfy local and national constituencies in most cases, with little concern for international stakeholders. It is not until recently that these policies have begun to reflect global concerns, such as the case with the ban on chlorofluorocarbons (CFCs). Nonetheless, while they were developed with the local conditions in mind, two approaches to dealing with environmental issues have been used: Command and control regulatory instruments and, more recently, market-based mechanisms.

The traditional approach to dealing with environmental problems has been through the enactment of regulations. These regulations required the implementation of anti-pollution procedures and limited the emissions of pollutants, use of specific technologies, etc.. or any combination thereof. This has been the approach of choice in the past, but rising economic concerns are beginning to require that new, more cost-effective mechanisms be developed and implemented. Market-based mechanisms aim to give producers and consumers clear signals about their consumption of environmental resources, letting producers and consumers decide their optimal consumption patterns<sup>11</sup>. The appropriateness of these instruments depends heavily on local conditions. In many developing countries, the presence of a dominant governmental sector or the lack of substantial economic activity may skew the choice of implementation tools if a purely

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<sup>11</sup>John Kay; Aubrey Silberston, "Green Economics," *National Institute Economic Review*, February, 1991.

western perspective of economic valuation is used<sup>12</sup>. Again, local conditions will dictate the appropriate response, and this local response will usually have to be driven through existing institutions, or new institutions will have to be created.

### **1.3.The Institutional Challenge**

The institutional challenge is closely linked to the policy challenge. In many cases, once the policies have been developed, the institutions that must carry out their implementation must be created. Institutions exist in parallel with policies and regulations, therefore they will also act at the levels of analysis presented in Figure 2. Going back to Choucri's definition of institutional challenge,<sup>13</sup> "the challenge of identifying the appropriate framework for international responses" is a barely charted area. This does not mean that international agreements do not exist, but rather the nature of environmental issues is such that previous frameworks may not be of much help.

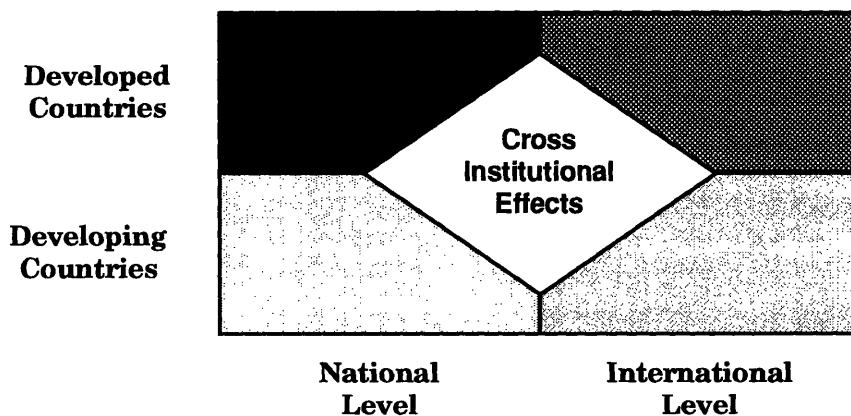
Issues arise along two dimensions related by strong institutional factors that will contribute to the difficulty of reaching agreement at all levels. The first dimension is that of policy level. Governmental institutions dealing with the environment are relatively new, even in developed countries. While laws regulating specific environmental areas have been in existence since the beginning of the century in many developed countries, institutions created for the sole purpose of regulating environmentally degrading activities have not. In many developing countries, these institutions may exist but in most cases they are inoperative or they are staffed by too few resources to matter.

In most developed countries, these institutions have been created as a result of policies to maintain or improve existing environmental stock. Over time, these institutions' role has evolved from pure policing agencies to participating in the policy-making process itself, i.e. the United States Environmental Protection Agency. In many cases, these organizations serve as advisors to decision makers, or might be given a certain mandate, and required to develop implementation regulations. The frameworks, strategies, regulations, and policies developed for national-level action reflect a high level of sophistication and understanding of the issues, if not of the political context surrounding them. While their work up till now may be criticized for lack of comprehensiveness or flexibility, these institutions have created a strong legislative base upon which they can act.

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<sup>12</sup>Monique Barbut, "What Financial Institutions Can Do," *Strengthening Environmental Co-Operation with Developing Countries*, OECD, Paris, France, 1989.

<sup>13</sup>Nazli Choucri, *ibid*



**Figure 4:** Dimensions along which difficulties are dependent, with a causal function

Figure 4 attempts to describe the level of sophistication of the institutions along the two dimensions of policy level and stage of development, with the darker colors representing higher levels of sophistication. Developed countries, while still struggling with some holistic conceptual issues such as waste minimization and recycling, are in general much further than developing countries in setting up the basic institutions. Specifically, developing countries lack the sufficient political awareness, the adequate legislative frameworks, the strong institutional base, the skilled manpower, and the financial resources<sup>14</sup> to establish this infrastructure. Lacking this infrastructure at the national level, these countries cannot or will not participate in policy debates at the international level, except when these discussion have clear negative repercussions to them.

The multi-sectoral, multi-disciplinary nature of environmental problems is a major source of problem resolution inefficiency. The OECD has described its membership's governance structure as set of "sectoral ministries or agencies with narrow scope," creating arrangements that are proving to be weak<sup>15</sup>. Furthermore, these issues also arise at the supra-national level, as in the case with the United Nations and the European Union. The World Resource Institute examined institutional processes of the United Nations and came out with a set recommendations to revamp the way the organization manages its

<sup>14</sup>Frans W. R. Evers, "A Strategic Tool For Sustainable Development," *Strengthening Environmental Co-Operation with Developing Countries*, OECD, Paris, France, 1989.

<sup>15</sup>OECD, *Strengthening Environmental Co-Operation with Developing Countries*, OECD, Paris, France, 1989.

environmental agenda<sup>16</sup>. The highlights of the issues facing the present organization include words like "full span of issues," "authority to mobilize financial resources," and "handle sectoral and cross-sectoral issues." These concerns seem to permeate all existing institutional structures.

Issues of authority, responsibility, funding, resources, etc. seem to be the drivers of institutional response. In the end, even the largest organizations making decision with global consequences are made by individuals with individualistic motives. Keeping this fact in mind explains the similarities in organizational dynamics witnessed. Resolving these issues is beyond the scope of this work, but examining these structures to determine which models might be the most appropriate for a developing country is not. This will be an area of focus of this thesis.

Developing countries have much to learn from the experiences of developed countries in dealing with environmental issues: in some cases they can learn from the west's mistakes, in others, they can learn from their successes. In most cases, though, they must adapt these learnings to local conditions as failure and success lies in the details. The purpose of this study is to take some of those lessons learned and understand whether and how they can be adapted to the local conditions of Lebanon.

#### **1.4. Case Study: Lebanon**

Lebanon is rapidly emerging from a state of chaos into a state of stability. Seventeen years of civil war have taken their toll on the political and economic landscape, leaving a country lacking in the most basic of infrastructures. In the post-World War II era, Lebanon became a center of trade, commerce, and tourism, but the war took care of eliminating much of those gains.

The major goal of the present administration is to stimulate the economy through the rebuilding of a solid infrastructure that would attract local and foreign business back into the country. Unlike many developing countries, Lebanon lacks many natural resources: It is poor in most pulp products, has nonexistent oil reserves, and extracts few mineral resources. The main source of income comes from expatriates providing for their families in their home country. The pre-war economy was heavily based on services: tourism, banking, trade, and commerce, with industry development not succeeding on a large scale.

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<sup>16</sup>Lee A. Kimball, *Forging International Agreement: Strengthening Inter-Governmental Institutions for Environment and Development*, World Resources Institute, Washington, DC, 1992.

As the infrastructure is rebuilt, industry will follow, and perhaps even tourism. There are at present no environmental regulations or policies to guide these efforts<sup>17</sup>. In 1992, the Ministry of State for the Environment issued a report titled "Environment and Development In Lebanon," which looks at the environmental state of Lebanon within the context of sustainable development. It covered the existing socio-economic framework, analyzed the various economic sectors, and proposed a set of strategies, policies, and a plan of action for the government in managing the environment. This report was presented to UNCED, the United Nations Conference on Environment and Development, but was not widely circulated in Lebanon. It is my impression in attempting to locate a copy of it that it was shelved after publication, and not much attention has been paid to it since then.

Given that the UNDP is helping the ministry in charge of the environment structure its policies, and that the report just mentioned was prepared for the UNDP to be presented at UNCED, the assumption will be made that whatever plans come out of the responsible ministry will incorporate the recommendations of the UNCED report as its basis. The recommendations of the report are considered to be the future direction of the Lebanese government.

## **1.5.Thesis Structure**

This thesis will be divided into four sections. The sections will focus on the institutions, policies, and tools used to implement the policies, and the case study on Lebanon. The intention is to build a basis of knowledge by which we can assess the state of Lebanon's existing policies and institutions, and address some of the potential areas of development.

### **1.5.1.Chapter 1: Institutional Context of Environmental Protection**

The focus in this chapter will be on the institutions that have evolved in the US and Europe to deal with environmental protection. The similarities in the nature of the problems arising in this context across national boundaries or levels of analysis makes the lessons learned easily applicable to those developing nations.

### **1.5.2.Chapter 2: Policy Approaches to Environmental Protection**

The policy approaches to environmental protection vary substantially from country to country, institution to institution, and by level of policy analysis. The goal of this chapter

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<sup>17</sup>Personal communication with Philippe Poinceau, UNDP representative in Beirut, Lebanon, in charge of helping the government develop its environmental policies.

is to present some of the more important policy approaches, and examine their usage in various western contexts, as well as their implications to developing countries.

### **1.5.3.Chapter 3: Tools of Policy Implementation**

The two types of tools used in the implementation of policies at non-supra-national levels have been command and control regulations and market-based mechanisms. Each of these approaches will be examined, from both a theoretical as well as a practical implementation perspective. Examples of their implementation in various contexts will be examined, and the potential application of one versus the other in developing economies will be discussed.

### **1.5.4.Chapter 4: Case Study: Lebanon**

The case study will look at the proposed action plan for Lebanon, in the form of the UNDP report to UNCED. A short overview of Lebanon's economic, political, and regulatory infrastructure will be presented with particular emphasis on the institutional arrangement in place. We will examine the recommendations made in the context of the lessons learned from the three previous chapters, and will highlight areas that appear to be lacking or contradicting those lessons.

### **1.5.5.Chapter 5: Conclusion**

The conclusion will include some of the recommendations on policy and institutional areas that prove weak, as well as defining areas of further study.

## **2. Institutional Context of Environmental Protection**

The development of dedicated governmental environmental institutions is a fairly recent event. The first international environmental entity, the United Nations Environmental Program, was not brought into existence until the 1972 UN conference in Stockholm, and then with a very limited budget. Today, that institution's budget is still small, as are its powers and mandates. On a national level, the US, Japan, and most other European countries did not establish their own environmental agencies until the 1960s and 1970s, putting them in the same age range as the UNEP. The roles that these institutions have taken on have ranged from the extremely powerful, such as the EPA, to the very weak, such as the UNEP and the German Federal Environmental Agency (FEA).

The body of literature regarding the design of effective international environmental institutions is still relatively small, and it is minimal with regard to national institutions<sup>18</sup>. In addition, developing countries have not received much attention as most of the attention was focused on western political and economic frameworks. This chapter will cover institutions operating at both the international and national levels. It is hoped that the first section, which addresses the roles of international institutions, will help us understand how developing countries can use them to evolve their own environmental frameworks. The second part, which deals with the institutional frameworks of the U.S. and the EC, will help us identify those key structural design criteria that affect the efficiency of organization, and use them in our case study.

### **2.1. The Role of International Environmental Organizations**

Governments establish international environmental institutions to respond collectively to problems they have not been able to solve individually. Effective institutions can affect political processes at three key points in the sequence of environmental policy

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<sup>18</sup>Lee A. Kimball, *Forging International Agreement*, World Resources Institute, Washington, DC, April, 1992.



making and implementation: 1) They can contribute to the creation of more appropriate agendas that reflect the political and technical consensus about the nature of environmental threats; 2) they can contribute to more comprehensive and specific international policies that are agreed upon through a political process whose core is intergovernmental bargaining; and 3) they can contribute to national policy responses that directly control the sources of environmental degradation.

The threat of large-scale environmental changes has forced institutions that would have remained somewhat complacent under normal circumstances to be creative and aggressive in alleviating these concerns. In most cases, the net result is a direct benefit to the nations. In practice, effective governmental response is usually undermined by a variety of national and international factors: low levels of concern about the effects of environmental degradation, the lack of technical, scientific, and managerial capacity to deal with the environmental issues, and the inability to overcome the problems of collective action through the lack of a benign contractual environment<sup>19</sup>. While the first two concerns are considered local in nature, and therefore out the realm of control of international organizations, international organizations have found ways to influence them.

### **2.1.1. Increasing Governmental Concern**

Increasing governmental concern requires that international institutions either effect some substantial change at the local level, or impose pressure at the international level. At the international level, when the affected nations do not understand the impact of the changes that are occurring, due to lack of technical resources, knowledge, etc., then normative pronouncements accompanied by collaborative scientific reviews can contribute to a shift in concern. Using the Vienna Convention and the Montreal Protocol regarding stratospheric ozone depletion as examples, the collaborative reviews of scientific evidence played a major role in increasing the level of concern within several governments. Many of the smaller developing nations that would be hurt by the rise of the sea level, such as the Maldives and Bangladesh, took on a strong active lobbying role.

These international institutions sometimes take on roles that their creators did not initially intend when they become magnifiers of public pressure. The institutions can create an atmosphere of competition amongst governments to be more pro-environment by providing a forum for politicians attempting to garner the public's sympathy and attention.

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<sup>19</sup>Marc A. Levy, et al., "Improving the Effectiveness of International Environmental Institutions", *Institutions for the Earth*, Ed. Peter M. Haas, Robert O. Keohane, Marc A. Levy, The MIT Press, Cambridge, Massachusetts, 1993.

Non-governmental organizations (NGOs) also play a significant role in increasing public pressure as they are not bound by the same rules as international institutions in criticizing governments and national policies. In those situations when NGOs can get enough national and international attention focused on the politicians to overcome industry and intra-governmental resistance, government positions may shift.

**Table 1:** How international institutions can promote effectiveness with the three Cs

<b>Role of Institutions</b>	<b>Representative Institutional Activities</b>
Increase Governmental <b>C</b> oncern	Facilitate direct and indirect linkage of issues Create, collect, and disseminate scientific knowledge Create opportunities to magnify domestic public pressure
Enhance <b>C</b> ontractual Environment	Provide bargaining forums that <ul style="list-style-type: none"> <li>• reduce transaction costs</li> <li>• create an iterated decision-making process</li> </ul> Conduct monitoring of <ul style="list-style-type: none"> <li>• environmental quality</li> <li>• national environmental performance</li> <li>• national environmental policies</li> </ul> Increase national and international accountability
Build National <b>C</b> apacity	Create inter-organizational networks with operational organizations to transfer technical and management expertise Transfer financial assistance Transfer policy-relevant information and expertise Boost bureaucratic power of domestic allies

Potentially, the most important role that international institutions can play with respect to developing countries is in creating incentive and dis-incentive links between issues. The UN and the World Bank provide perfect forums to take this approach due to their positions of strength and the variety of problems they tend to tackle. A state with a low affinity for environmental concerns may be willing to shift its stance in this linked context. The negative and positive incentives that can be presented to a state can be direct

in nature, as with financial and technological incentives and the threat of trade sanctions, as well as indirect, as with diplomatic pressure. Diplomatic pressure can be very effective when governments pushing an agenda may raise the prospect that the opposing nation may face difficulties in other areas of world diplomacy if it fails to support the proposed program. In the case of the negotiations over ozone depletion, environmental coalitions formed to exert this type of pressure, proving very effective in managing to get a broad consensus on the final protocol<sup>20</sup>.

When conditions are right, these institutions can increase concern within respective governments. One of the key variables in getting conditions right with respect to the environment is the level of public concern. Global policy change has been driven mostly by the degree of domestic environmentalist pressure in the major industrialized democracies, not by the decision-making rules of the relevant institutions<sup>21</sup>. The framework that seems to be evolving in this discussion is that in developed countries, endogenous pressure seems to drive environmental policy development while exogenous pressures may prove to be the most effective in dealing with developing countries. This exogenous pressure may be taken extremely negatively by developing nations as most of the global danger that people perceive was created by the developed nations themselves.

### **2.1.2. Enhancing the Contractual Environment**

In negotiating multi-country agreements, the negotiating parties take into consideration not only their own predilections regarding an issue, but also the feasibility of such actions as well as their associated costs and benefits. The concern expressed by these parties is partly a function of two dominant contextual variables: the nature of the contractual environment, and the state's capacity to implement what was agreed upon. International organizations and institutions can facilitate the development and negotiation of multi-country agreements by enhancing the contractual environment through their management of the key variables. These establishments are able to reduce the transaction costs associated with agreements by creating bargaining forums where information is shared, raising the level of communication and credibility between the participants. These forums also serve to increase credibility by providing for the continual interaction and negotiation among nations on the same set of issues<sup>22</sup>.

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<sup>20</sup>Marc A. Levy, et al., *ibid.*

<sup>21</sup>Robert O. Keohane, et al., "The Effectiveness of International Environmental Institutions", *Institutions for the Earth*, Ed. Peter M. Haas, Robert O. Keohane, Marc A. Levy, The MIT Press, Cambridge, Massachusetts, 1993.

<sup>22</sup>Marc A. Levy, et al., *ibid.*

The most important practical function that these institutions serve is that of monitoring and verification. Distrust of others is commonplace in international negotiations, and this distrust regarding others' future actions can restrain otherwise willing countries from accepting mutual constraints. These agencies can help overcome some of these inefficiencies by serving as a clearinghouse for information and measurements on environmental quality, sources of pollution or potential pollution, and implemented national policy. Even though most of the data collected is generated by the responsible governments with independent assessment occurring in relatively few cases, as with acid rain and world fertility, other governments seem to value the information provided through these reports.

Enhancing the contractual environment appears most relevant in those situations where property rights are ill-defined. When those rights are ill-defined, the parties at those negotiations tend to focus on regulatory rules specifying mutual restraint. The alternative structure would be a "free for all" as with the case of fishing zones off the U.S., where foreign fleets converged like locusts before the establishment of exclusive economic zones. Prior to the creation of these zones, the ability of fishing fleets to escape detection created an atmosphere of distrust which contributed to the failure of collective efforts to manage fish stocks.

### **2.1.3. Increasing National Capacity**

The declaration and implementation of collective principles, norms, and rules is not solely dependent on the level of concern of governments; it is also grounded in the existence of a minimum level of institutionalized technical capacity. This capacity is essential to negotiate meaningful regulations that address not only the existing environmental condition, but also the political and economic incentives facing governments, firms, and other organizations that can affect outcomes. The translation of international agreements into a national response relies upon the existence of capable political, legal, and administrative capacity. In developing countries, where this whole framework may be lacking, international institutions can play an important role in helping develop this capacity. This can be done through the transfer of resources in the form of technical assistance, direct aid, or through the creation of inter-organizational networks that will serve as catalysts and facilitators.

In the overall scheme of things, this may be a key source of policy shifting in developing countries. In many cases, the inability of the entrenched governments to fully understand the impact of their decisions promotes negative actions and behaviors, and

limits their negotiating bandwidth. Aid such as technical assistance, training programs, the provision of policy-relevant information, and funds for research, are familiar to those nations and can encourage capacity-limited governments to develop stronger sustainable development policy programs. While these programs were able to achieve success in enhancing existing national capacity in many cases, they were not able to reach the level required to achieve the substantive changes in environmental protection. This is not necessarily due to lack of resources of the recipient governments, but the lack of resources of the international organization attempting to redress such problems. These organizations, which tend to be small, attempt to achieve their goals through the development of networks with larger organizations such as the UNDO, the World Bank, and other regional development banks<sup>23</sup>.

At an international level, any issue that emerges will have certain values for the three variables: Concern, Capacity, and Contractual environment. In those situations where the three Cs are favorable to effective management, international institutions are either not needed or can succeed with minimal effort<sup>24</sup>. The reality is that those cases are rare, with the overwhelming majority lacking in some if not all of the variables. It is under difficult conditions that institutional effectiveness can be assessed by judging the extent to which they perform functions to support and enhance those variables.

The largest and most extensive environmental institutional framework has evolved in the U.S. under the auspices of a favorable and powerful federal government. The U.S. agency in charge of environmental protection, appropriately named the Environmental Protection Agency (EPA), represents one potentially very successful institutional approach to managing and operationalizing this framework. The European Community is structurally similar to the U.S. federal government, but has not reached the level of integration of state and federal powers that has been achieved in the U.S. Its environmental policy is representative of a lowest-common-denominator approach to regulation and clearly illustrates the sovereignty issues associated with international agreements.

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<sup>23</sup>Marc A. Levy, et al., *ibid.*

<sup>24</sup>M. J. Peterson, "International Fisheries Management," *Institutions for the Earth*, Ed. Peter M. Haas, Robert O. Keohane, Marc A. Levy, The MIT Press, Cambridge, Massachusetts, 1993.

## 2.2. Development of the European Community (EC)

The initial movement towards European cooperation came with the establishment of the European Coal and Steel Community (ECSC), in Paris in 1951. This community was created with the goal of better managing the coal and steel production of the signing countries. The European Economic Community (EEC or EC) was created in 1957 in Rome, under the treaty bearing the name of the signing city, and was a natural extension of the ECSC<sup>25</sup>.

The ultimate purpose of the treaty was to create an economic community through the creation of a common trading block or market. The goal of the economic community was to be achieved by guaranteeing the members of the community four basic freedoms: The freedom to circulate goods, services, people, and capital freely within the community. The treaty also specified that a customs union was to be created, and a system of free competition was to be established and be allowed to grow, and certain common policies were to be agreed upon. The environment, on the other hand, was never mentioned as a policy area<sup>26</sup> and was initially considered to be a local or, at most, regional issue. The member countries did not see the need to empower the EC with the legislative tools to regulate this policy area given that many of the countries had some kind of environmental program in place already<sup>27</sup>.

For the four basic freedoms to be guaranteed, a certain level of harmonization between the different countries' legislation and regulations was needed. If a product from a member country did not meet the regulations of another member country, then the free movement of goods within the community was restricted. The EC was empowered to intervene to harmonize the specific regulations across the community so that they no longer represented a barrier. Initially, the environmental regulations were so loose that technical compliance was easy, and did not represent a trade barrier. As governments began to implement stricter environmental programs, trade barriers were raised. Given that there was no mention of environmental policy in the initial treaty, the EC had to circumvent the issue that it was not legally powered to legislate environmental issues. The technical barriers created by these environmental regulations empowered the EC to legislate within that area to remove these blockages to Community integration.

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<sup>25</sup>G. S. Makridakis, M. Bainbridge, *Single Market Europe: Opportunities and Challenges for Business*, Jossey - Bass Publishers, San Fransisco, California, 1991.

<sup>26</sup>E. Rehbinder, R. Stewart, *Environmental Protection Policy: Legal Integration in the United States and the European Community*, Walter de Gruyter & Co., Berlin, 1988.

<sup>27</sup>Neal, Schubel, Ibid.

The policies developed by the EC have depended upon and have reflected the progress and extent of European integration. The sophistication of the institutions, that is, their development and legal integration into the European fabric, has determined the clarity, effectiveness, and extent of the decisions and recommendations rendered. While the development of the Community affected the direction that environmental policy took, there was also a reciprocal effect on the Community's direction and policies from the states<sup>28</sup>. Germany's present regulations are usually viewed to be the EC's future regulations.

There is a major difference between the policy-making processes of European nations and the EC: The Community lacks history, which results in "active" versus "reactive" policy making<sup>29</sup>. Reactive policy making constitutes incremental policy changes where the adjustment of existing policies is used as the tool for problem solving. This adjustment is marginal in altering the scope of policy instruments as the problems change or become more acute. In contrast, active policy making seeks to establish new or very different policies so that the solution of the problem at hand requires the comprehensive appraisal and evaluation that is often advocated by the proponents of rational decision making.

The lack of existing policy and precedents has forced the Community to take on the role of active policy maker. It perceived a need to have distinctive policies, and has interpreted its role as the promoter of those great leaps and shifts in perspectives which is in contrast to member state policy-making processes that are reactive in nature. While the Commission may start from a new set of assumptions about policy goals, in which the assertion of a Community interest is different from that of the sum of the member state interests, member states start from their existing commitments, along with the companion package of political agendas and miscellaneous policies. The result is a qualitative difference between the starting points of the member states, and the Commission, irrespective of the "European Community" feelings that may exist within the respective governments.

In most sectors, policy-making responsibilities are shared by the Community and member states, with a few exceptional cases where the power has been completely removed from the states and transferred to the EC. When the responsibilities are shared, national authorities remain partners in the policy process but also act as the agents of the EC. Within the framework where the power has been transferred, national authorities as well as

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<sup>28</sup>Rehbinder, Stewart, *ibid*

<sup>29</sup>Renate Mayntz, Fritz Scharpf, *Policy Making in the German Federal Bureaucracy*, Elsevier, Amsterdam, 1975.

private companies bear the brunt of ensuring that their operation of national policies conform to Community rules. Where the main policy-making responsibility remains with the member states, such as in the fields of social and regional policy, the relationship is again different. The relationship shifts as well for the purely domestic fields such as education, where no attempt has been made to transfer responsibility to the EC<sup>30</sup>.

### **2.3. European Community Institutions**

The EC is governed by four institutions that act as its legislative, judicial, and executive branches. The four institutions are<sup>31</sup>:

- i)* The European Commission
- ii)* The Council of Ministers
- iii)* The European Parliament
- iv)* The European Court of Justice

#### **2.3.1. The European Commission**

The Commission is the primary administrative body of the EC. It is composed of 17 commissioners, each of whom is appointed for a four-year term, and given a policy portfolio to deal with. The Commission itself is supported by 23 Directorate Generals, each of whom reports to the appropriate commissioner. Another administrative group deals specifically with legal issues that the Commission brings before the European Court of Justice. The Commission's two most important roles lie first in it being the only institution that can propose new legislation, and second, in it being charged with assuring implementation of regulation and directives passed by the Council. However, its power is not extensive, resulting in inefficient solutions to the problems at hand, if a solution can be reached<sup>32</sup>.

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<sup>30</sup>Helen Wallace, "Negotiation, Conflict, and Compromise: The Elusive Pursuit of Common Policies", *Policy Making in the European Community*, Ed. Helen Wallace, William Wallace, Carole Webb, John Wiley & Sons, New York, 1983.

<sup>31</sup>Pierre Mailler, *The Economy of the European Community*, Office for Official Publication of the European Communities, Luxembourg, 1984.

<sup>32</sup>S. B. Gentry, H. R. Burnett, Pamela Castle, *Developments in the European Environmental Market: Opportunities and Constraints*, Bureau of National Affairs, Washington, DC, October, 1991.



### **2.3.2.The Council of Ministers**

The Council of Ministers consists of one representative from each of the member states. It is the ultimate legislative body of the Community whose actual membership will vary according to the type of legislation that is under consideration. For example, if the issue were of agricultural concern, then the Ministers of Agriculture of the various countries would attend, versus a monetary issue, where the Finance or Treasury Ministers would attend. It is the only body in the EC able to adopt legislation, thereby reviewing every proposal submitted by the commission for each minister's national perspective. While decisions in this institution require a majority, the veto power available to the states requires that, in practice, unanimity exist on the issues being addressed.

### **2.3.3.The European Parliament**

The European Parliament is made of popularly elected representatives from the member states. As with the majority of parliaments, this one plays a limited role in policy making in the community. The absence of a legislative function impedes any major impact on the establishment of policies, in spite of the Parliament's emphasis on specialist committees<sup>33</sup>. The role of the Parliament regained some emphasis in 1986 with the passing of the Single European Act, which has expanded the powers of this institution, and gave it the ability to force the Council to accept amendments to EC legislation aimed at harmonizing national laws. Overall, its effectiveness and influence remain limited in nature and scope.

### **2.3.4.The European Court of Justice (ECJ)**

The ECJ rules exclusively on issues arising under the Treaty of Rome and other EC legislation. It is within the Commission's authority to institute actions against member states if they fail to comply with EC regulations and directives. The problem lies in the inability of the Court to further pursue the issue, due to the lack of its mandated powers. Instead, the compliance mechanism that is assumed to work is that of the self-interest of the offending nations in remaining part of the community. It is hoped that this would be sufficient to compel the nation to follow the Court's decision and comply with the regulation.

### **2.3.5.Legislative Instruments in the EC**

The European Community functions by having all members of the Community actively cooperate with each other to come up with policies that all can accept. Once the

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<sup>33</sup>Helen Wallace, *ibid.*

Council of Ministers adopts a policy, it can use one of two legislative tools available to it: The Directive, and the Regulation. The Treaty states that a regulation "shall be binding in its entirety and directly applicable" whereas a directive "shall be binding as to the results achieved" but shall leave to the member states "the choice of form and methods."

Directives must be incorporated into national law to make them effective legally within the member states. The directive is only binding as to the effect that is to be achieved, thereby limiting the promulgation of environmental law, in theory, to broad policies and regulatory frameworks to be implemented in the member states. This tool affords the EC states much flexibility in implementing and adjusting to existing state laws and administrative procedures, with the tradeoff being lack of consistency in form and level of implementation<sup>34</sup>. While the Treaty of Rome states that the EC laws are applicable to member states only, this may change with the market integration of the European Free Trade Association (EFTA) with the EC. In 1991, both groups agreed that EC environmental standards would be extended to their countries too, thereby increasing the geographical scope of EC environmental policy<sup>35</sup>.

Regulations are used to a very limited extent due to the inability of the EC to justify their use in the area of environmental policy. The Treaty authorizes Community directives "for the approximation" of member state laws, regulations and administrative actions that "directly affect the establishment or functioning of the common market." The Treaty further states that the Council, in complete consensus, may take "appropriate measures" to "attain, in the course of the operation of the common market, one of the objectives of the Community" when the Treaty has not provided the necessary powers to do so. The articles by which the community was legislating on environmental issues were intended to be used by the Community to ensure the economic functioning of the common market, not the regulation of environmental issues. As the EC matured over the last three decades, its objectives moved from the simple trade barriers to seeking the promotion of environmental quality as one of its goals. Unfortunately, one of the constraints on the reinterpretation of these Articles is that the policies promulgated under it cannot be implemented except in the directive format, thereby removing regulation as a much-used tool of policy implementation<sup>36</sup>.

There are three types of directives used to legislate in the areas of the environment: The regulation-type directive, the environmental standard directive, and the framework

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<sup>34</sup>Rehbinder, Stewart, *ibid.*

<sup>35</sup>Sean Milmo, *Chemical Marketing Reporter*, Vol. 240, No. 21, November 18, 1991.

<sup>36</sup>Rehbinder, Stewart, *ibid.*

directive. Each of these directives varies in its specificity and its scope, and is used under differing political circumstances.

#### **2.3.5.1.Regulation-Type Directive**

This directive, as its name indicates, is usually very detailed, leaving little room for the member states to interpret the directive or implement it on their own. They have only to incorporate it into national law, with the role of implementing the directive confined to applying those directives to particular cases and enforcing them. An example of this type of directive is the Titanium Dioxide Directive, which regulates strictly the production of this material, and in which the EC takes on an executive role, whereby the member countries have to consult with it to exempt local plants from the regulations when the member country feels that the polluter has implemented measures sufficient to satisfy the directive<sup>37</sup>.

#### **2.3.5.2.Environmental Standards Directive**

The second type of directive sets environmental quality standards. These directives deal with air and water pollution issues, but leave the member states great leeway in applying them; however this trend has been changing lately. This type of directive is usually chosen for regulating concerns that have no direct trade impacts, and are less serious so that some variation between member states can be accepted. The Community is instituting a new trend by establishing some Community or joint Community and state mechanisms for the supervision of regulation implementation. This stricter trend is appearing more and more in policy directives issued by the EC. An example of this type of directive is the one issued in 1984 regulating air pollution from industrial plants<sup>38</sup>.

#### **2.3.5.3.Framework Directives**

The third type of directive establishes environmental protection principles or coordinates member states' policies. This is the broadest of the directives whose main objective is to provide direction for the Community as a whole. The role of the Community is motivated by the intent to offset the lack of agreement on uniformity in the various environmental sectors. Lately, as seen with the fourth EAP, there has been a change in

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<sup>37</sup>Nigel Haigh, Graham Benett, Pascale Kromarek, Thierry Lavoux, *Comparative Report: Waste and Waste in Four Countries*, Graham & Trotman, Gaithersburg, Maryland, 1986.

<sup>38</sup>Studies and Research Division of the General Secretariat of the Economic and Social Committee (SRDGSES), *European Environment Policy: Air, Water, Waste Management*, Office for Official Publications of the European Communities, Brussels, 1987.

community attitude towards these kinds of policies. The third type of policy has been commingled with the first through the new legislative powers given to it under the 1986 amendment to the Treaty. The new directives will carry more power, and the EC will be able to monitor them more effectively than before.

#### **2.3.5.4. Other Tools**

Beyond the powers formally given to it, the Community institutions use a variety of informal tools such as decisions, resolutions, recommendations, communications, and agreements to try to implement their policies. The binding power of these tools differs, but all share the same attribute of not being directly applicable to any single individual. They are used in the format of "making policy declarations, implementing organizational and administrative measures establishing research programs and systems of information exchange, creating special funds, and acceding to international conventions." The recommendation is used instead of a directive when member states wish to avoid the strict obligations of a directive.

The U.S. federal institutional framework operates in a completely different context. While structurally similar, the U.S.'s is a truly federal system, with extensive power at the federal level, while the EC is a new entity with very different dynamics. The structure and powers of the U.S. federal government have not changed in over fifty years, since the Great Depression, except in the environmental area, where it has assumed a regulatory role for many areas of environmental protection. The EC in contrast is still seeking economic integration, and struggling with the social, political, and economic forces trying to pull it apart.

#### **2.4. The U.S. Federal Government**

The U.S. Environmental Protection Agency was created in an two-tier environment. As with the EC, legislative action is taken at two levels: Federal and state. The EPA is principally a federal agency and is therefore limited by the constitutional powers granted to the federal government. The U.S. Constitution does not specifically address environmental protection in and of itself, and the federal courts have failed to read a constitutional right to environmental quality. However, unlike the EC Treaty of Rome, the Constitution does grant Congress, and thereby the EPA, extensive legislative powers that permit it to take actions in environmental areas. The extent of these powers make it so that, from a practical perspective, Congress has virtually unlimited authority to enact measures regulating,

taxing, or subsidizing the use and development of environmental and natural resources within the U.S. with the power to preempt state regulations.

#### **2.4.1.Federal Legislative Instruments**

Three strategies have been used by the federal government to integrate environmental law: 1) federal standards federally enforced, 2) federal standards with state implementation and enforcement, and 3) federal requirements or incentives for state adoption and implementation of environmental measures. Some recent innovations include the use of market-oriented systems of transferable pollution rights and federally funded cleanup and compensation funds.

##### **2.4.1.1.Federal Standards, Federally Enforced**

This type of regulation or strategy is usually targeted at nationally marketed products, as with emissions from cars, motor vehicle fuel additives, noise pollution by new products, and the manufacture and sale of pesticides and toxic chemicals. In all of these areas, the EPA is the regulatory agency in charge of standard setting, implementation and enforcement. In some situations, as with the transport of hazardous waste, other agencies like the Department of Transportation have jurisdictional authority. These regulatory strategies often preempt more rigorous or different state regulations following the rationale of harmonization of regulation to facilitate trade across states. The intent is to avoid divergent and potentially conflicting state regulations that would hold up markets and remove from manufacturers the ability to realize economies of scale, which could be viewed as subversive to national interests.

##### **2.4.1.2.Federal Standards with State Implementation and Enforcement**

This second strategy focuses on industrial processes whereby the federal government adopts certain standards of environmental quality; It then passes on the responsibility of adoption and enforcement of these standards by the affected facilities to the states. This approach has been used in conjunction with the Clean Air Act (CAA), which requires the EPA to adopt nationally uniform air quality standards, and requires that states devise implementation plans (SIPs) through which source controls are to be imposed to achieve standards. If the states do not carry through the requirements of the CAA, then the measures could be enforced by either the federal government or citizens pursuant to citizens suit provisions, or the EPA could rewrite SIPs it deems to be inadequate or take over the process entirely.

The federal government can also mandate emissions limitations or effluent standards for specific facility types, with the responsibility for enforcement left to the federal agencies. In practice, these federal agencies, typically the EPA, delegate the responsibility to the states if it meets state adequacy requirement regarding implementation by state agencies. The delegated programs still fall under the jurisdiction of the federal government, which can step in to ensure enforcement, or can prompt state agencies through the use of federally authorized citizen law suits. Given this type of development, the delegation can be revoked. The EPA has also used this approach to set the emission standards from new facilities under the CAA, set effluent limitations under the Clean Water Act (CWA), and control toxic waste disposal under the Resource Conservation and Recovery Act (RCRA).

There is an incentive for federal regulators to delegate the responsibility as well as for state regulators to accept it. Federal to state delegation occurs due to constraints on budget and resources, as well as due to the difficulties of maintaining a centralized system of data gathering and processing. Furthermore, state regulators are more familiar with the regulated facilities as well as being to better ascertain the variety of local conditions that need to be taken into consideration during implementation and enforcement. State officials, on the other hand, appreciate the flexibility and autonomy accorded to them by the delegation of power, as well as the federal funds that would be made available to underwrite the administrative expenses. This trend accelerated during the Reagan era, whereby local officials were increasingly responsible for implementation of their SIPs, but their efforts were hampered by the cutbacks in federal funds to assist these programs.

#### **2.4.1.3. Federal Requirements or Incentives for State Adoption and Implementation of Environmental Measures**

The U.S. federal government might prefer to use incentives to prompt states to adopt and implement certain regulatory standards or to undertake some kind of resource planning and control activities. This approach was initially used in the late 1960s to deal with air and water pollution when states were required to adopt federally mandated quality standards. At the time, the federal government had the legislative authority to deal with trans-boundary pollution and take emergency abatement measures, but was otherwise limited to the supervision and review of state programs.

This approach was initially undertaken in the 1960s due to special interest group opposition as well as the perception that a decentralized management and control system would prove more effective. However, by 1970, Congress had concluded that such an

approach did not generate the required result in terms of level of standards and adequacy of enforcement, and adopted a much more centralized command and control system with the CAA of 1970 and the Federal Water Pollution Control Acts Amendments of 1972. In general, the areas of land use control, sewage, water supply, and solid waste management still rely on state-level regulation and management.

## **2.5. Institutional Differences Between the U.S. and the EC**

Federal U.S. environmental policies were developed after a high level of political, and economic integration had occurred. The economic integration across states permitted the efficient centralization of product regulation, and created a demand by states with stronger environmental concerns and associated industries for centralized regulation to prevent economic distortions across states. The political integration provided the foundation for the implementation and enforcement of promulgated policies through federal administrative agencies as well as through the use of the courts.

U.S. environmental policy is more extensive and sophisticated than that of the EC due to the more comprehensive powers and resource that the U.S. federal government controls, and which the EC lacks. These include the role of the government as the principal holder of one third of all U.S. land and an even larger share of its natural resources; its powerful taxing and spending abilities, as well as its industrial licensing authority. These resources and powers dwarf any that the EC may have been able to build up over the last twenty years.

The EC's effort to achieve the same level of federal integration as the U.S. have been complicated by a multiplicity of factors<sup>39</sup>:

- The EC's origins as an economic institution
- The differences in language and cultures between member states
- The politically insecure and limited definition of the Community's legislative powers
- The lawmaking structure dominated by the Council and representatives of member states rather than Community interest
- The lack of a fully developed Community court system
- The lack of a bureaucracy with direct implementation and enforcement authority
- The decline of integration in other areas

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<sup>39</sup>Rehbinder, Stewart, *ibid.*

- The decline of decisional supra-nationalism

The effects of these factors will become apparent in our discussions of U.S. and EC policies.

The EC and U.S. experiences should serve as two experiments with very different boundary conditions that we can use to help us either design better institutions for environmental protection, or help us predict the potential success of existing structures. The key differences between the U.S. and the EC have helped the former build the integrated base needed for sustainable development, while leaving the latter to vagaries of its member countries. As of now, the "laggard" countries in the EC are still "laggards" while the leaders are forging ahead, and in many cases, reaping profits from the knowledge gained in the transformation.

While it may seem that the decentralized approach to environmental management is not very efficient or even workable, the German FEA belies that statement. Germany has some of the strictest, if not *the* strictest, environmental laws in Europe, yet the responsibility for environmental management is delegated to a variety of ministries and the FEA has an advisory role similar to the European Environmental Agency (EEA). The key difference between the rest of the EC membership and Germany is the level of environmental concern felt by the public and its permeation into the government. In Germany, that level is extremely high, as reflected by the strength of the green political movement, while in Greece, Italy, and Spain, it is extremely weak. These effects will be reflected in the policies enacted by the EC and the U.S.



### **3. Policy Approaches to Environmental Protection**

Over the last few years, environmental theory and its applications have received tremendous attention from policy makers. This development came about due to increasingly obvious environmental degradation as well as increasingly higher living standards. Environmental disasters such as the U.S. Dust Bowl of the 1930s have made it very clear that human exploitation of the planet is not without its consequences. On a global basis, we are beginning to see the effects of Man's development raising concerns among our policy-makers. The popularization of these local and global concerns has forced politicians to address issues that they had not considered before, did not understand clearly, and whose causes were not, in many cases, within their sphere of jurisdiction.

Policy development over the years has progressed from the micro-management of pollution problems to the macro-management of resources, development, and environment. The high complexity of the problems, the linkages of human activity to environmental consequences, and the resulting feedback are being recognized as one system whose components need to be managed in a holistic fashion instead of the piecemeal approach taken in the past. Within this system, severe differences exist on economic, social, and political levels between developed and developing nations, differences that are causing trans-boundary global problems; this is forcing developed nations to recognize their stake in the development of their less-fortunate counterparts. This new awareness is driving the majority of new policies promulgated over the last seven years, starting with the concept of Sustainable Development (SD).

This chapter will initially deal with the issue of sustainable development and the development and growth issues associated with developing countries. The second section will look at the specific policies of the U.S. and the EC, which will be combined from the lessons learned in the first section and adapted to our case-study country.

### **3.1.Sustainable Development**

Sustainable development (SD), or more specifically "sustainability," is not a new development or concept. It is actually a fairly old approach of which our ancestors were clearly aware in their daily lives. Sustainability was the original economy of humanity, not because people were more conscious of the planet they lived on, but because they had no choice. The lack of modern transportation methods implied that the population had to survive based on what was available locally, i.e., if population growth exceeded food production growth, food was not easily transported, and famine would occur, driving the system back to equilibrium. These populations learned to manage their growth as well as the exploitation of agricultural land for long-term survival. Communities understood this balance well, and adjusted their own behaviors to match it: They viewed themselves as part of the landscape, not masters of it<sup>40</sup>.

#### **3.1.1.What is Sustainable Development?**

Sustainable development is a conceptually simple approach to managing the development and growth of communities. It is not a fixed set of rules, regulations, or approaches; rather it is a holistic perspective on social, economic, political, and consequently environmental issues that takes as its basic premise that environment and development need to coexist in a sustainable fashion.

This approach was initially presented by the World Commission on Environment and Development (WCED) in its report, *Our Common Future*<sup>41</sup>, and has had a major impact on all subsequent thinking regarding environmental issues. The report characterizes SD as paths of social, economic, and political progress that "meet the needs of this generation without compromising the ability of future generations to meet their own needs." It reflects a choice of values for managing the planet in which inter and intra-generational equity matters. The power of this concept lies not only in its ability to bring together the disparate social, political, and economic issues, but also to bring clearly to the forefront of discussion a systems view that refutes any approach aimed at managing these sectors individually.

SD reflects the emergence of a new set of politics, a set of politics dominated by environmental concerns. This is a new reality in which western developed countries are realizing the potentially devastating global effects of environmental over-exploitation by sovereign third world nations. Western perspective is rapidly shifting from one in which the

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<sup>40</sup>William D. Ruckelhaus, "Toward a Sustainable World," *Scientific American*, September, 1989.

<sup>41</sup>\_\_\_\_\_, *Our Common Future*, World Commission on Environment and Development, Oxford University Press, 1987.

response to questions about third world nations' environmental problems is "it's their problem" to one in which "it's our problem" is the answer. This cooperative perspective is in sharp contrast to the Malthusian-Darwinian evolutionary doctrines of uncontrollable population explosion, natural selection, and survival of the fittest that has characterized much of European expansionism<sup>42</sup>.

SD forces a transition in environmental thinking from a view in which economic development has negative environmental consequences and must be avoided, to one that balances ecological needs with the economic needs of growing and developing communities. At present, growth and development are processes that every nation is pursuing to sustain an ever-increasing level of resource demand. This resource demand manifests itself differently in developed economies versus developing: developed countries' focus is on the efficiency of resource use in an ever-more-competitive global arena, while developing countries' focus is on providing the basic physical needs of fast-growing populations.

### **3.1.2. The Structural Aspects of SD**

The move from the present way of life to an SD mode will require changes similar to those experienced in the industrial revolution, except the change has to be conscious and driven endogenously in this situation. The structural changes that mankind went through in previous "revolutions" were due to technological innovations that increased the efficiency with which we are able to exploit resources, move them around the world, and convert them into consumables. With each new revolution, the western world moved further away from sustainability and into a mode of short-term exploitation, driven by the view that there are no limits to the resources that exist. The improvements of living standards with each successive level of industrialization set the model for development for the next two centuries: Industrialization equals development equals better living conditions. This model is taken to heart by all developing nations without clear understanding of how to manage the transformation of industrialization into development.

Choucri and North<sup>43</sup> proposed three dimensions of consequence to the growth and development of nations and their environmental relationships: 1) population, 2) technology,

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<sup>42</sup>Hayward R. Alker Jr; Peter M. Haas, "The Rise of Global Eco-Politics," *Global Accord: Environmental Challenges and International Responses*, Ed. Nazli Choucri, The MIT Press, Cambridge, Massachusetts, 1993.

<sup>43</sup>Nazli Choucri; Robert C. North, "Growth, Development, and Environmental Sustainability: Profiles and Paradox," *Global Accord: Environmental Challenges and International Responses*, Ed. Nazli Choucri, The MIT Press, Cambridge, Massachusetts, 1993.

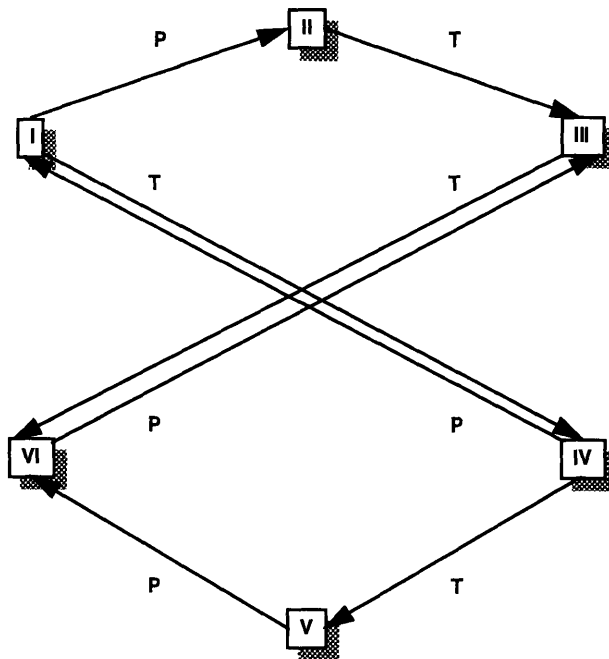
and 3) resources. A larger set of "conditioning" variables that are largely derivative in nature, such as agriculture, industry, and trade, also needs to be considered, but it is now assumed that their effects are secondary in nature. Each of the nations profiled by the authors is placed in one of six categories representing the ranking of their relative shares of the "master" variables (Table 1).

The authors make the argument that nations progress in fixed patterns along these groupings, based on what they decide to, or are able to, manage. Since the availability of resources is not a variable they can control, except through extreme actions such as war, governments must manage development by addressing population and technology issues (Fig. 1). It is easy to see how one can progress and regress based on the skill with which each of these variables is managed. Population growth is also close to being an independent variable, as governments can decrease its growth rates but cannot eliminate it. As the imbalance between variables, such as resources and population on one side and technology on the other, increase, social, economic, and political strains will emerge. This leaves technology as the main driver of growth and development, and places policy-making bodies in the position of trying keep the rate of its growth higher than that of population.

A distinction needs to be made between growth and development. In previous discussions, we have used the terms interchangeably but we have to separate them at this point as they have sufficiently different implications that they need to be highlighted. Growth is to be viewed as the actual volumetric increase in the measured variable, while development reflects the efficiency with which resources are extracted and processed into valuable products. In an era where population growth is inevitable and the available resource base is constant, growth and development need to be managed closely if sustainable development is to be achieved. The relationship between environmental concerns and growth of development is an antithetical one: growth implies the use of more resources for the production of more units of a good, with inherently higher levels of environmental damage, while development implies the use of the same level of resources to produce more goods, with correspondingly lower environmental impact. It is this aspect of technology that nations have to manage, as the alternative, uncontrolled growth, will inevitably lead to social and economic chaos.

**Table 1:** Groupings of countries by levels of global share in master variables

Profile Definition			
Group I	Resources <sup>44</sup>	>	Population > Technology <sup>45</sup>
Group II	Population	>	Resources > Technology
Group III	Population	>	Technology > Resources
Group IV	Resources	>	Technology > Population
Group V	Technology	>	Resources > Population
Group VI	Technology	>	Population > Resources



Paths Generated by Rising Technology

I -----> IV -----> V  
 II -----> III -----> VI

Paths Generated by Rising Population

IV -----> I -----> II  
 V -----> VI -----> III

**Figure 1:** Dynamics of development<sup>46</sup>

<sup>44</sup>Resources are proxied by territory size

<sup>45</sup>Technology is proxied by GNP

### 3.1.3.SD and Developed Countries

Country perspectives on development vary across the spectrum. The paradigms surrounding environment and development have been evolving as the analysis of emerging problems has continued to reveal deeper inter-linkages between those two goals. These issues are especially relevant to developing countries as they face two sets of potentially conflicting issues: how to develop as quickly as possible, and how to safeguard the environment. The latter concern was driven initially by Western country organization, but that is changing as the leaders of those nations are beginning to see the negative effects of the actualization of their decisions: The government of Pakistan stated that while it believes that Pakistan has the moral and economic right to seek development, it would nonetheless attempt to limit its contributions to climate change problems as it develops<sup>47</sup>.

Environmental protection is viewed by poorer nations as a rich person's luxury, and is therefore not something that these countries have time to worry about. There are many cases where nations rushing headlong into industrialization without environmental consideration later realized that the damage done far outweighed the benefits accrued<sup>48</sup>. In other cases, fierce population growth has forced the over-exploitation of the environment for basic survival needs, causing damage to potentially productive eco-systems. There is somewhere a point that western nations seem to have passed in the eighteenth century, where the mind set of nations shifts from survival to growth, and from growth to development.

Sagasti and Colby<sup>49</sup> presented a summary of the path of progress that eco-developmental thinking has followed and is currently progressing towards, shown in Figure 2. These paradigms reflect mostly western thinking, but need to be considered by developing nations as they can no longer afford to follow the paths that western countries have discarded. It is important for these developing countries to remember that while western economies had the benefit of abundant resources, either in their homelands or through colonization, the third world countries do not have that luxury. Many geographical and economic factors available in the times of the industrial revolution are not present anymore. This absence of breathing room will force developing nations to step up

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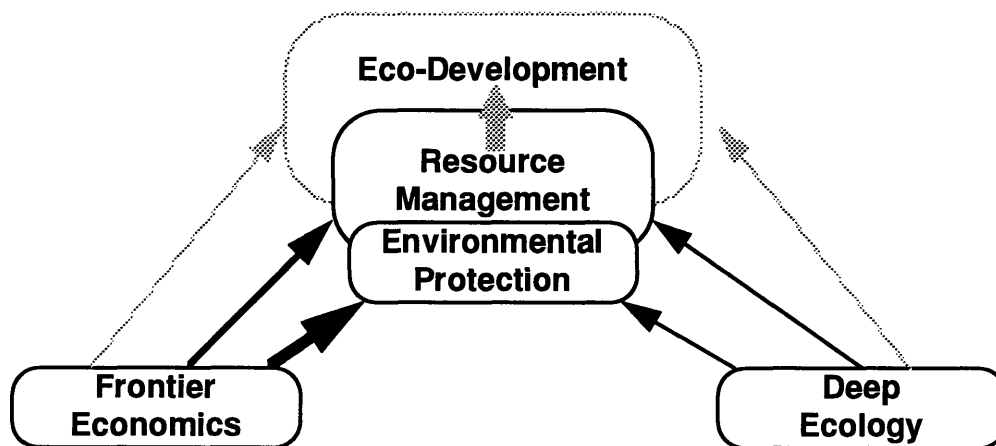
<sup>46</sup>Nazli Choucri; Robert C. Choucri, *ibid*.

<sup>47</sup>R. Monatersky, "Time for Action," *Science News*, Vol. 139, 1991.

<sup>48</sup>Wilfrido Cruz; Robert Repetto, *The Environmental Effects of Stabilization and Structural Adjustment Programs: The Philippines Case*, World Resources Institute, September, 1992.

<sup>49</sup>Fransisco R. Sagasti; Michael E. Colby, "Perspectives on Global Change from Developing Countries," *Global Accord: Environmental Challenges and International Responses*, Ed. Nazli Choucri, The MIT Press, Cambridge, Massachusetts, 1993.

immediately to either resource management paradigms or eco-development, or alternatively drift further and further into poverty reinforced by exploding population numbers.



**Figure 2:** Evolving paradigms in eco-development<sup>50</sup>

In recent years, the idea of environment as a constraint to development has given way to an acceptance of the complementarity of the two. Economic development expands opportunities for investing in the protection of the environment by providing resources for public services and by alleviating poverty. The synergies between poverty alleviation and environmental quality are extensive. Inadequate sanitation, shortages of clean water, pollution from biomass burning, and many types of land degradation in developing countries have poverty as their root cause<sup>51</sup>. Poor land-hungry farmers resort in many cases to the cultivation of environmentally fragile areas such as tropical forests, where crop yields on cleared fields drop rapidly after a few years. These farmers, faced with overwhelming day-to-day survival concerns, are unable to make the tradeoff between long-term productivity and short-term benefits. It is in these situations where underdevelopment causes environmental deterioration which then perpetuates or worsens underdevelopment, and poverty alleviation is potentially one of the major pathways to breaking this cycle (Fig. 3).

It is important to understand why there has been more attention paid to the environmental conditions of developing countries by their more-developed counterparts. It is not out of the goodness of their hearts, but more out of the realization that if developing countries choose growth over development, the resources of the planet will be extremely

<sup>50</sup>Fransisco R. Sagasti; Michael E. Colby, *ibid.*

<sup>51</sup>Mohammed T. El-Ashry, "Balancing Economic Development with Environmental Protection in Developing and Lesser Developed Countries," *Air & Waste*, January, 1993.

strained, and environmental, social, and economic problems will be felt on a global level. One need only consider the impact of China, whose per capita production of greenhouse gases is one third of the world average, if it decides to forgo environmental protection and focus on the construction of polluting heavy industries. With 20% of the world population, the potential impact of the increase in greenhouse gases from that one country would be substantial. To a degree unique in human history, a quarter of humanity has the potential not just for self-destruction, but for the extinction of the human species<sup>52</sup>.

**Table 2: Share of Agriculture in Employment and GDP in Developing Countries**

	% of Labor Force in Agriculture		% of GDP Due to Agriculture	
	1965	1980	1965	1980
Middle Income	55	45	44	19
Low Income	82	75	19	27

DeCanio illustrated the economic situation of many of the poorer developing nations in his report, *Rich, Poor Share Stake in Poverty, Pollution Link*<sup>53</sup>. While developing countries are home to 80% of the world population and produce 60% of the world's primary commodities, they account for only one sixth of global economic output. The low economic output in those nations is driven by the existence of a dual economies, one of which is highly advanced but supports a very small sector of the population, and the other which is agricultural, but supports the majority (Table 2). This dichotomy reflects the central economic problem of developing countries: large portions of their populations are involved in activities that generate very small per-capita economic surplus, but equity and social justice demand the provision of basic services to all.

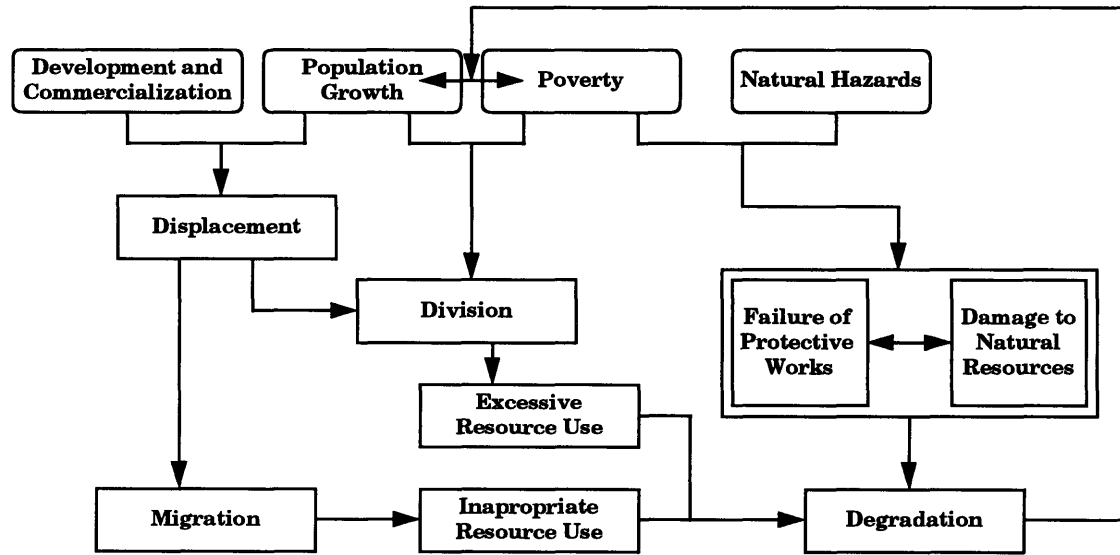
Many developing nations are caught in a Catch 22: they want to shift their workforces into higher-value-added sectors, but lack the resources to educate them; and they cannot educate them until the higher-value-added sectors grow enough to support this training. Figure 3 highlights the factors that affect developing nations more than others, as population growth and its complementary variable, poverty, are shown to be central to this

<sup>52</sup>Ramphal, Shridath, "Beyond Mere Survival," *EPA Journal*, April/June, 1993.

<sup>53</sup>Stephen J. DeCanio, "Rich, Poor Share Stake in Poverty, Pollution Link," *Forum for Applied Research and Public Policy*, Summer, 1993.



feedback loop. The issue of poverty alleviation has become one of the core development programs of institutions such as the UNEP, the World Bank, and the UNDP, as the areas of complementarity between poverty and environmental degradation are identified.



**Figure 3: Impoverishment and degradation spirals<sup>54</sup>**

Western "aid" and advisory agencies are beginning to shift the way they deal with the problems of developing countries. Their past experiences with structural adjustment and stabilization programs have in many cases resulted in some large-scale environmental degradation problems. It should be clearly noted that many developing countries are struggling under the weight of debt they accrued in the 1970s and 1980s, and the interest burden of these loans is not inconsequential. When nations start defaulting on their debt, then agencies such as the IMF and the World Bank step in to make sure that these countries are able to repay their debt. This is usually ensured by applying austerity measures and forcing large-scale restructuring of policies and institutions, without much consideration of their impact on the environment.

In the last few years, these agencies have come to realize that the continual pressure on these nations, while able to create actions to satisfy short-term debt servicing, is actually creating a major decrease in the overall assets of those countries. While these will

<sup>54</sup>Robert W. Kates; Viola Haarmann, "Where the Poor Live: Are the Assumptions Correct," *Environment*, Volume 34, Number 4, May, 1992.

get their money back in the short term, the amount of money they will have to reinvest in the future to repair the damage done will be much higher. This realization has prompted them to consider the environmental impact of their actions in both the lending and in the economic stabilization aspects of their work. Lending for environmental projects is becoming more common, as in the case for the Athens underground, which fell into the category due to the projections that it would reduce the extremely high levels of air pollution in the city. Debt-for-nature swaps are also occurring in an effort to save tropical forests, but the major shift is towards helping create a basis for long-term local involvement and maintenance of those policies. The nature of the help provided is shifting towards providing information and developing local skills, which is very different from previous policies which were aimed at implementing large-scale industrial projects to help nations advance. This shift is clearly reflected in UNCED's Agenda 21.

**Table 3: Excerpt from the table of contents of Agenda 21**

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**SECTION I. SOCIAL AND ECONOMIC DIMENSIONS**

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International cooperation to accelerate sustainable development in developing countries and related domestic policies

Combating poverty

Changing consumption patterns

Demographic dynamics and sustainability

Protecting and promoting human health conditions

Promoting sustainable human settlement development

Integrating environment and development in decision making

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### **3.2. Agenda 21**

The main operational product of the UNCED Rio conference was Agenda 21. Agenda 21 provides a comprehensive blueprint for implementing national and international policies in support of sustainable development, as shown in Table 3. The document produced covers more than 100 program areas, and embodies one of UNCED's major themes: "concerted action and shared responsibilities by developed and developing countries

are crucial in addressing the linkages between environment and development<sup>55</sup>." The bulk of the document addresses specific environmental problems, from soil erosion to waste disposal. It also contains provisions for new and additional financial support, improved access to environmentally sound technology, and strengthened institutional capacity in developing countries.

Agenda 21, where 21 refers to the twenty-first century, is a comprehensive document on development, with environment as a major background concern. It is composed of four sections:

**Section 1, "Social and Economic Dimensions,"** includes recommended actions on sustainable development cooperation, poverty, consumption, demographics, health, human settlements, and integration of environment and development in decision making.

**Section 2, "Conservation and Management of Resources for Development,"** includes chapters on atmospheric protection, land resources, deforestation, desertification and drought, mountains, agriculture, biological diversity, biotechnology, oceans, freshwater resources, toxic chemicals, hazardous waste, solid waste, and radioactive wastes.

**Section 3, "Strengthening the Role of Major Groups,"** includes ways to increase the participation in sustainable development efforts of major social groups: women, youth, indigenous people, non-governmental organizations, local authorities, trade unions, business and industry, scientific and technological communities, and farmers.

**Section 4, "Means of Implementation,"** comprises chapters on financial resources; technology transfer, cooperation, and capacity building; science; education, public awareness, and training; institutional arrangements; legal instruments and mechanisms; and information collection, analysis and dissemination.

In the area of international cooperation to accelerate sustainable development in developing countries and related domestic policies, UNCED proposed the following action programs:

- i)* Promoting sustainable development through trade liberalization;
- ii)* Making trade and environment mutually supportive;
- iii)* Providing adequate financial resources to developing countries and dealing with international debt;

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<sup>55</sup>Mohammed T. El-Ashry, "The Road from Rio: Implications of the UN Conference on Environment and Development for the World Bank," *Journal of Environment and Development*, Summer, 1993.

- iv)* Encouraging macro-economic policies conducive to environment and development.

The program areas that constitute Agenda 21 are described in terms of the basis for action, objectives, activities and means of implementation. The programs should be carried out by the various actors according to the different situations, capacities and priorities of countries and regions in full respect of all the principles contained in the Rio Declaration on Environment and Development. The agenda could evolve over time in the light of changing needs and circumstances, as this process is supposed to mark the beginning of a new global partnership for sustainable development.

Similar types of action plans are proposed for almost every aspect of social, economic, and political growth and development. The effects of UNCED have been felt in other aid and advisory agencies as well. The World Bank, which has been criticized in the past for projects that provided incentives to trade-off the environment for development, has changed its policies on project and program evaluation. This shift is especially relevant for countries that expect to rely on World Bank aid to restart or stabilize their economies.

### **3.3. World Bank and the Environment**

The World Bank is in a very favorable position to address the holistic issues brought up by Agenda 21. In 1987, the Bank initiated a major effort to incorporate environmental concerns into all aspects of its work, from technical assistance to project finance, policy dialogue, and research. This effort has evolved into the Bank's current four-part strategy for sustainable development<sup>56</sup>:

- i)* Do no wrong. A comprehensive environmental procedure is now included to ensure that the projects being financed take into account environmental considerations.
- ii)* Exploit the synergies between poverty alleviation, economic efficiency, and the enhancement of environmental quality.
- iii)* Help nations set priorities, build institutions, and formulate specifically targeted policies for sound environmental stewardship.
- iv)* Continue to support the Global Environmental Facility in protecting the global commons for future generations and integrating global environmental concerns into national development plans.

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<sup>56</sup>Mohammed T. El-Ashry, "The Road from Rio: Implications of the UN Conference on Environment and Development for the World Bank," *Journal of Environment and Development*, Summer, 1993.

There is a strong theme emerging throughout the literature reflecting the links between poverty and environmental degradation. To address this issue, the Bank has developed an extensive anti-poverty strategy that specifically targets the areas such as health care, education, population and family planning, sanitation, water supply, and rural development. These programs seek to address areas of high mutuality between poverty and environment:

- i)* The provision of water and sanitation services will reduce the incidence of disease.
- ii)* Soil and water conservation as well as crop yields can be better managed through the providing farmer education and extension services.
- iii)* The population growth and the consequential strains it puts on natural resources can be slowed through the use of family planning services and expanded educational opportunities for girls.
- iv)* Environmental programs tend to be labor-intensive and benefit the poor directly

The World Bank recognizes that the poverty is driven as much by economics as politics. In most developing nations, the poor, who would be the ones to benefit the most from any environmental improvements, are usually marginalized. Their input into decision making and policy implementation processes are therefore diminished or eliminated. The Bank is attempting to address this issue, which tends to be associated with strong oppressive regimes, through the use of consultation and participation by local communities. It is believed that this type of participation will establish the legitimacy of many environmental projects and policies on the ground, build powerful constituencies for environmental change, and thus greatly improve the prospects of successful implementation. The usefulness of local community participation will be highlighted later on.

Developing nations need to be aware of the World Bank's policies as they differ substantially from the old ways. The new requirements for providing aid will put a strain on the aid recipients, but will also present them with opportunities to address issues that the Bank would not have provided funds for previously. The nature of the aid that the Bank is providing is also shifting from being purely monetary in nature to a holistic package that includes the institutionalization of knowledge needed for sustainability. This implies changing some of the local political institutions, the circumvention of old lines of command,

and the creation of certain awareness in poor people that they can have an impact on the country. The issues of sovereignty become much more notable as the Bank begins to take on more of a participatory role than an advisory one.

The type of help that nations request will help us understand where they may be heading in the future. If an institution whose main concern is to parcel out viable loans views environmental protection as a core component of the viability of those loans, then let those blind nations beware. The time is ripe to come up with holistic solutions with a reasonable expectation that foreign agencies will help implement those due to the potentially negative environmental impact of doing nothing. What will drive these programs in the final count will be the political will of the policy makers. It is with them that the power (and, usually, the wealth) lies, and it is up to them to take on the roles of statesmen, and shed the role of politicians.

### **3.4.Implications**

The previous section presented the many emerging perspectives on global environmental change and the linkage of environment to development, and highlighted the shift in focus of developed countries. A few major themes need to be highlighted.

Environmental policy development is very complex under normal circumstances, where "normal" refers to countries with minimally acceptable living standards. It is many times more complex in poorer developing countries. The issues it dealt with are multi-dimensional and multi-disciplinary, involving substantial lack of understanding of the causal human-environment relationships on many levels. However, our understanding of these relationships at a local level is strong, and it is usually at that level that action must be taken to achieve global results. Sustainable development provides a strong framework for environmental and economic policy development, but highlights substantial differences between developed and developing countries' future paths of progress. While developed countries have frameworks in place that mimic what sustainable development proposes, developing countries do not. They must view their potential paths of progress in a sustainable development framework, otherwise they will jeopardize their short- and long-term futures.

These countries can improve their condition through a variety of development paths based on their national resources, population, and development. To advance they must manage population and technology/development growth rates; if these variables get out of balance, the nations will tend to regress. Both development and population sizes affect the

environment, but in different ways. In pursuing progress, developing countries can no longer afford to take the path of developed countries due to structural changes in the global economy, as well as the structures of their own economies and population sizes. They must pursue a path of resource management or eco-development, as these will help them achieve long-term sustainability.

Large populations that are not supported by minimal living standards are a serious threat to their own environment. The implications of the poverty/environmental degradation model are that the cycle will tend to perpetuate itself if it is not broken. Western agencies are recognizing the ramifications of the population explosion that might occur and its implications on worldwide resources, causing a major policy shift within these institutions. They have begun to focus on poverty alleviation problems as part of structural adjustment and stabilization programs. The World Bank, the U.S. EPA, and UNCED in Agenda 21 recognize this as one of the core issues of sustainable development.

The seriousness of the damage that a business-as-usual approach taken on by developing countries can have on global resources has generated substantial effort to help these countries in a variety of ways. It is increasingly recognized that the lack of institutional capacity as well as resources to maintain that capacity are key to the present state of many nations. The West's aid is moving towards providing support to build that capacity, providing financial resources to support it, and addressing some underlying debt service issues that are suffocating many third world economies. Debt-for-environment swaps are examples of such efforts, and represent a shift from previous Darwinian predisposition towards the fate of the third world.

It is ironic that developing nations have unwittingly turned the tables around on the developing countries by threatening their long-term survival through their local actions. This has the potential for serious conflict if the issue rises to a point where developed nations view themselves being forced into a corner. The Secretary General of the United Nations, Boutros Boutros Ghali, brought this point up when he said<sup>57</sup>:

*"...Since time immemorial, mankind has had to face threats to its security. Security evolves, however. To put it simply, I would say that it is now becoming less and less a military matter - since in a world in the process of unification any war*

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<sup>57</sup>Opening Statements at the UNCED conference in Rio, Statement by Boutros Boutros Ghali, Secretary General of the United Nations, 1992.

*is, in a way, a kind of civil war - and is, instead acquiring an economic and ecological dimension..."*

The two dominant modes of environmental protection and management in the world today are those of the U.S. federal government and those of the EC. Each one represents a different set of compromises that should help guide developing countries in the development of their own regulatory systems. Both of these systems are fairly new and are evolving very quickly to deal with problems at all levels of analysis (Introduction, Fig. 2), with their final form representing the amalgamation of all social, political, and economic pressures experienced during development. The lessons to be gained from looking at the U.S. and the EC are not in the specifics of the regulations used, but in understanding the actors that have influenced the development process, approach taken, and the reasons for its success or failure.

### **3.5. The Emergence of the Green Movement**

During the 1960s, 1970s, and the early 1980s, environmental concern was initially concentrated on local and regional issues. The overriding concern of the public, of the government, and of businesses was the evaluation and the addressing of the impacts of air or water emissions and waste disposal operations at the local, and in some cases regional level, as well as with dealing with the issues of hazardous waste. The assessment of the severity of the problems, along with the necessary steps for remediation, were conducted almost exclusively within the context of a country's economy, degree of environmental public concern, government structure, and cultural traditions. The scope of this movement grew late in the 1980s to encompass issues of global concern, such as ozone depletion and global warming, with reciprocally more stringent regulations imposed. The globalization of the issues has forced local governments to deal with events on the international scene as well as in their own backyard<sup>58</sup>.

Green movements have had much more success in establishing themselves and generating grassroots support in Europe than in the U.S. This level of support has helped them gain power to the extent that they are beginning to affect national policies, and have caused governments to take a new stance towards industry and pollution. The force of this movement should not be underestimated. In Denmark and Sweden, public support for

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<sup>58</sup>S. B. Gentry, *Developments in the European Environmental Market: Opportunities and Constraints*, Bureau of National Affairs, Washington, D.C., October 1991.



environmental legislation is measured at around 100%<sup>59</sup>. In May 1989, the Prime Minister of the Netherlands had to step down because an agreement could not be reached on the financing of a highly ambitious environmental protection program to reduce pollution of land, water, and air between 70% and 90% by the year 2010<sup>60</sup>. In Britain, the Green Party won 15% of the national vote in the elections for the European Parliament in 1989<sup>61</sup>, while green groups in France won 14% of the votes in the same election<sup>62</sup>.

While countries such as Germany, France, the Netherlands have very strong environmental legislation, other European countries do not. The level of concern in Greece, Spain, and Italy is very low and is reflected strongly in their national environmental programs. Greece did not adopt emergency legislation to deal with atmospheric pollution in Athens until 1982, and did not enact a somewhat substantial environmental legislative framework until 1986<sup>63</sup>. Italy did not establish an dedicated environmental governmental agency until 1986, and its role has not been strong. The power that these "laggard" countries have on EC environmental policy-making process is substantial, and will prove in many cases to be a strong influence to retarding it.

In the U.S., green movements have not been able to establish such a political foothold, even though public support for the environment remains high, mainly due to their inability to present a complete agenda for government. The de facto two-party political system in the U.S. does not look well upon new entrants, which is reflected in the inability of any new party to successfully contest any federal elections. The socio-economic background of the U.S. differs from most of the world due to the size of the country and its prosperity, creating a large complacent population that will support the party in power if the times are good, and switch to other party if the economic times are bad. This is process that has been called by some as "Electionomics"<sup>64</sup>.

However, even without the presence of politically powerful green movements, the U.S. has evolved the most comprehensive pollution control system in the world. As with the

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<sup>59</sup>*The DRT International 1991 Survey of Manager's Attitudes to the Environment*, Touche Ross & Co., 1991.

<sup>60</sup>Wilhelm Zeller, "European Solutions to EIL Coverage," *Best's Review: Property - Casualty Insurance Edition*, Vol. 91, No. 11, March, 1991.

<sup>61</sup>\_\_\_\_\_, "The Greening of British Politics," *The Economist*, March 3, 1990.

<sup>62</sup>\_\_\_\_\_, "Voting Green," *The Economist*, January 23, 1993.

<sup>63</sup>Dimitri Stevis, "The Politics of Greek Environmental Policy," *Policy Studies Journal*, Vol. 20, No. 4, 1992.

<sup>64</sup>Thomas Ferguson, Joel Rogers, *Right Turn: The Decline of the Democrats and the Future of American Politics*, Hill and Wang, New York, 1988.

EC, there are some "laggard" states, such as Missouri, Georgia, and Oklahoma<sup>65</sup> but their influence on federal government decisions is much smaller than their counterparts in the EC. Furthermore, there is federally mandated minimum acceptable environmental quality level that all states, even the "laggards," must maintain.

The Green Movement is nothing more than the actualization of the public's concerns regarding the environment they live in. Policy makers, while acutely aware of the public's concern, need to balance that concern with political, social, and economic issues, keeping in mind their need to get reelected. This balancing of interests is similar between the U.S. and the EC member states, but the multi-layered EC-member state link creates a buffer that changes the dynamics of the politicians' cost-benefit analysis. The results are different a affinity level for various interest groups at the EC level than at the state or U.S. level.

### **3.6. Policy Making in the U.S. and the EC**

Three major groups seem to influence policy making in the U.S. and in the EC: U.S. Congress/EC member states, industry, and environmental organizations. The roles of and influence of each varies across organizations, influencing the policy outcomes in different ways. In combining the role of U.S. Congressmen and that of the European states into one, we are trying to convey the federalist nature of the EC system. A key difference exists between both in that the powers of the federal government are more extensive than those of the EC as are its policy and legislative mandates.

#### **3.6.1. Congress/EC Member States**

U.S. congressional entrepreneurship has been a major factor in the emergence of federal environmental policies<sup>66</sup>. The decentralized structure of the U.S. Congress permits and encourages politically ambitious members to enhance their power and reputation by sponsoring, obtaining passage, and overseeing the implementation of new legislation. As general public concern with environmental degradation has grown, congressmen have sought to capitalize on this concern through legislative initiatives in the environmental area. The entrepreneurship of these congressmen has been helped in the environmental arena by the role that the media has played in developing public awareness around this issue and generating support for national legislation to deal with it.

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<sup>65</sup>Samuel P. Hays, "Environmental Political Culture and Environmental Political Development," *Environmental History Review*, Summer, 1992.

<sup>66</sup>E. Reh binder, R. Stewart, *Environmental Protection Policy: Legal Integration in the United States and the European Community*, Walter de Gruyter & Co., Berlin, 1988.

The environmental policy initiation role of U.S. Congressmen was initially taken on by the European Commission, which initiated policy proposals in the area of environmental protection. Lately though, the member states are increasingly influencing both the identification and development of issues for regulation, and trying to limit the EC's power to regulate this policy area. A general agreement has been reached that the authority and policy-making responsibility for dealing with the protection of nature and the regulation of land use should remain under the authority of the member states, reinforcing the de-integration trend. In many cases, environmental proposals are driven by some of the larger environmental "leaders" in the community. These members' goals are geared, under the banner of economic harmonization, towards forcing the rest of the community to share the same economic burden that their own industries are having to deal with. If the EC does not accept and ratify the proposal, these countries, such as Germany, may take unilateral actions and raise trade barriers in the process. Given their large size, the effects of these barriers will have detrimental effects on other countries' economies.

The consensus rule on environmental policies gave substantial power to the "laggard" states. Their low level of concern for the environment in a lowest-common-denominator approach slowed the overall policy development process as they would not accept regulations that would impose substantial burdens on their economies. In many cases, though, what the poorer countries were doing was negotiating for financial aid from their wealthier neighbors to help them implement those rules. Within this context, the EC represents a microcosm of the rest of the world with developed nations implementing strict regulation on one side, and developing nations not caring very much on the other side.

### **3.6.2.Industry**

In the U.S., industry plays a powerful negative role in federal environmental policy. While this group's influence waned during the heyday of environmentalism in the early 1970s, it has regained some of that influence under the Reagan administration<sup>67</sup>. This group's power has increased as the problems in implementing ambitious environmental programs became apparent and concern with the economic burden that these programs are putting on industry was heightened. This grouping has responded by instituting a strong permanent lobbying effort by hiring lobbyists and lawyers to represent them before the Congress, the federal agencies, and the courts<sup>68</sup>. Substantial resources are devoted to

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<sup>67</sup>Jeffrey H. Birnbaum, Allan S. Murray, *Showdown at Gucci Gulch: Lawmakers, Lobbyists, and the Unlikely Triumph of Tax Reform*, Random House, New York, NY, 1987.

<sup>68</sup>Jeffrey H. Birnbaum, Allan S. Murray, *ibid.*

administrative proceedings and federal court litigation in order to prevent, influence, or set aside unfavorable agency regulatory decisions.

At the EC level, there are a number of trade and industry associations that lobby the Commission regarding environmental issues. Given their existing resources, and their previous experience in lobbying and persuading governments, the industry groups are particularly powerful at this level. The efforts tend to concentrate on the Directorate that actually will benefit them the most, which in most cases is the Directorate General responsible for Internal Markets and Industrial Affairs, and which is usually opposed to strong environmental measures.

Industry groups also exhibit differences along economic integration policy lines: Some groups are pushing to establish EC-wide environmental regulation harmonization to remove trade barriers, while others, mostly national industry groups, wish to maintain those trade barriers that are protecting them. The effect of environmental regulations on trade issues is emerging as a strong driver as its impact on trade restrictions can be substantial: The Netherlands, for example, is facing strong EC pressure because its regulations on the recyclability of beer bottles has erected a strong barrier to beer imports.

### **3.6.3.Environmental Organizations**

U.S. national environmental advocacy groups seeking to influence federal policy are usually better funded and organized than their local counterparts. While they have had some success in blocking or delaying development projects through a combination of litigation, administrative and legislative lobbying, and arousal of public opinion, they have not played a major role in regulatory implementation and enforcement. The success that they have had is in offsetting industry influence with administrators, securing court judgments, requiring that administrative decisions be reconsidered, and identifying and publicizing new problems that require government involvement. The influence that these groups have comes primarily from general public support for environmental issues rather than from their ability to provide votes to the respectively lobbied members of Congress.

The main European environmental group is the European Environmental Bureau (EEB), and consists of 63 national environmental organizations, including all the more important national organizations. It is a bureaucratic organization that the leaders of the national groups cooperate with but do not provide with any active support. While it tries to influence all the Community actors involved in the policy-making process, its influence is strongest with the Commission. It tends to support strong environmental policy proposals,

and it comments on all the more important Commission proposals for environmental directives. The EEB exercises some influence in the formulation of Community policy, but it is mostly at the preparatory stage, as it becomes weak once a proposal has been made. With the shifting of power to the Council and the member states, the role of this organization may be further diminished.

Given the present level of Community integration, environmental interest groups in most member states seek national solutions from their national governments. As with industry groups, the environmental groups have greater impact at the national level than they do at the Community level. They have this greater impact due to the more political nature of the national legislative and bureaucratic apparatus, versus the much-more-insulated Community decision process. Grass-root movements, under-represented interests, and new values carry greater weight locally due to the shorter distance between the interest groups and the politicians. What happens in the EC headquarters becomes a political issue only after the national governments need to pass it into law. This diminishment of political influence at the community level impedes the effectiveness of environmental movements, which need visible conflict to survive.

#### **3.6.4. Other Groups**

The other groups that may influence the Community are the courts, the media, and the scientific community. In the courts' case, environmental litigation is still limited, and there are no state courts that have dealt with Community environmental laws. Even the ECJ has not become a major player due to its lack of enforcement power. The scientific community is essentially relegated to the role of preparing a particular legislative proposal, but is of little importance when dealing with the issues of harmonization.

The European media lacks the effectiveness that it has in other contexts due to its essentially national nature. There are no large European papers or magazines that command enough readership and influence to affect the policies of the EC. U.S. media has been more of a catalyst than an active participant in policy formulation by dramatizing environmental problems such as the Exxon Valdez spill and the Three Mile Island nuclear incident. The presence of nationally oriented newspapers and television networks have been important in developing public awareness of environmental problems throughout the nation and generating support for national legislation to deal with them.

### **3.7.Environmental Policies of the U.S. and the EC**

The early part of this chapter focused heavily on the general policy frameworks being developed, and heavily stressed sustainable development. Since most of these policies were developed under the auspices of western institutions, we cannot but wonder whether these institutions are following up on what they are recommending to others. The focus of this section is going to be again on the U.S. and the EC, trying to understand what are their major policies and programs, how they evolved, and the major differences between them. There will be more emphasis on EC policy evolution, as it has had clearly defined shifts, as compared with U.S. policy, which has been somewhat under continuous development due to the existence of the EPA bureaucracy.

#### **3.7.1.U.S. Environmental Policies**

Present US environmental policy focuses primarily on pollution control and environmental cleanup following a sectoral approach. It has a number of statutes aimed at disposing of hazardous waste on land and controlling toxic emissions into the air and water, with the Environmental Protection Agency and its state equivalents charged with the maintenance of these statutes. The basic formula requires the EPA to set standards governing the issuance of permits, which again, can be issued by the EPA or its state equivalents. The three types of standards that are common to environmental programs fall under the command and control (C&C) umbrella:

- i)* Ambient standards are set on the basis of total concentration levels
- ii)* Emissions standards that are source-specific, and dictate the amount of pollution allowed to emanate out of a single source
- iii)* Workplace standards that dictate the use of certain types of equipment or processes when the use of the previous two standards is not practical

The use of ambient standards is hampered by the unavailability of good monitoring devices, which prevents the detection of violations, as well as from the lack of clear scientific guidelines, making standard setting in this context open to questioning, and therefore more difficult to implement. Emission standards, due to their association with a single source, are more easily monitored, and therefore standards are more easily enforced, which helps explain their prevalence. These standards are usually established on an industry-wide basis, usually after an industry analysis, and formulated to use the best available technology for that industry. This process is usually biased towards existing sources, as it requires that new sources comply with much more stringent emissions rules than existing sources.

**Table 4: EPA Action programs completed and progressing<sup>69</sup>**

***EPA Action Programs and Steps***

**Reducing Risks**

Improving air quality  
Setting priorities  
Reducing lead risks  
Restricting chemical exposure  
Accelerating Superfund cleanups  
Setting water quality standards

**Preventing Pollution**

Cutting toxic releases  
Conserving energy  
Promoting recycling  
Educating citizens

**Enforcing Environmental Laws**

Making polluters pay  
Strengthening water enforcement  
Restoring resources

**Protecting Natural Resources**

Protecting wetlands  
Preserving ecosystems  
Halting ocean dumping

**Strengthening Science**

Improving the knowledge base  
Reassessing chemical toxicity  
Developing new cleanup technologies  
Improving environmental monitoring  
Augmenting resources

**Exercising International Leadership**

Protecting the ozone layer  
Slowing global climate change  
Assisting Eastern and Central Europe  
Preserving global forests  
Trading debt for environmental protection

**Strengthening Agency Resources**

Increasing EPA funding and personnel

<sup>69</sup>U.S. Environmental Protection Agency, *Securing Our Legacy*, U.S. Environmental Protection Agency, Washington, DC, April, 1992.

Environmental standards are usually applied to particular pollution sources through permits issued by federal or state governments, who are both responsible for the enforcement of these regulations. Most of these regulations further provide for the possibility of citizen suits, which allow citizens to sue polluters who violate the terms of their permits, as well as suing the EPA and state agencies when they fail to live up to their mandates. The final touch to the policy of permitting citizen suits is allowing the same citizens to recover attorney and expert witness fees, which might not only make these suits against large companies financially viable, but might encourage them.

While the majority of U.S.-based statutes espouse a command-and-control (C&C) approach, new trends in the use of market-based instruments are beginning to appear. Many critics of present approaches argue that the present environmental regime has reached the limits of its efficiency, and that it is time to move to the next level. The Clean Air Act has specific provisions allowing the trade of pollution rights among sources to achieve ambient standards at the lowest possible cost, while deposit refund systems have proven to be very useful in reducing litter in targeted areas. Taxes and fees on emissions, measures that have found wide support in the academic community, are becoming more attractive to government as the revenue potential becomes clearer and the free pollution allowance that present regulations give polluters come under further environmental scrutiny.

Pollution control issues dominated most of the seventies, with almost all the major statutes in place by the early 1980s, at which time environmental reclamation was just emerging as a major problem. The legislative regime that forces polluters to look at the past damage caused comes under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Unlike most other programs, CERCLA is an environmental liability program that is retroactive in nature to all polluters of a site for the costs of both cleanup and natural resource damage. The intriguing thing about this act is that the liability it imposes is strict, joint, and several; this implies that each responsible party is independently liable for the government's entire cleanup cost. The government can also decide to sue the parties identified and force them to clean up the sites themselves, an action that will still require government involvement but further incorporates public involvement.

### **3.7.2.EC Environmental Policies**

Community environmental policy is characterized by its simultaneous simplicity and complexity. Unlike the U.S., where a federally dictated regulation issued is binding in its



existing form, EC directives, which represent the bulk of the 200 environmental decisions the EC has taken, have to go through a process of interpretation to be incorporated into national legislation. There are very few cases where EC has had the legislative, regulatory, and enforcement power over environmental issues and used it to a large extent.

The most obvious characteristic of EC policies and regulations is their lack of focus, depth, and comprehensiveness. The emphasis of new laws is on the regulation of new products while existing products are almost ignored. While over 200 directives, regulations, and decisions were passed<sup>70</sup>, as compared to the U.S.'s 20,000, no environmental sector is comprehensively regulated by the EC and at most, a fifth of relevant problem areas are covered<sup>71</sup>. This patchwork of regulations reflects the ad hoc pragmatic approach taken by the EC in identifying and developing subjects for harmonization; unfortunately, the regulations and directives adopted did not identify major priority areas for harmonization, and left the local implementation to the local governments. Instead, the regulations and directives that have emerged have concentrated on narrow manageable areas of varying importance, while ignoring larger problems.

This two-tier legislative process has created a heterogeneous regulatory framework across member states, as the EC legislation dictates the goals but leaves the modes of implementation to the member nations. The member states have implemented the directives in a manner that minimizes their individual political, social and economic costs and in a way that either complements or supplements their own national policies. The present system is a literal mosaic of implementation approaches to reach the same goals.

The major components of the U.S. regulatory framework and the EC's environmental action plans seem to support the notion that their policies are shifting towards sustainable approaches in very different ways. The roles of the two institutions, the EC and the U.S. federal government, also seem to be diverging in the future: The U.S. seemingly sees a more enhanced and active role for the federal agencies while the EC views itself as focusing on larger industry sectors to help promote sustainability within those sectors.

### **3.7.3.U.S. Environmental Legislative Programs**

In 1970, amid growing public pressure for a cleaner environment, President Nixon submitted to Congress a reorganization plan for the creation of an independent

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<sup>70</sup>Nigel Haigh, Konrad von Moltke, "The European Community: An Environmental Force," *EPA Journal*, July/August, 1990.

<sup>71</sup>Rehbinder, Stewart, *Ibid.*

environmental protection agency in the executive branch of the government<sup>72</sup>. This agency would combine under one umbrella the fifteen different components from five executive departments and independent agencies, with the mandate to carry out federal laws to protect the environment. Many of the EPA's new responsibilities are part of the new generation of environmental problems that surfaced in the 1980s, problems that are global in nature, such as climate change, stratospheric ozone depletion, rainforest destruction, and acid rain. The EPA is in charge of implementing and enforcing the fourteen major environmental laws that the U.S. Congress has passed:

- 1) The Clean Air Act
- 2) The Clean Water Act
- 3) The Safe Drinking Water Act
- 4) The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- 5) The Emergency Planning and Community Right to Know Act
- 6) The Resource Conservation and Recovery Act
- 7) The Federal Insecticide, Fungicide, and Rodenticide Act
- 8) The Toxic Substances Control Act
- 9) The Marine Protection, Research, and Sanctuaries Act
- 10) The Uranium Mill Tailings Radiation Control Act
- 11) The Indoor Radon Abatement Act
- 12) The Ocean Dumping Ban Act
- 13) The Coastal Zone Management Act
- 14) The Pollution Prevention Act

While the EPA's budget to manage these programs is around \$6 billion, a few of these programs receive the majority of the funding, as with grants for the construction of sewage treatment plants (\$2.1 billion), and the cleanup of Superfund sites (\$1.6 billion). The programs that the EPA is working on can be grouped into seven action categories that cut across all legislative programs: Reducing risks, preventing pollution, enforcing environmental laws, protecting natural resources, strengthening science, exercising international leadership, and strengthening agency resources. Within each of these action programs are specific steps the EPA is pursuing to achieve the goals it has set for itself.

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<sup>72</sup>U.S. Environmental Protection Agency, *Preserving Our Future Today*, U.S. Environmental Protection Agency, Washington, DC, October, 1991.

These action steps, while published to cover progress made over the 1989 to 1991 period, clearly reflect the programs that need to be implemented in the near future (Table 4). They are generic enough to be adapted to any situation by varying the emphasis on the specific steps, encompassing enough that they could serve as the beginnings of overall policy approach, yet specific enough to be taken to implementation quickly. This will be very important to nations looking to the US for help, as well as making clear to the states what the near future of environmental protection will be like.

The policies that the EPA has been developing and implementing over the last twenty years have been fairly successful at improving the living conditions of people, or at the very least preventing further deterioration. The development of regulations has been steady, with major new programs or the re-authorization of older ones generating spurts in activity by the various stakeholders. This intricate system that has evolved over the years operates within a constitutionally-set two-tier governmental infrastructure, where states have certain preemptive rights over the federal government, and where the courts are beginning to take on roles of major importance through their setting of precedents.

#### **3.7.4. The Environmental Action Plans (EAP)**

During the first years of the Community's existence, environmental regulations came about as a result of efforts to enact uniform industrial standards throughout the member countries. The EC did not have formal and distinct environmental powers at that early stage. As environmental issues gained further importance, Environmental Action Plans were created to guide Community policy making in this area. The EAPs are non-binding indications of what the Commission intends to propose over a given period of time.

The first action plan, developed in 1972, set out a relatively detailed timetable for projects and action to be taken at the EC level. Although the emphasis was largely controlling water pollution, the activities planned ranged from the creation of scientific monitoring systems to studies on urban problems in the north-west part of the EC. It also laid out a work schedule of pollution cost studies for various industries, regions, and products that were to serve as the basis for the application of standards to follow enactment of more general environmental legislation. This plan was followed by the enactment of numerous general and specific measures in a variety of areas covered by the plan. Some of the main political principles stated in the first program were<sup>73</sup>:

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<sup>73</sup>Pascale Kromarek, *Federal Republic of Germany: Water and Waste, A Study of the Implementation of EEC Directives*, Graham & Trotman, Norwell, MA, 1986.

- i)* Prevention is more effective than ex post treatment
- ii)* Polluters are financially responsible for the pollution they create
- iii)* The most appropriate geographic decision-making level will be sought for each type of action
- iv)* Pollution across boundaries must be prevented
- v)* Environmental impact of official action must be assessed
- vi)* The member states are allowed to enact more stringent national regulations

A second five-year plan that was adopted in 1977 extended the emphasis on water pollution but also enlarged the area of interest in the EC to include such areas as noise pollution, ecological maps and surveys, waste management, environmental education, and international actions. The third plan, adopted in 1982 to cover four years, continued the previous plans' objectives; however, it also began to expand into the area of rational natural resource management, the introduction of clean technologies, and development of a comprehensive strategy to create greater impact on other areas of community policy. The fourth plan, enacted in 1987, had similarly minor effects with its major focus on increased pollution prevention measures, improvement in managing resources, and support for international environmental efforts.

The signing of the 1992 Maastricht Treaty of European Union enhanced the EC legislative authority and framework by committing the Community to promote "sustainable and non-inflationary growth, respecting the environment." Furthermore, the Treaty states that "environmental policy must be integrated into the definition and implementation of other community policies." There was a heavy emphasis in the treaty on the notion of "subsidiarity." Subsidiarity implies that environmental decisions should be made as close as possible to the affected citizens, and that the Community will only act in environmental areas where joint action at the EC level would serve the concerned citizens better than individual states' efforts.

The scope of the fifth action plan adopted post-Maastricht demonstrates the new intent of the EC. It is entitled *Towards Sustainability, A European Community Programme of Policy and Action in Relation to the Environment and Sustainable Development*. Five trade sectors have been selected for attention under these programs: Industry, energy, transport, agriculture, and tourism<sup>74</sup>. It is in those sectors that the Community believes it can be most effective at its level of interaction. They were also chosen due to the potentially

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<sup>74</sup>The EC Committee of the American Chamber of Commerce in Belgium, *EC Environment Guide*, The EC Committee of the American Chamber of Commerce in Belgium, 1993.

significant impacts that they have had and could have in the future on the environment as well as their crucial roles in the creation of sustainable development policies. Clearly, the EC has decided to remove itself from the micro-management of local environmental issues and focus on larger harmonization and sustainable development aspects.

The differences in environmental policy approaches between the EC and the U.S. reflects differences on many factors. Of this factors, the institutional and political frameworks seem to be the dominant drivers. In the U.S., it is congressional entrepreneurship that drives innovations, as with Project 88, which aimed at further increasing the use of market-based instruments for regulation. In the EC, it is also the leadership of member states that drives, but the strength of the smaller states is felt much more strongly. The U.S. has broad regulatory latitude as well as strong enforcement powers, while the EC lacks both. Institutional capacity is not an issue in these situations, eliminating lack of knowledge as a key variable, leaving the two previous factors as dominant.

In developing countries, however, all three variables will need to be addressed as the lack of any of the drivers, be they political or institutional, will cause the implementation of mediocre plans that will not serve the good of the nation. Our case study will address those variables in the context of the discussion on sustainable development.

## 4. Tools of Policy Implementation

In an era where environmental costs are skyrocketing and the pollution control costs on an incinerator account for almost a third of its development investment, many questions are beginning to surface about the efficiency of the existing command and control (C&C) mechanisms in controlling environmental degradation. The emergence of new paradigms, such as the Polluter Pays Principle, the transformation of the public's perception of alternative instruments, and the advances in our knowledge have made the development and use of new instruments not only possible, but necessary. Of the three major modes of environmental policy instruments: regulatory instruments (RIs), economic instruments (EIs), and government-industry cooperative agreements, we will focus on the first two. Government-industry agreements will not be considered separately as this author believes that these agreements eventually fall into one of the two previous categories, because not going into them will either engender regulatory response, or cause potentially higher economic costs.

### 4.1. General Approaches to Policy Implementation

While economists have long criticized traditional RI-based pollution control policies for their apparent inefficiencies, these methods are still the predominant ones in use in most countries. To understand this phenomena, one must understand the underlying decision-making process behind it, or at least the variables that affect the final outcome of the process. Perhaps the two interlinked variables that influence decision making the most are those of distributional effects<sup>75</sup> and the level of politicization of the regulatory process. To predict the political effects of a policy, the concentration of interests, the large impact on a limited set of firms or people<sup>76</sup>, and the affinity of politicians for those concerns must be taken into consideration.

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<sup>75</sup>Donald N. Dewees, "Instrument Choice in Environmental Policy," *Economic Enquiry*, Vol. XXI, January, 1993.

<sup>76</sup>George Stigler, "The Theory of Economic Regulation," *Bell Journal of Economics and Management Science*, 1971.

When they have been heard, economists' arguments have revolved around efficiency of markets. In an ideal world, given the powers they wield, politicians would be fairly sophisticated individuals, with a keen understanding of the different tools available to them. Unfortunately for the US. voter, a 1980 survey of policy-makers demonstrated that very few interviewees mentioned or understood the efficiency arguments<sup>77</sup>. These arguments are sophisticated and rely on an understanding of market mechanics and the resulting indirect price effects. If and when these politicians understand the issues involved, they may not be willing to grant a "license to pollute."

In a paper published in 1985, Bohm and Russell presented a set of factors that seem to explain why policy makers prefer a direct regulatory approach to an indirect incentive-based one. Politicians prefer RI because<sup>78</sup>:

- i) in many administrations, economists play a minor role, and authorities are much more familiar with the C&C approach
- ii) the EI approach is considered too indirect since the purpose of this approach is to alter the context in which polluters make their decisions, rather than prescribing the appropriate course of action
- iii) the revenues generated are dependent on polluter's decisions, and are therefore uncertain
- iv) the increased financial strain of charges would cause inflationary pressures
- v) the negative distributional effects of charges on low income groups may be substantial
- vi) the environmental impact of C&C regulations are more certain than those of EIs
- vii) C&C regulations are viewed as no-nonsense tools while EIs may be perceived as granting licenses to pollute

From a policy maker's perspective, regulations yield much more certain results in impacting discharges and production processes. Unless the cost function for reduction of discharges is known, the effect of effluent charges are uncertain. In this context, regulation is viewed as a no-nonsense instrument that can be used to deal with serious environmental issues. If effluent charges are used, they have clear revenue distribution effects that governments may not be willing to bear. If it can be safely said that the short run impact of

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<sup>77</sup>Steve Kelman, *What Price Incentives? Economists and the Environment*, Auburn House Publishing Company, Boston, Massachusetts, 1981.

<sup>78</sup>P. Bohm, C. S. Russell, "Comparative Analysis of Alternative Policy Instruments," *Handbook of Natural Resource and Energy Economics*, Vol I, Elsevier Science Publishers B.V., 1985.

decisions is more important to politicians than the long run, then regulations will be favored. Charges may result in higher impact on prices initially, but have a lower impact in the long run, while regulatory directives would have less conspicuous distributive effects in the short-run, but would have higher effects in the long run.

Given the arguments for efficiency, which at present time entail increases in effluent charges, waste disposal charges, etc., it is no surprise that polluting firms and trade associations prefer regulations to charges. It has been proposed that if charges were set at a level that would bring pollution levels in the long run as well as in the short run in line with regulatory measures, it is worse for the polluters if they have to pay fees<sup>79</sup>. In addition, the government may be more liable to listen to polluters before imposing strict uncompromising regulations<sup>80</sup>. Finally, in certain countries, the introduction of new regulations is accompanied by drawn-out negotiations and provides ample opportunity for appeal. Under this method, industries could filibuster over a long period, to their benefit<sup>81</sup>.

While most of the studies mentioned were based on developed countries, the political distributional effects are enhanced in developing countries. Power and wealth tend to be distributed very unevenly in those countries, with a strong correlation between both. This political structure, and the ability to move capital around the world very easily, creates an atmosphere of quasi-colonialism and exploitation. In these contexts, it is to be expected that no regulations governing the environment might be implemented, serving as an extreme of the situations mentioned in the studies.

#### **4.2. Factors Affecting Choice of Tools**

When the choice of approach is taken, the development of the specific tools is governed by a different set of political and institutional considerations. While analytical issues of "conformity" with existing legislative structures, and "optimality" of the resource reallocation process may dominate discussions in certain contexts, these frameworks introduce non-analytical concerns; the political contexts and traditions in these contexts are significant determinants as well. The differences in choice of instrument in the OECD are affected by<sup>82</sup>:

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<sup>79</sup>Walter Spofford, *Properties of Alternative Source Control Policies: Case Study of the Lower Delaware Valley*, Resources for the Future, Washington, DC, 1983.

<sup>80</sup>P.G. Quirk, *Industry Influence on Federal Regulatory Agencies*, Princeton University Press, Princeton, New Jersey, 1981.

<sup>81</sup>P. Bohm, C. S. Russell, *ibid.*

<sup>82</sup>OECD, *Economic Instruments for Environmental Protection*, OECD, Paris, 1989.



- i) differences in relation to basic principles of environmental and public policy, i.e., US policy moving away from price control and regulation during the Reagan era, creating a preference for tradable permits.
- ii) differences in relative power between various actors, or group of actors, relevant to the actual policies, i.e., differences between the US EPA, which has enforcement power, and the West German FEA (the German EPA equivalent), which serves in an advisory role, with power resting in other agencies and ministries.
- iii) differences in the general political contexts, i.e. industry, public, and political awareness of environmental issues, as well as supra-national agreements such as the EC.
- iv) differences in the political structures, i.e. centralized structures versus federal decentralized ones.

In very few cases did one of these factors dominate and cause the choice of one instrument over another. It is usually the interaction among these variables, along with second-order transient effects, that usually determine the choice of instrument. Some of these issues will be further highlighted when specific examples of instrument choice success or failure are discussed.

#### **4.3. Efficiency of Policy Instruments**

In attaining a required level of environmental quality, an environmental agency must deal with the many individuals and independent actors whose actions finally effect the environment. The parties to this process differ among themselves in the types of production technologies that they use and the product mixes that they manufacture, each creating a different environmental effect at a local, regional and global level. Each will react to a certain form of environmental pollution control in a different manner, driven by their own utility functions.

In evaluating different policy instruments, one must have a basic set of variables against which to pass judgment. Bohm and Russell<sup>83</sup> suggested that policy instruments should be judged along many dimensions, reflecting the nature of the problem being addressed. These dimensions are:

- i) *Static efficiency* which reflects upon the ability of the instrument to implement a policy at the lowest cost, assuming that environmental goals do not change.

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<sup>83</sup>P. Bohm, C. S. Russell, *ibid.*

- ii) *Information intensity* which reflects the amount of data and the predictive skills needed by an environmental agency to implement a policy. The highest level of efficiency will be achieved when each of the actors is driven to the point of decreasing marginal utility
- iii) *Ease of monitoring and enforcement.* The first element, monitoring, refers to the relative difficulty measuring and interpreting discharges necessary to judge compliance, prepare bills, or audit self-reporting functions, while the second section refers to the ability of monitoring agencies to force polluters to comply.
- iv) *Flexibility in the face of economic change* addresses the ease with which the implementation systems adjust to maintain the ambient goal when changes in the exogenous economic landscape occur, such as tastes, technologies, etc. The fundamental distinction to be made is between a system that adjusts to the decentralized actions of the polluters and one that must be adjusted through regulations. The advantages accrue in minimizing data-gathering costs as well as the possibility of political interference.
- v) *Dynamic incentives* are the incentives provided by the implementation tool in future decision making. The three main areas of concern are: 1) whether the instrument will encourage the adoption of new technology or whether old facilities remain more attractive; 2) whether the instrument makes capital investments artificially cheap; 3) and whether or not incentives for the polluter to relocate are impounded in the instrument.
- vi) *Political considerations*, including distribution effects, ethical concerns, and broader economic policy issues.

These are some very basic variables that need to be considered in the implementation of policy instruments. These variables are as relevant in developing economies as they are in developed ones, if not more so due to the lack of disposable resources available. The weightings on each of the variables will change depending on the context of evaluation, and tradeoffs will have to be made between instruments achieving varying levels of efficiency.

Within the framework of efficiency, one would assume that firms would fight increased efficiency in regulation as it implies a reallocation of costs or the creation of new costs for these firms. If these firms' perception is that they will not be able to reflect these costs in their prices, then they prefer regulations, for reasons mentioned earlier. Given the disparate levels of environmental enforcement, some nations' environmental costs will be lower than others, and in an increasingly global economy, these lower costs will be translated into lower prices.

#### **4.4. Argument for RIs**

C&C regulations can be defined as a "directive to individual decision-makers requiring them to set one or more output or input quantities at some specified levels or prohibiting them from exceeding (or falling short of) some specified levels."<sup>84</sup> Regulation has been the more preferred form of environmental policy implementation by policy-makers in the industrialized regions of the world. A variety of reasons in a variety of contexts have been used to support the use of this type of implementation tool. This tool has not only been used in the area of environmental policy, but in almost every other area where the government attempted to achieve some goals. Taxes and charges have rarely been introduced as control instruments, and their use to achieve specific goals has been even more rare.

In evaluating regulatory instruments, perhaps the two most important variables to consider are static efficiency and information intensity. If an agency can determine the appropriate charges that a polluter must pay so that a predetermined ambient standard is met, then the same result can be achieved by regulating the individual sources of pollution<sup>85</sup>. If the multiple polluters are involved in this process and different alternative policies create different future reactions in terms of new technology implementation, discharge levels, etc., then one needs to evaluate these alternatives in conjunction with the differing costs of administration, monitoring, and enforcement. In most situations, if not all, information will not be freely available to the regulating agencies, adding another consideration to the evaluation process.

Under a very limited set of circumstance, though not unrealistic, some regulatory approaches may prove to be inherently efficient. The alternatives proposed were presented by Bohm and Russel<sup>86</sup> in order of decreasing degree of freedom for the regulated parties.

##### **4.4.1. Forcing the Polluter and Polluted to Negotiate**

This approach's implementability will probably be restricted to very few situations. Many analyses have reached the conclusion that if the conditions needed for this regulation to be efficient are met, the parties involved would have probably negotiated the situation without government intervention. It is also recognized that where the number of

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<sup>84</sup>W. J. Baumol, W. E. Oates, *The Theory of Environmental Policy*, Cambridge University Press, 1988.

<sup>85</sup>Richard W. Tresch, *Public Finance: A Normative Theory*, Business Publications, Inc., 1981.

<sup>86</sup>P. Bohm, C. S. Russell, *ibid.*

individuals concerned is large, the likelihood of voluntary negotiations diminishes<sup>87</sup>. The administrative costs associated with the negotiations become prohibitive and "as the number of participants becomes critically large, the individual will more and more come to treat the behavior of all others as beyond his own possible range of influence."<sup>88</sup>

Even when these negotiations occur, it is important to determine whether all parties involved are involved in the negotiating process. An example of this occurred in Sweden. An automobile maker found that when the neighboring refinery was processing lower quality petroleum while the wind was blowing towards the production facility, there was a marked increase in corrosion of paint and metal at the car maker's facility. Negotiations between the two parties took place and the refiner agreed to process lower-quality petroleum only when the wind was blowing towards the neighboring city, whose inhabitants took no part in the negotiating process.

As the previous example shows, this type of regulation can be efficient when the following conditions are met<sup>89</sup>:

- i) complete information about relevant costs is available to the participants
- ii) monitoring costs are sufficiently small
- iii) compliance costs for the polluter are small
- iv) the threat of alternative action is available

In situations where authorities can gather the necessary information at low cost, and the information set available to the negotiators is far from complete, then regulations that are more interventionist in nature may be more efficient.

#### **4.4.2. Performance Standards**

The regulation of effluent concentrations through standards provides polluters with the maximum freedom of compliance. In the case where little is known about compliance costs, standard setting may be more efficient than alternative instruments<sup>90</sup>. In the absence of a pricing mechanism to determine the value of the damages inflicted on the

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<sup>87</sup>W. J. Baumol, W. E. Oates, *ibid.*

<sup>88</sup>J. M. Buchana, "Cooperation and Conflict in Public-Goods Interaction," *Western Economics Journal*, March, 1967.

<sup>89</sup>P. Bohm, C. S. Russell, *ibid.*

<sup>90</sup>Martin Weitzman, "Prices vs Quantities," *Review of Economic Studies* Vol. XLI, No. 128, 1974.

environment, there is no easy way to implement economics-based solutions. Furthermore, the efficiency argument entails that the charge system be tailored to the various polluters, and given the lack of information as well as the administrative costs of implementation, a standards-based system would perform just as well<sup>91</sup>. The information intensity of setting optimal effluent standards is the same as that of setting optimal effluent charges<sup>92</sup>. On a relative basis, this approach may be more efficient as the costs associated with a trial-and-error process of determining the appropriate charges to achieve certain environmental standards will be too high. Furthermore, in a dynamic environment, the assimilative capabilities of the ecosystem will change in time and space, requiring frequent adjustments across both dimensions.

Two forms of this approach have been tried: source-specific regulation, and area-specific regulation. Source-specific regulations affect each polluter in the same manner, while area-specific regulations tend to be a combination of EIs and RIs, and increase the degrees of freedom available to the polluters. In the latter situation, the environmental quality of an area is regulated, but the polluters within that area are allowed to trade emission rights to achieve the most optimal level of emission for each of them.

When there is a high cost level to monitoring discharges, neither effluent charges nor effluent standards may be appropriate instrument choices. There are special concerns that arise with monitoring ability and costs that need to be identified<sup>93</sup>:

- i)* The fugitiveness of emissions requires constant monitoring
- ii)* Performance standards must take into account normal variation in processes that will cause variation in effluent quality
- iii)* The sampling regime must be matched to the process being regulated
- iv)* The inability of existing monitoring equipment to deliver reliable information consistently

The efficiency of this regulation will be heavily influenced by all these variables, to the point that the reader may think that it is not possible to make this approach completely efficient. It is unclear that any existing approach will generate an optimal reaction across a broad set of players resulting in an ideal level of efficiency. What is clear is that on a

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<sup>91</sup>P. Bohm, C. S. Russell, *ibid.*

<sup>92</sup>Karl-Goran Maeler, "Effluent Charges versus Effluent Standards," *The Management of Water Quality and Environment*, Macmillan, London, 1974.

<sup>93</sup>P. Bohm, C. S. Russell, *ibid.*

relative scale, different methods will yield varying levels of costs, thereby shifting the cost benefit analysis one way versus the other.

#### **4.4.3.Regulating Input Variables Correlated with Emissions**

When data about the final effluent is not easy to determine, it may be appropriate from a static efficiency point of view to regulate input variables that correlate strongly with the emissions to be regulated. This situation is more efficient if the monitoring of input variables is done more easily than the monitoring of the effluents. This instrument has been put into play in the power generating sector where state authorities ordered the power generating utilities to use low-sulfur coal to minimize the emissions of sulfur dioxide. In this case, the relationship between the sulfur content in the raw material, be it oil or coal, was strongly correlated to the sulfur emanating from the smoke stacks.

This instrument can also be applied to communities by setting certain mandatory recycling levels, which will in theory reduce landfilled or incinerated waste by a similar amount, demonstrating its potential to be applied to a variety of situations on its own or in combination with other instruments, with a high level of efficiency.

#### **4.4.4.Design Standards**

By now, it is becoming increasingly clear that information is lacking in many areas to make a good choice among instruments. Furthermore, if the chosen instrument requires expensive monitoring of sources, then it becomes less efficient. Another approach has been to choose the technology used in pollution control or in production processes, or the raw materials input quality, such as low-sulfur coal or unleaded gasoline. This is an approach that is gaining popularity in the U.S., and is already established in Europe, where many governments mandate the use of Best Available Technology (BAT) in emissions control<sup>94</sup>. When there is no doubt about the most efficient solution to meeting a certain performance standard, a design standard is an obvious policy choice.

When doubts exist about the most efficient approach to meeting the set performance standards, design standards specifying technology type are likely to cause misallocations of resources. Firms in similar industries have different least-cost solutions to the reduction of discharges, and a fixed standard is probably very inefficient if BAT is not clearly defined. When design standards have not proven to be effective in practice, the problem has usually been found to lie in the area of monitoring and enforcement, not in the standards

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<sup>94</sup>U.S. Congress, Office of Technology Assessment, *Facing America's Trash: What Next for Municipal Solid Waste*, Washington, DC, 1989.

themselves. If these problems are to be addressed, then the efficiency gains may be lost in the administrative costs.

The optimality of this approach needs to be questioned when there are potentially strong variations in the cost function of the players being regulated. The implementation of a set design standard would generate a very inefficient situation if the legal liabilities of adopting different measures are high. This would create a situation similar to what exists today with the EPA and the reclamation of contaminated Superfund sites. The owners of these sites will tend to go with the more expensive approach recommended by the EPA to gain that legal shield from further lawsuits, resulting in a stifling of innovative, potentially cheaper, but less-proven methods of cleanup. In this situation, the degrees of freedom available to polluters and owners decrease to almost nil.

#### **4.4.5. Bans on Products and Processes**

This type of regulation is probably the strictest form there is, but may overall be the most efficient. The direct result of a ban on a product or a process is creation of a search for an alternative by the producers and consumers. Enforcement costs of bans by regulators tend to be low, as the sources of products can, usually, be quickly identified with consequentially higher probability of fines for those who violate the ban. Furthermore, the shift of responsibility to consumers and producers will force them to fully internalize the costs of the ban and make appropriate choices based on their cost functions.

These bans are usually most efficient when there are close substitutes at low additional extra costs, as in the case when CFCs were banned, and other propellants took their place. This has been an option that is gaining popularity in the U.S. as well as Europe due to the presence of close substitutes, and the ability of the existing information gathering system to detect very quickly whether a ban has been broken. The use of this regulation, though, has been predominant in the elimination of highly toxic discharges, or in the banning of development of certain environmentally sensitive ecosystems.

#### **4.4.6. Collective Facilities**

Collective facilities are a market aberration in that their existence is governed by government intervention in a potentially profitable enterprise. In an ideal world, where property rights have clearly been allocated, monitoring of violations of those property rights is easily done, and all externalities are reflected in product costs, the market would surely create these facilities. Unfortunately, privately-owned facilities to deal with potentially

profitable issues may not materialize if the administrative complexity is too high, with correspondingly high costs.

If the issue involves a pure public good, the "free-rider" problem may be large enough that the economics of the issue would shift the profitability equation. In such situations, the government may choose to provide collective facilities, where no act of regulation is required. The provision of wastewater treatment plants as well as sewers to connect them is just such an example, where the government deals with the free-rider problems through the use of inefficient real estate and effluent volumes taxes. In situations where the government can clearly identify a polluter whose effluents' toxicity is much higher than the rest, then the potential for implementing direct charges is possible, resulting in a locally optimum solution.

The listing of all the actual and potential applications of these instruments would serve no purpose at this point. What this section has attempted to do is to present the general regulatory tools that have been used, along with an overview of some of the relevant efficiency concerns. The question as to which is more appropriate in what context will be addressed later on, when these approaches will be contrasted with the use of economic instruments to achieve environmental quality goals. In the end, our focus will be to understand which of these approaches are the most relevant to developing countries.

#### **4.5. Argument for EIs**

The economic theory behind the use of these instruments has been in development for over two decades, and has reached a high level of sophistication. Perhaps reflecting the level of urgency in dealing with environmental problems, as well as the apparent failure of other control mechanisms, EIs have moved from the realm of curiosities in academia into the regulatory marketplace. They are now being used in limited fashion to help redress certain perceived failures in the pricing mechanism of producers.

Until recently, the environment has often been viewed as a receptacle for pollutants at a negligible price. It was regarded as common property, property to be used by all without a charge being levied, a "zero-price good" in economic terms. The institutional structure in place was not sophisticated enough or did not have the willingness to put a price on environmental degradation, providing for a discrepancy between private costs<sup>95</sup>

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<sup>95</sup>Private costs are those factor inputs evaluated from a single activity's point of view.



and social costs<sup>96</sup>. This discrepancy would eventually lead to a sub-optimal allocation of capital, production factors, labor, and environmental common property<sup>97</sup>. With no charge being assessed to the use of the environment, opportunity costs cannot be fully appreciated, as in the case of air pollution. In this situation, experienced by many Los Angeles and Athens residents, the opportunity cost of air as a receptive medium for pollution is the health damage resulting from that generation of pollutants. This opportunity cost is not reflected in the price of gasoline of cars.

The discrepancy between private and social costs is important because the price of goods does not always reflect all social costs that come about during production. This implies that goods with high negative environmental effects do not reflect these effects in their cost structure. The resulting market prices are therefore too low from a social perspective. The exclusion of the effects from the product cost structure results in two allocation effects<sup>98</sup>:

- i) The zero price paid for the environment leads to an overproduction of ecologically harmful products
- ii) The common property resource is overused, resulting in environmental degradation.

Economic-based environmental policies provide mechanisms for producers to communicate the full social costs of products to consumers. They force producers to incorporate all the "externalities" involved in the production of a good, resulting in more optimal allocation of funds by consumers due to the presence of a more efficient market. These principles were reflected in the "Polluter Pays Principle" adopted by many nations.

#### **4.5.1. The Polluter Pays Principle (PPP)**

While past economic incentive approaches were considered to be licenses to pollute or were dismissed as being impractical<sup>99</sup>, they have now become the focus of attention in many of the OECD countries.

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<sup>96</sup>Social costs are the aggregate of all economic costs for a single activity, including those negative externalities from other units within an economy, such environmental degradation, and remediation costs.

<sup>97</sup>Horst Siebert, *Economics of the Environment, Theory and Policy*, Springer - Verlag Berlin Heidelberg, Germany, 1987.

<sup>98</sup>Horst Siebert, *ibid.*

<sup>99</sup>Hahn, Robert W., Stavins, Robert N., "Market-Based Environmental Regulation: A New Era for an Old Idea?", *Ecology Law Quarterly*, Vol. 18, No. 1, 1991.

Over the past twenty years, the OECD membership has used a variety of policy instruments to protect and conserve the environment. They have used command and control (C&C) instruments as well as economic instruments to effect changes in pollution practices, with varied success in each of the areas. The aim of the EIs used was to affect the costs and benefits of alternative actions available to the polluting agent, providing them with a rational reason to choose those actions that are less environmentally polluting.

As environmental policies were formulated in the early 1960s, the principle that polluters should pay, better known as the Polluter Pays Principle (PPP), emerged. The basic tenet of PPP is that the price of a good should reflect fully all costs associated with production, be they raw materials, air quality, or disposal charges. The PPP seeks to internalize all the costs associated with creating a final product. This cost internalization would permit the efficient functioning of economic markets through the use of correct end price signals. In the absence of this internalization, resources become free, and can therefore be wasted, degraded, and destroyed.

PPP is becoming the most widely formally accepted principle to dealing with pollution control. In 1972, the OECD council recommended that PPP become one of the fundamental principles of pollution control in member countries, a recommendation that was adopted in 1975 by the EC. In 1989, the OECD adopted a recommendation to apply the PPP to accidental pollution, linking economic principles to legal principles relating to damage compensation<sup>100</sup>. As of now, the principle is implicit in most of the laws being passed, but its interpretation for application under similar environments still differs grossly from social context to social context.

The main difference between regulatory instruments and economic instruments is that in the former case, there is no other choice left to the polluter: he must comply or face a slew of judicial and administrative procedures against him. EIs, on the other hand, leave actors free to respond to the economic stimuli, be it positive or negative, in a way that maximizes their own utility. The definition of a pure EI is that which "provides, for the purpose of environmental improvement, monetary incentives for voluntary, non coerced action by polluters<sup>101</sup>." This instrument rarely exists in its purest form, since its existence rests on a complete pricing of all environmental goods, which is clearly not a stage we have reached. Invariably, EIs have been combined with RIs to various extents, thereby causing some definitional problems.

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<sup>100</sup>OECD., *The State of the Environment*, OECD, Paris, 1991.

<sup>101</sup>OECD, *Economic Instruments for Environmental Protection*, OECD, Paris, 1989.

#### **4.5.2. Definition of Economic Instruments**

The dividing line between regulatory instruments and EI cannot be drawn easily by using one all-encompassing definition. Instruments that are clearly economic in their nature have been defined as C&C instruments, while other C&C instruments have been coined as economic in nature. The purest definition of an economic instrument would look at the behavior of a targeted group caused by modification of the costs and benefits, as assessed by that group. Another definition include the involvement money, whereby the term "economic" translates into a financial impact on the polluters. While the intent of EIs is to reduce pollution and improve environmental quality, many proposed instruments do not generate any gains, as in the case of emissions trading permits. In other cases, there may be an overlap between C&C and EI instruments when market creation efforts are seen as institutional arrangements to influence environmental quality changes indirectly in relation to economic behavior.

EIs have come to mean different things to different people. The approach taken by the OECD was to enumerate the qualities associated with an EI and use that list as the litmus test. The common elements to EIs are<sup>102</sup>:

- i)* The existence of financial impact on producers or consumers
- ii)* The possibility for voluntary action
- iii)* The involvement of government or related authorities
- iv)* The intention of directly or indirectly maintaining or improving environmental quality by applying the instrument.

While the above list can tell us whether an instrument can be defined as economic or not, it cannot tell us which types of instruments would be most useful in a certain context. Furthermore, it does not tell us how to go about setting the cost structure of the instrument. These two components are the most important ones in the creation and application of an EI.

#### **4.6. EIs in Practice**

There are five broad categories of EIs used: 1) charges, 2) subsidies, 3) deposit-refund systems, 4) market creation, and 5) financial enforcement. These categories should be considered very broadly as they may overlap in some cases. Various forms of these

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<sup>102</sup>OECD, *Economic Instruments for Environmental Protection*, OECD, Paris, 1989.

instruments have been proposed by the OECD<sup>103</sup>, US Office of Technology Assessment<sup>104</sup> (OTA), US Congressional Budget Office<sup>105</sup> (CBO), and the United Nations Conference on Environment and Development (UNCED). Furthermore, various US state-level agencies, as well as European state-level ones, have made proposals that combine elements of the individual instruments. What is presented is a summary of those instruments, somewhat heavily biased towards the area of solid waste management (SWM), due to past research in this area. Figure 1 shows some of the tools used in OECD countries, demonstrating the prevalence of charges as a revenue-generating instrument.

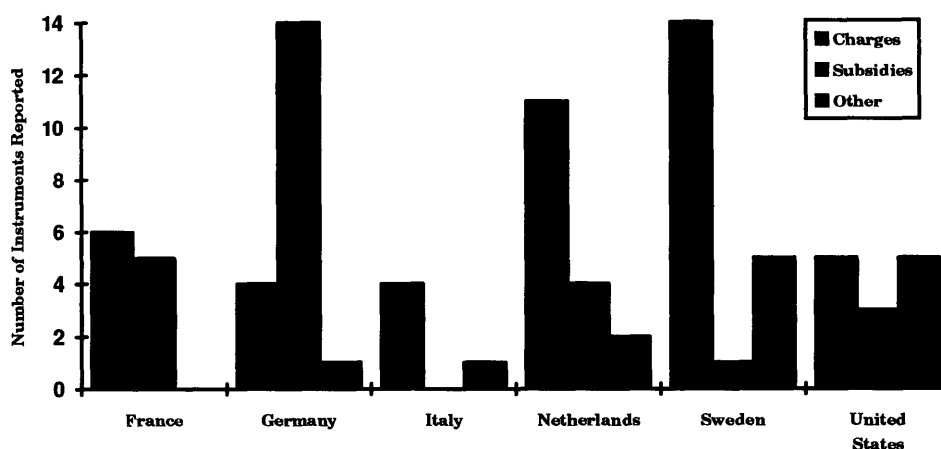


Figure 1: Economic Instruments in Operation (1987)<sup>106</sup>

#### 4.6.1.Charges

Charges are fees that polluters have to pay for their right to discharge environmentally degrading products into the ecosystem. In theory, charges should be set at a level that reflects the true cost of environmental degradation or, alternatively, at a level that will reflect the future remediation costs. Economists would describe this level where the marginal cost of generating one extra unit of pollution is equal to the marginal cost of one extra unit of pollution control<sup>107</sup>. For this approach to be efficient from a social

<sup>103</sup>OECD, *Economic Instruments for Environmental Protection*, OECD, Paris, 1989.

<sup>104</sup>U.S. Congress, Office of Technology Assessment, *ibid.*

<sup>105</sup>U.S. Congressional Budget Office, *Federal Options for Reducing Waste Disposal*, U.S. Government Printing Office, Washington, DC, 1991.

<sup>106</sup>OECD, *Economic Instruments for Environmental Protection*, OECD, Paris, 1989.

<sup>107</sup> Edwin Mansfield, *Microeconomics: Theory and Applications*, Fifth Edition, Norton, 1985.

perspective, the charges incurred by the polluter would be earmarked to the rectification of his damage.

**Table 1: Application of types of charges in various OECD countries**

Country	Type of Charge							
	Effluent				User	Product	Administrative	Tax Differentiation
	Air	Water	Waste	Noise				
Australia		X	X		X		X	
Belgium			X		X		X	
Canada					X			
Denmark					X	X	X	X
Finland					X	X	X	X
France	X	X		X	X	X		
Germany		X		X	X	X	X	
Italy		X			X	X		
Japan	X			X				
Netherlands		X	X	X	X	X	X	X
Norway					X	X	X	X
Sweden					X	X	X	X
Switzerland				X	X			X
United Kingdom				X	X		X	X
United States			X	X	X		X	

Under the charges banner, five main systems were proposed:

- i) *Effluent Charges* are paid on outputs into the environment and are based on quantity and/or quality. These are similar to the unit-based system discussed in the CBO study.
- ii) *User Charges* are payments for the cost of treatment of effluents.
- iii) *Product Charges*: are similar to effluent charges but apply to products.
- iv) *Administrative Charges*: are payments for government services such as regulation enforcement, permits, and registration of chemicals.
- v) *Tax Differentiation*: targets specific products of processes leading to "more favorable prices for environmentally friendly products."

#### 4.6.2. Subsidies

In general, when discussing economic instruments, subsidies are any regulations that translate into some form of financial assistance. The regulation or instrument does not have to bear that name, or act as a direct transfer of funds, but the result must be that a financial benefit would be forgone if the instrument is not applied. It is usually provided to polluters to alter their behavior or for the purpose of helping firms facing difficulties in complying with certain regulations.

- i) *Grant Funds* are a non-repayable type of financial assistance that constitute the commonly understood subsidy term.
- ii) *Soft Loans* are loans priced below what the market would otherwise price them at. This is also a subsidy as the government is foregoing a certain cash flow which has been transferred to the instrument user.
- iii) *Tax Allowances* take on a variety of forms and shapes. They can range from tax exempt bonds to accelerated depreciation schedules. This instrument affects the bottom line directly while *tax differentiation* works by increasing targeted products' market price relative to similar goods that are viewed as environmentally friendly.
- iv) *Procurement* programs provide for certain price premiums for items made out of recycled materials, or products using new, but more expensive, "environmentally friendly" technology.

#### 4.6.3. Deposit Refund Systems

A deposit refund system is a modified charge system that specifically targets consumers of easily transportable products. A charge is placed on the product at the time of purchase, a charge that can recuperated by returning the product at the end of its useful life. Table 2 shows some of the areas of application of deposit refund systems. The success level varies substantially, as a function of the value of the deposit. The higher the deposit, and consequently the refund, the higher the success level. In general, these programs capture between 70% and 90% of targeted containers and appear particularly effective in reducing litter<sup>108</sup>.

**Table 2:** Types of deposit refund systems in use (1987)

	Denmark	Finland	Norway	Netherlands	Sweden	United States
Containers	X	X	X	X	X	X
Car Hulks			X		X	
Batteries						X
Tires						X

The effectiveness of this instrument has to be considered in avoidance terms, that is, the avoided cost of littering and waste disposal. Since many of the returned goods are

<sup>108</sup>Franklin Associates, Ltd., *The Role of Beverage Containers in Recycling and Solid Waste Management, A Perspective for the 1990s*, final report prepared for Anheuser-Busch Companies, Inc., Prairie Village, Kansas, April, 1989.

recyclable, there are further benefits that accrue from avoided resource depletion that need to be considered. Overall, this system seems to be efficient from both an economic perspective and an administrative perspective. From the administrative perspective, the costs of maintaining this system are low due to its decentralized nature, as well as the incentive structure, which is aligned with the goals being sought.

#### **4.6.4. Market Creation**

The term "market creation" may be misleading as to the true intent of this instrument. The intent is to create artificial markets where polluters are provided the ability to buy and sell pollution rights allocated to them by the government. The following forms have been used, but other forms can be created to reach a more efficient process of pollution control:

- i) Emissions Trading:* implies the trading of excess polluting capacity. This instrument implies that there is a limit set by a government agency, and producers that pollute less can earn a profit, giving them a competitive cost advantage.
- ii) Market Intervention:* implies that the government will intervene if market prices of certain secondary materials fall below a certain price.
- iii) Liability Insurance:* Establishing liability of polluters for remediation or damage may lead to the creation of a market in which risks of polluters are transferred to insurance companies. This is a concept similar to car insurance where drivers representing higher risks paying higher premiums, resulting in a cost disadvantage.

#### **4.6.5. Financial Enforcement Incentives**

This category can be thought of as a regulatory instrument if it were not for the direct financial consequences to the producers. This system should be considered when the economic models of the company as well as the enforcement context make it so that non-compliance with regulation is a seriously considered alternative.

*Non-Compliance Fees:* would be imposed when polluters do not comply, and would be based on the profits made through non-compliance. Such a system has been attempted in Sweden, but only six cases have been brought to court, and only two pursued successfully.

*Performance Bonds:* are bonds paid to authorities in anticipation of compliance, and would be refunded after the concerned entity has complied.

All of these instruments have been applied in one form or another, and the results from their application has been mixed. It is important to see the actual final form of these

instruments to understand the impact that they will have, and the compromises that they reflect. Subsidies, deposit refund systems, and financial enforcement incentives will not be presented with examples as they are very straight forward in their application. The other instruments show some variations and innovation in certain domains of application and should be highlighted. The two countries that will be highlighted will be the United States and Germany, as they have been the most innovative in the areas of using charges and creating markets. In the case of the US, the major focus has been on regulations dealing with solid waste management, due to previous research on this subject, and the increased attention that this policy area has received over the last few years.

#### **4.6.6. Implementation of EIs in the United States: Federal Level**

SWM has been a concern that has usually been left to the States to deal with in the US. The main area of involvement has been that of hazardous waste, where the EPA has extensive authority under subtitle D of the Resource Conservation and Recovery Act (RCRA). In the 1970s, some activities to pursue the materials and energy conservation objectives stated in RCRA were undertaken. Most of the activities were centered around studies, such as the one by the Bureau of Mines addressing materials recovery in municipal solid waste<sup>109</sup>, and establishing information transfer programs to states, communities, and businesses<sup>110</sup>. These efforts have been minimal since the early 1980s, mostly due to President Reagan's policy of less government involvement .

Federal financial incentives to stimulate recycling activities and increase their markets have been limited. An investment tax credit for recycling equipment, with a total value of \$143 million, was made available between 1978 and 1983. The tax credit was used up completely, but it was not clear whether the investments that were made would not have been made otherwise<sup>111</sup>. In an effort to promote recycling, the Tax Reform Act of 1986 ended some disincentives to recycling by removing some preferential tax treatments for the timber industry and modified oil depletion allowances.

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<sup>109</sup>P. M. Sullivan, M. H. Stanczyk, M. J. Spendlove, *Resource Recovery from Raw Urban Refuse*, Bureau of Mines, Washington, DC, 1973.

<sup>110</sup>U.S. Environmental Protection Agency, *Resource Recovery and Waste Reduction, Third Report to Congress*, National Technical Information Service, Washington, DC, 1975.

<sup>111</sup>Environmental Defense Fund, *Coming Full Circle: Successful Recycling Today*, Environmental Defense Fund, New York, NY, 1988.



#### **4.6.6.1. Market Creation**

The federal government has created only two major markets: one in the area of cogeneration of electricity, and the other in the area of tradable emissions permits.

##### **4.6.6.1.1. Creation of Co-Generation Market**

The enactment of PURPA in 1978 was a major impetus to the development of waste-to-energy plants (WEP) in the 1980s and beyond. The legislation was explicitly aimed at correcting perceived inefficiencies in the electric utility sector, encouraging conservation of fossil fuels, reorienting electricity generation from large-scale centralized to smaller-scale decentralized plants, and enhancing equitable rate making for small power generators facing a monopoly<sup>112</sup>.

PURPA altered the nature of utility regulations by pricing energy according to the buyer's avoided cost rather than the seller's average cost. Incentives to develop energy-producing facilities would be driven primarily by the utility's avoided cost, defined as the incremental cost of alternative supply options. PURPA implementation has been delegated to the states, which are authorized to establish the procedures by which avoided costs are to be determined.

The effect of PURPA is clear when the percentage of plants producing electricity is examined. In 1983, only 8 of 49 (16%) plants produced electricity. This had increased to 60 of 120 (50%), with a high concentration in the Northeast due to the favorable waste disposal and utility avoided costs economics. With energy revenues typically representing 50% or more of annual project revenues, it is clear that many plants would not have been built without this guaranteed source of revenue<sup>113</sup>. With incineration taking on a larger role in SWM, PURPA has made this option even more attractive.

##### **4.6.6.1.2. Creation of Tradable Emissions Permits**

The creation of this type of marketable instrument in the US has to be examined within the larger context of the Clean Air Act. Concepts such as *bubbles*, *offsets*, and *banking* were introduced to find new ways of achieving more stringent air quality goals without causing undue financial strain on producers.

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<sup>112</sup>W. Meade, "Competitive Bidding and the Regulatory Balancing Act," *Public Utilities Fortnightly*, September, 1987.

<sup>113</sup>A. L. White, M. Zack, "Avoided Cost Pricing of Electricity from Waste-to-Energy Plants," *Energy Policy*, August, 1989.

*Bubbles* allow the relocation of emissions between point sources within a bubble as long as the total emissions under the bubble remains the same. Firms with multiple sites under a bubble can then regulate their emissions in the manner that is the most cost-effective for them.

*Offsets* permit the creation of new sources in areas of non-attainment of air quality standards, when the installation of a new source would entail the reduction in emissions from another source that is equal to or greater than the new source's contributions.

*Banking* provides perhaps an unprecedented level of flexibility for states to manage emissions in both space and time. *Banking* allows the storage of more-than-required emissions reductions, in the form of emission reduction credit (ERC), which is the currency of this trading system.

The combination of these three concepts has created a market in which environmentally effective producers can sell their ERCs to less efficient ones and benefit from that trade. In essence, companies will trade away their emissions until their marginal cost of emissions reduction is equal to that of the other players in the market. The results of this approach have been impressive in terms of efficiency, but not in overall improvement of air quality. Companies using this system have been able to find the new Pareto equilibrium points and have achieved the required levels of ambient quality at a much lower level of investment<sup>114</sup>.

#### **4.6.7. Implementation of EIs in the United States: State Level**

It is worthwhile to note that while the Federal government's involvement in State SWM issues is limited, many states also limit their involvement in SWM, and delegate the authority to the local communities. On the other hand, many states are also actively involved in all aspects of waste management, resulting in many successful implementations of many innovative programs. In Rhode Island and Delaware, the State governments take on a primary role in the SWM, leaving local governments uninvolved. In other States, counties and municipalities have primary responsibility for dealing with SWM, such as Arkansas, New York, and Washington<sup>115</sup>. In most cases, though, there is cooperation between the local governments and the State, a cooperation that can greatly improve SWM efforts.

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<sup>114</sup>OECD, *Economic Instruments for Environmental Protection*, OECD, Paris, 1989.

<sup>115</sup>Council of State Governments and the New York State Legislative Commission on Solid Waste Management, "Solid Waste Programs in the States," *Journal of Resource Management and Technology*, September, 1987.

States have been very innovative in their use of market-based instruments to affect consumer and producer behavior, but their scope has been very limited. When these instruments have been applied, except in a few cases, the results have been unclear.

#### **4.6.7.1.Charges**

Three major types of charge systems have been tested in the US. The first of these systems, unit-based pricing, has had very limited testing, while the second, user charges on landfilling, has been used to subsidize recycling programs, with the third being a tax differentiation scheme.

##### **4.6.7.1.1.Unit-Based Charges**

As many as 100 communities have experimented with unit-based pricing systems, but the majority of these communities are small. The majority of programs require households to buy special bags for waste disposal. Seattle, a city of 500,000, requires households to subscribe for several sizes of cans. In essence, volume is the determinant of cost for consumers versus weight or toxicity.

In those communities that have collected data, the impact has been significant, with a 2.2% decrease in volume in Ilion, N.Y., and a 1.4% decrease in Seattle for a 10% increase in waste collection cost. In Perkasio, Pennsylvania, a 10% increase in collection cost, combined with a free curbside recycling of newspapers, resulted in a 2.6% decrease in collection volume. However, there was a substantial increase in illegal waste disposal in all locations, reflecting the ease with which consumers will choose alternative solutions to their disposal problems<sup>116</sup>.

Furthermore, the cost of administering these programs is not known. There is no information as to the cost of providing these specialized bags or containers, the cost of changing the billing procedure, or the costs of the households to pick up these bags from supermarkets or town centers. All of these have to be better understood before the plans can be implemented on a large scale.

##### **4.6.7.1.2.User Charges**

In 1981, New Jersey started a voluntary recycling program financed by a \$.12 per cubic yard surcharge on all waste deposited in the state's landfills. Forty-five percent of the fund was to be used to reward communities that engaged in recycling programs, and could

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<sup>116</sup>U.S. Congressional Budget Office, *Federal Options for Reducing Waste Disposal*, Government Printing Office, Washington, DC, October 1991.

document these efforts on a residential and commercial basis. The remainder of the fund was to be used to help communities and private companies in establishing or expanding recycling programs, as well as in the promotion of educational programs<sup>117</sup>.

While the program did achieve a measure of success, it became evident that the 1986 recycling goal of 25% was not going to be reached. As a result of the inability of voluntary programs to reach the 25% mark, the state implemented a mandatory program where all 21 counties would establish plans for yard waste composting within six months and devise plans within two years for recycling three out of four of the following materials: glass, aluminum, paper, and plastic. The counties were further expected to conduct studies as to how to develop markets for these secondary materials in order to keep receiving state funding. The 12-cent tax was increased substantially, enhancing the appeal of state funding. The program created a 50% investment state tax credit with regards to the purchase of recycling machinery and/or recycled materials<sup>118</sup>.

The result of the programs have been remarkable, with seventeen of the twenty one counties having submitted plans and receiving state funding. While the total volume of recycled materials has more than tripled between 1985 and 1989, developing markets for the recyclable goods has proven difficult given the competition for these markets by neighboring states. In the case of paper, counties are having to pay \$40 per ton to have certain types of paper removed. This problem also arises in the area of plastic recycling as the regional plastic recycling capacity is limited.

#### **4.6.7.2. Tax Incentives**

While a variety of states have implemented tax-based incentive programs, the results have not been encouraging. In most cases, tax incentives do not appear to be major influences on business investment decisions and they do not necessarily lead to increased recovery of materials from wastes. In manufacturing segments using secondary materials, recent investment in facilities to process these non-standard manufacturing inputs has been very limited. It appears that in the longer term, the lack of investment is unlikely to be reversed by the small incentives brought around through state-level tax incentives<sup>119</sup>.

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<sup>117</sup>Barry G. Rabe, "Environmental Regulation in New Jersey: Innovations and Limitations," *Publius: The Journal of Federalism*, Winter, 1991.

<sup>118</sup>M. C. Vasuki, "Institutional Framework for Recycling: A Comparison of Two Systems," *Journal of Resource Management and Technology*, July, 1988.

<sup>119</sup>Franklin Associates, Ltd., *Economic Incentives and Disincentives for Recycling Solid Waste*, contract report prepared for the U.S. Congress OTA, Prairie Village, KS, April, 1989.

### **4.6.7.3. Market Creation**

Only one major type of market creation exercise has been undertaken at the state level: secondary product price guarantee (SPPG). The U.S. institutional structure, as well as the ease of shipment of waste across states, has made the implementation of state-level programs difficult due to the possibilities of disposal cost arbitrage.

There have been very few examples in which a state created a market buffering system to protect the price of secondary materials. One state that has attempted to do so is California. In 1987, California enacted a redemption law for beverage containers that requires the establishment of convenience buy-back centers for recycling. A processing fee associated with the program makes it unique in the realm of recycling programs. The State maintains price levels by having distributors pay a processing fee if the recycled volume is not high enough to keep recyclers in business. This fee is probably passed on to consumers, who can then redeem it at the buy-back centers.

The results of this program have been mixed, with recycling rates having gone up only slightly since its enactment. It is thought that the program's lack of success could be attributed to either its slow startup or its cumbersome administrative nature. There is criticism by local officials that if the administrative resources devoted to the program were directed at curbside recycling, the result would be a higher level of secondary materials collection. On the other hand, many States as well as the Federal government are expressing interest in the program<sup>120</sup>.

### **4.6.8. Implementation of EIs in Germany**

German environmental regulations are very similar to those of the EC. This is due to the modeling of EC regulations on German regulations, which implies that most EC directive and regulations have been implemented in Germany to a large extent. The difference between the German policies and the EC policies are the extent to which the Germans are willing to go with their laws. They are trying to fully apply the "polluter pays" principle to the actual producers of packaging, a policy that has not been tried in any other European country.

#### **4.6.8.1. Market Creation**

The latest legislation passed by the government puts the responsibility for minimizing packaging waste on the manufacturers and retailers rather than municipalities.

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<sup>120</sup>U.S. Congress, Office of Technology Assessment, *Facing America's Trash: What Next for Municipal Solid Waste*, Washington DC, October, 1989.

The law decreed that by 1995, 80 percent of waste plastic and paper packaging must be recycled with a maximum 40 percent to be recycled through incineration with energy recovery. The target for tin and aluminum is 90 percent<sup>121</sup>. This law has forced retailers, consumer goods producers, packaging manufacturers and waste management companies to collectively establish the Dual System, a nationwide collection and recycling scheme, which will run parallel to the existing waste disposal service operated by municipalities. This system will be financed through a small levy on consumer goods producers, equivalent to 2 pfennings per packaged item.

While this system has been in use for over two years, major difficulties have developed due to the oversupply of secondary materials combined with a lack of facilities capable of processing them. This caused the prices of secondary materials to lower to the point that the program has been operating at a loss since its inception. Furthermore, political difficulties have surfaced, as the packaging of imported products was not dealt with clearly, causing retailers to stop carrying products, and creating protectionist accusations against Germany by other EC member nations.

#### **4.7. Major Trends**

The limited implementation of EIs in developed economies seems to have been caused by a combination of factors. Two major issues mentioned earlier surface again, reflecting the dominant regulatory aspect of most approaches to environmental management: 1) the institutional structures in place, from regulators to environmentalists to producers, are much more used to C&C regulations and have developed methods to deal with them; 2) the level of our predictive abilities and understanding of causal relationships is still low enough, as demonstrated by the simplicity of environmental models used, that the practical application of these instruments is not feasible from an environmental management point of view.

This context would help explain a few observations that have been made relative to the application of these instruments in an OECD report<sup>122</sup>:

- i) Economic efficiency is not the driving goal of regulations, instead the revenue aspect of these instruments predominates.
- ii) EIs with complex multi-sectoral modes are met with resistance

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<sup>121</sup>Sean Milmo, "Who is Driving? The European Community Looks to Streamline Recycling Regulations, While Industry Tries to Beat it to the Punch", *Chemical Marketing Reporter*, Vol. 240, No. 11, September 9, 1991.

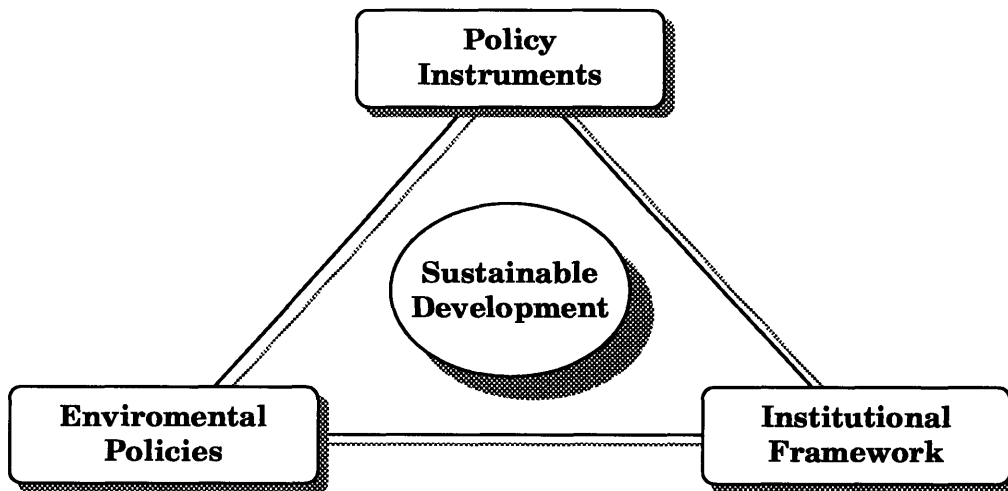
<sup>122</sup>OECD, *Economic Instruments for Environmental Protection*, OECD, Paris, France, 1989.

- iii)* Most EIs are implemented as adjuncts to RIs.
- iv)* Policy integration is accompanied by modification of regulations but is rarely accompanied by the use of the appropriate EIs.

Amidst this overwhelming apparent opposition, EIs are developing and being used in increasingly larger contexts. A few driving policy trends help explain the survival of this approach.

The first of these trends is that the reduction in government budgets as well as the multiple recessions that have hit world economies have increased interest in cost-effective alternatives to existing approaches. It is becoming clearer that complex human societal processes regulated by unidimensional standards of compliance yield low efficiencies. The rate of multi-sectoral and multi-disciplinary integration is increasing awareness among the players, and breaking down communications barriers. Finally, the transition from curative, i.e. ex post, policies to preventive ones is demonstrating substantial economic efficiencies. While the combination of these trends is further sustaining the development and implementation of these tools in developed countries, very little work is being done on understanding the application of these tools in the context of developing economies.

## 5. Case Study: Lebanon



**Figure 1:** The linkages between policies, institutions, policy instruments, and sustainable development

In the previous four chapters, the relevance of sustainable development (SD) to developing countries was highlighted in a variety of ways. We examined the policies of western institutions, their structure, the role of international organizations, as well as the types of policy instruments that can be used to achieve that goal. What we have not done is interpret these concepts in a country-specific context. This is the goal of this chapter. We will examine two sets of recommendations, one targeting institutional reform, and the other focusing on policy reforms. We will identify some of the weaknesses of these proposals and recommend some changes to them. In addition, we will make recommendations as to the type of policy tools that may be most appropriate for Lebanon in light of our recommended institutional and policy changes.



### 5.1.Environmental Institutional Framework

The demographics of Lebanon have a substantial effect on the development of governmental institutions. Lebanon's long history of sectarian aggression has influenced the way the government has developed the levels of delegation of responsibility as the clusters of population tend to be homogenous, except in the larger cities of Beirut and Tripoli. The Mohafazas represent a first-level effort at creating homogenous geographical subdivisions. The Cazas are just more of the same, with the municipalities representing the smallest subdivision possible. This clustering of population is reflected in the large numbers of people living in communities under 10,000 people (Fig. 2). About 43% of the population inhabits these small communities, with a majority of those living in communities of fewer than 3,000 people. This demographic distribution needs to be kept in mind as it has substantial repercussion on the potential responsibilities that these communities can absorb.

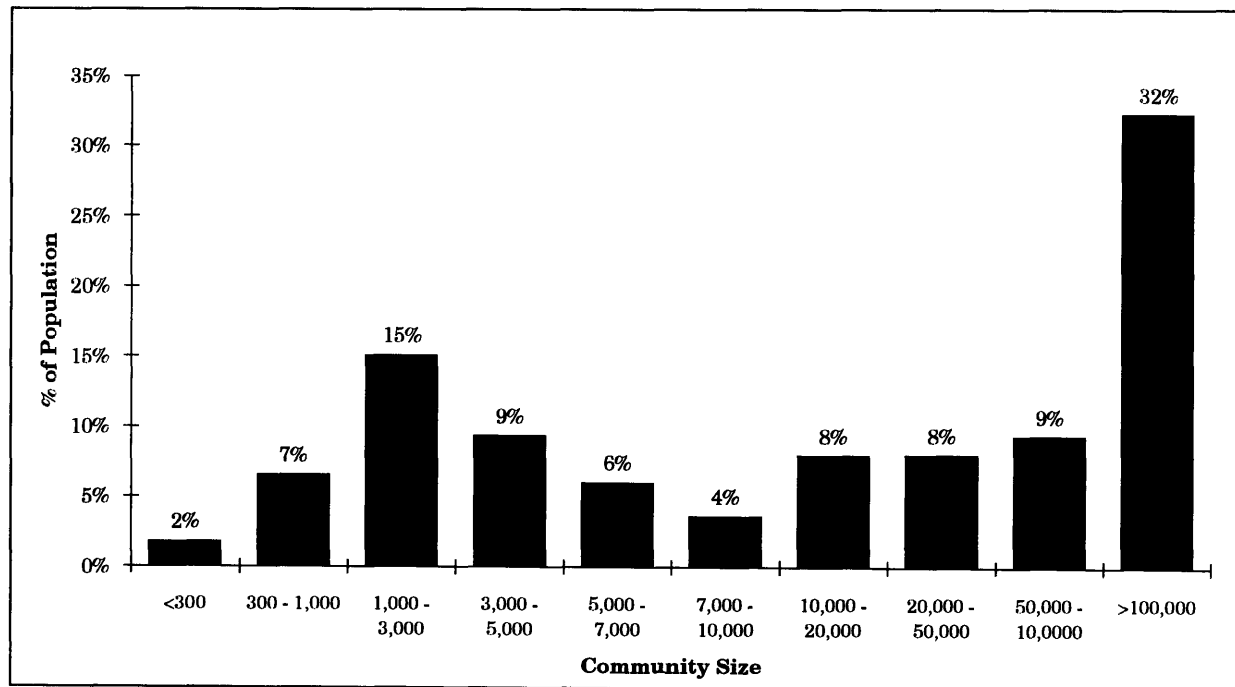


Figure 2: Distribution of population by community size

#### 5.1.1.Institutions of the Central Government

The administrative institutions of the central government consist primarily of the Secretary General of the Prime Ministry, along with the agencies and ministries in Table 1 that are attached to the Council of Ministers. The central government manages the nation with a two-tier approach. There are five Mohafazas that are made up of 24 Cazas, each

representing a different aspect of the central government. Associated with each Mohafaza are field units belonging to the Ministries of Interior, Finance, Health, Agriculture, Labor and Social Affairs, Public Works, National Education and Fine Arts, Telecommunication, Hydraulic and Electric Resources, and National Defense. The Mohafiz represents the national government administration in the region. The administrator of the Caza represents the same administration but at the Caza level. Associated with each Caza are field units belonging to the Ministries of Interior, Health, Agriculture, and Justice. The lowest level of government exists in the form of the municipality, which represents any community with at least 300 people. It is headed by an elected mayor, and enjoys vast jurisdictional authority over local affairs.

### **5.1.2. Other Agencies**

There is a number of autonomous or semi-autonomous agencies that exist in the country. The semi-autonomous ones include some of the public utilities, and those agencies dealing with very specific projects, such as the "Green Plan," and the "Litani Project." The more important agency from our perspective is that organization that has been created to cope with some urgent need, given that the need does not fall within the capability of any single industry. This agency would report to the council of Ministers, and can set its own salary scales, and position classifications. It can seek, receive, and disburse funds to ministries or other agencies and projects. These powers and responsibilities give it the role, according to CDM, "of a super ministry." One the most prominent of these super ministries is the Council for Development and Reconstruction. Similar agencies were created for the Airport, the "Litani Project," and the "Grand Project du Liban."

The level of autonomy available to those agencies varies. These agencies could be as independent as the Central Bank, which is virtually entrepreneurial, to the Litani Project, which cannot freely hire or fire, or pay sufficiently competitive salaries to retain the better qualified people. The problem of salaries is pervasive to the government, causing widespread corruption, and the loss, or more accurately, the inability to hire or retain personnel with outstanding qualifications.

Responsibility for environmental management is divided among the ministries, the municipalities, the Mohafazas, and the autonomous and semi-autonomous agencies in a manner that essentially precludes any effective effort from taking place.

**Table 1: Public Agencies and Ministries associated with Council of Ministers**

Public Agencies	Ministries
Central Inspection Board	Justice (MJ)
Civil Service Board	Foreign Affairs and Emigrants (MFAE)
Bureau of Accounts	Interior (MOI)
General Disciplinary Council	Finance (MF)
National Council for Scientific Research	Public Works and Transport (MPWT)
Council for Development and Reconstruction	National Defense (MND)
	National Education and Fine Arts (MNEFA)
	Public Health (MPH)
	National Economy and Commerce (MNEC)
	Agriculture (MA)
	Telecommunication (MT)
	Labor and Social Affairs (MLSA)
	Information (MI)
	Tourism (MT)
	Hydraulic and Electric Resources (MHER)
	Industry and Petroleum (MIP)
	Housing and Cooperatives (MHC)
	Environment (ME)

### **5.1.3.Environmental Functions - Municipal Level**

The following are excerpts from the laws that govern the role of the municipalities and their powers. Section 4: Extent and authority of Municipal Council

- Special regulations issued by the council are obligatory within the limits of the municipality.
- The municipal council has authority, among other things, to:
  - i)* Prepare the municipal budget.
  - ii)* Borrow funds for executing previously studied projects.
  - iii)* Determine municipal levies.
  - iv)* Prepare conditions of contract for supplies and public work office.
- Plan roads and streets in cooperation with the town planning office.
- Contribute to the funding of projects for public benefit.
- Follow up on the progress of public works and prepare reports regarding same to the concerned authorities.
- Governmental controls on Municipal Council decisions.

Authorities of the Chief of the Executive Council (Mayor) - Among others:

- Execute municipal council decision.
- Prepare municipal budget.
- Manage municipal funds.
- Represent municipality in court.
- Take all actions to protect the public from contagious diseases.
- Protect public comfort, safety, and health.
- Control traffic and facilitate pedestrian travel on roads and keep them clear of debris and wastes.
- Take preventive action against dangers of fire, explosion, and floods.
- Protect the environment, natural sights, historical areas, and prevent pollution.
- Give permits for excavation of public roads for installation of water mains, sewer lines, etc.
- Give permits to make connections to the public sewer after the applied fees have been paid.

#### **5.1.4. Ministry of Interior (MOI)**

The MOI is involved in the fiscal administration of municipalities, including the collection and disbursement of tax moneys. The ministry will aid the construction of sewers if the municipalities contribute 50% of the cost of the screened and approved project. The extent of this aid is limited, though, due to the portion of the budget allocated for this use. The MOI also serves as the liaison between the municipalities and the Directorate of Urbanism at the MPW, which has authority to do the surveying, the design, and the preparation of an estimate for municipal sewers.

#### **5.1.5. Ministry of Public Work (MPW)**

The ministry contains within itself the Directorate of Urbanism, which in itself contains the Department of Roads, Buildings, and Sanitary Engineering. It is the role of this department to conduct studies of sewage systems for cities and villages. These studies were to include the methods for the collection and disposal of wastewater and storm water, the planning of the sewage network, and solutions to the domestic solid waste problems. The department is supposed to prepare specifications, bills of materials, and certificates of payment, and to implement and execute projects. These activities cover about 450 communities out of 600. At the time of the CDM report (1981), the existing budget for sewer

construction was about LL. 300,000, (U.S. \$79,000), which supports a department chief, three engineers, four surveyors, two draftsmen, one secretary, and one receptionist.

Even though the role of the department is to implement and execute projects, the ministry itself does not build sewers. Its work ends with the completion of the design and the estimate of the cost, which are then turned over to the municipalities to deal with. Given the fact that the department has never publicized how municipalities would go about seeking their aid, it is not clear that their intention is to help all those municipalities that need their aid.

#### **5.1.6.Ministry of Housing Cooperatives (MHC)**

The MHC is the de facto provider of solid waste management facilities. Its role is to study and execute sewage networks and modern treatment works for municipalities in conjunction with the ministry of Housing and Reconstruction. It must be mentioned, though, that the MHC would only provide the facilities if the municipalities were able to supply 50% of the required funds, which few could. If the funds could not be provided, material and labor supplied by the municipalities were sometimes accepted instead of cash.

#### **5.1.7.Ministry of Hydraulic and Electric Resources (MHER)**

This Ministry consists of two Directorates: The General Directorate of Hydraulic and Electrical Equipment (GDHEE), and the General Directorate of Development (GDD).

The GDHEE is responsible for the implementation and provision of equipment for all projects related to water resources, as well as the maintenance of chlorinating equipment. The GDD is responsible for the management and operation of the facilities provided by the GDHEE, which it accomplishes using a number of national authorities to which are delegated the direct managerial responsibilities. This ministry has no involvement in solid waste, its main focus being water resource management.

#### **5.1.8.Ministry of Public Health (MPH)**

This ministry encompasses within itself the Department of Sanitary Engineering (DSE). Its role and responsibilities were established in Decree N0.8388 of 12/12/1961, and confirmed and amended in 1963. The legal responsibilities of the department are listed below:

- Reviewing the public health aspects and approving sewer network studies prior to implementation.
- Recommending actions to be taken to prevent pollution of water sources and food supplies.
- Controlling epidemiological programs.
- Maintaining a statistical division of public health statistics.
- Sampling surveys and bacteriological analysis of water sources and supplies, in coordination with the many water supplies authorities.
- Serving as technical advisor on the installation, maintenance, and operation of equipment affecting water quality.
- Supervising and operating a school for sanitarians in Tripoli, and conducting a rural sanitation program in the Caza of Akkar.
- Providing a public health representative in each Mohafaza.

In 1981, the department consisted of an experienced chief, and only two sanitary engineers.

#### **5.1.9. Ministry of Industry and Petroleum (MIP)**

The ministry is to abate any environmental pollution from oil and its derivatives, in cooperation of all other authorities concerned.

The existing system's weaknesses arise at both the national and municipal level. At the national level, they manifest themselves through the unworkable structure created by diffuse responsibilities accompanied by profuse laws and decrees. These laws and decrees have not been translated into a coherent set of standards and regulations due to the lack of an entity that has both the responsibility and the knowledge to perform the translation. The lack of a single regulatory entity, as well as the continuous shifting of authority, has eliminated the possibility of any long-term planning to evolve.

At the municipal level, the problems take on two dimensions: Scope and scale. Along the first dimension, it is clear the responsibilities given to the municipalities and their abilities to respond to them are not equivalent, by orders of magnitude. Many of the responsibilities given to the municipalities are better dealt with at a regional or national level. Water resource management, wastewater management, air pollution standards, etc. are all issues best resolved on a scale larger than a municipality.

The issue of scale is especially relevant as over 40% of the Lebanese population inhabits communities that are less than 10,000 people in size, with a heavy bias towards communities that are around 3,000 people in size (Fig. 2). If we assume a strong correlation between community size and municipality size, then it becomes clear that the majority of municipalities do not have the scale needed to take on many of their given responsibilities. The development of much of the required environmental infrastructure requires a permanent support base that is not cost-effective at the municipality level. Furthermore, there has been a long history of non-cooperation between municipalities which, if addressed, could have helped partially alleviate the problem. This leads to a clear conclusion that the present environmental institutional infrastructure is un-sustainable.

## **5.2. Analysis of CDM Institutional Recommendations**

In 1982, Camp Dresser & McKee, at the behest of the World Health Organization, the UNDP, and the Lebanese government, studied the development of a National Waste Management Plan that targeted five areas: 1) Wastewater management, 2) stormwater drainage, 3) solid wastes management, 4) water pollution control, and 5) waste reuse and reclamation. The report also included a report on the institutional studies that had been performed, and recommended some substantial changes to the existing system. However, the recommendation that was made suffers from some flaws that will have potential effects on the future development of environmental policy as well as the ability of Lebanon to respond to the environmental restriction put on trade and aid in the future.

### **5.2.1. Proposed Models**

In its final report on alternative institutional structures for environmental protection, CDM proposed four alternative models to help resolve the institutional issues, with the highlighted report being the recommended one:

- i)* Create an organization responsible for all waste management functions, including operation and maintenance, with local or regional offices directly responsible to it, both administratively and technically.
- ii)* ***Create an organization for all centrally exercised waste management functions, responsible for regulatory direction and funding control of local regionally representative operating organizations, and for assisting them technically.***
- iii)* Assign central policy-making, overall planning, standard-setting, and funding functions to one agency, and the responsibility of the implementation functions of facility planning, design, construction,

operation, and maintenance to another national agency, which would operate them through directly supervised local or regional offices.

- iv)* Separate policy, planning, and funding responsibilities from implementation as in *iii*, but place operating responsibility in the hands of locally or regionally representative organizations, which would be subject to the regulatory direction and funding control of the policy-planning-funding agency, and would be given technical and contracting assistance by the central implementing agency.

The recommendation of CDM, which is highlighted, seems to be a compromise to satisfy local politicians and was not made without political pressure to choose this structure over others<sup>123</sup>. The justification used by CDM for this recommendation was that an organizational arrangement including divided responsibility at the national level would be more achievable than one in which all the necessary functions and resources were combined under one umbrella. The distribution of bureaucratic and other benefits that accompany enhanced responsibility makes the separation of the policy-making and regulatory more politically palatable.

### **5.2.2. Comparison with EC and U.S.**

The critique of the CDM recommendation will be based on the lessons learned from examining the U.S. and EC environmental protection frameworks. This comparison is possible because the Lebanese system of environmental protection has hierarchical similarities to both the U.S. and EC systems. Lebanon is not a federation, though it behaves like one. The central government has sovereign authority over all aspects of government, but chooses to delegate many of those responsibilities to the Mohafazas, Cazas, and Municipalities. The role of the Mohafazas and Cazas in environmental protection seems unclear as most of the responsibilities have now been delegated to the municipalities. This creates a structure where the central government and the municipalities are equivalent to the EC and its membership, and the U.S. and its states (Table 2)

The CDM recommendation will be evaluated based upon the critical success variables of the U.S. and EC. The environmental institutional framework differences between the U.S. and the EC manifest themselves along three dimensions: 1) Integration, 2) scope, and 3) centralization. It is along those three dimensions that we will compare CDM recommendations *i* and *ii* and the U.S. and EC structures to ascertain which might be more appropriate.

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<sup>123</sup>Personal communication with one of the members of the CDM team that worked on the study.



**Table 2:** Similarities in government levels between Lebanon, the U.S., and the EC

Lebanon	European Community	United States
State Level	EC Level	Federal Level
Mohafaza / Caza / Municipal Level	State Level	State Level

*Centralization* is a function of scope and integration and addresses the ability of the environmental organization to make policies, set standards, and enforce implementation in a centralized fashion. The cross-sectoral nature of environmental problems dictate at this point, where this point refers to a time where affinity of local citizens to act in an environmentally benign manner is not elevated enough, that effective action be taken in a centralized manner to ensure inclusion of all relevant variables. The EC is the ultimate decentralized organization as, in general, it has neither the power to ensure implementation nor enforcement. Its role in most cases is to legislate through directives, which are macro-level declarations in many cases, which will be interpreted by the states in whatever manner is most suitable to them. The U.S. on the other hand is very centralized in the policy making and enforcement aspects of environmental protection, but also relies on the public's ability to press suit against agencies to whom it has delegated responsibility for implementation to ensure compliance.

**Table 3:** Comparison of CDM recommendation *i* and *ii* with the U.S. and EC institutional structures

Dimensions	CDM <i>i</i>	CDM <i>ii</i>	U.S.	EC
Centralization	Medium	Low	High	Low
Scope	Broad <sup>124</sup>	Limited	Comprehensive	Limited
Integration	Low	Low	Medium	Low

*Scope* refers to the issues that the institution has jurisdictional authority over. While the EC's environmental scope had grown substantially over the last two decades, it has diminished considerably with the signing of the Maastricht Treaty. The highlighting of

<sup>124</sup>Increased centralization will create the ability to manage environmental issues in a multi-sectoral fashion

the concept of "subsidiarity" relegated many issues to the country level and re-focused the EC's environmental role on the broader implications of sustainable development. The environmental issues it still has real powers to deal with after "subsidiarity" is taken into account are all trans-boundary in nature. On the other side of the Atlantic ocean, the U.S. EPA's scope has grown considerably since its inception. The issues it was legislated to deal with were expanded dramatically under CERCLA and the latest re-authorization of the CAA: Superfund remediation and the setting up of tradable permits now fall under its jurisdiction, providing it with more power than any other agency on the planet.

*Integration* refers to the ability of the environmental institution to address multi-sectoral environmental issues and manage them effectively. It also refers to the level of integration of this institution into the other sectors of government and its ability to impact decision making to generate sustainable development types of policies. The EC has just adopted the concept of sustainable development and made a firm commitment to support it within its legislative abilities, but lacks in many cases the ability to act at the local level. The U.S., on the other hand, has not made as specific a declaration, but all of the EPA's efforts seem to be geared towards producing such policies, i.e. risk reduction, waste minimization and prevention, and recycling.

The effectiveness of institutions is not only dependent on their placement along the three dimensions, but also on the level of environmental concern that exists in a country. The U.S. has what can be considered a moderate level of concern for the environment while Germany has an extremely high level. The shape of the environmental institutions that have evolved in each context is very different but both of these institutions' effectiveness is considered to be high. In the U.S., the EPA is highly centralized while in Germany, the FEA's mode of operation is very diffuse, with implementation and enforcement left to the German states in many cases, or to the relevant ministries. The high level of concern permeates the decision-making process at all political levels in Germany, permitting this decentralization of decision making. In the U.S., that is not the case, as many states would happily trade-off the environment for industrialization, which is a mindset that is very similar to that of developing countries.

CDM recommendations *i* and *ii* fall short of proposing the comprehensive changes needed to deal with the environment in a sustainable development manner. The major benefit derived from CDM *i* and *ii* lies in the centralization of the policy making, regulating, and funding into one agency, a model which is very similar to the EPA model. This will create an agency that can build the necessary capacity to enter into a dialogue with international agencies to seek their help. The centralized aspect of this agency will permit

it to develop a more complete approach to environmental management and deal with environmental issues on the scale needed to resolve them effectively. The major difference between CDM *i* and *ii* lies in the manner of implementation of plans and policies.

CDM *i* is a much more structured model that centralizes all aspects of environmental protection and removes much local influence from interfering with regulation interpretation. CDM *ii* fails to recognize the political influence of local politicians on the regional authorities and leaves too much responsibility in their hands. If this structure is implemented, it can be expected that the poorer areas will want to promote industry at the sake of environment, and will not enforce and implement regulations in a satisfactory manner. As pointed out in the CDM report, it is much more economical in political terms to separate implementation from policy making, with the implication being we are trading off long-term benefits for short-term ones.

While the difference between the two models seems to be minor, one need only look to the EC and the U.S. to realize the effect differences in level of centralization. The effects of politicking over the years have weakened the EC governing structure to the point where it finally relegated most responsibilities to the states. The only ways that the wealthier nations of the EC, most of which can be considered environmental "leaders," have been able to move the poorer nations forward is through the use of subsidies or the threat of trade barriers. This dilution of the EC's power has continued to diminish the scope of activities it can undertake. In the U.S.'s case, the centralization of the many programs into the EPA has created a broad enough legislative base, letting the EPA expand its scope continually to address issues such as tradable permits and Superfund cleanups. Clearly, in situations where there is not a pervasive concern for the environment and there is a lack of a history of environmental integration into policy issues, as with Lebanon, a strong central agency is needed.

The limited scope of the environmental agency under both recommendations *i* and *ii* is another failure of the CDM recommendations. Most western agencies are realizing that environmental issues have multiple dimensions and need to be addressed in this fashion. The tradable emissions permits would not have been possible without the ability of the EPA to regulate across multiple counties and states. Furthermore, the disciplines used in EPA's management of air pollution range from emissions control to urban development to parking permitting. The management of wastewater treatment systems as well as the permitting required for the Boston Central Artery Project also required a mutli-sectoral approach, which the EPA had to manage. It is the EPA's ability manage across these sectors that is yielding more efficient solutions. The EC's scope, on the other hand, is limited by the

unclear authorities it has in this area, resulting in product based policies that seek to target issues one at a time. To increase its scope, the EC membership must give up some of their sovereign rights, or to accept the EC's recommendation acting as a coordinating body for the nations that make up the membership. Neither of these scenarios seem likely at the present time given the economic and political situation in the EC.

The nature of the Lebanese geography, its small size, and the variety of ecological zones that criss-cross municipal boundaries requires a multi-sectoral approach to environmental protection if any level of efficiency is to be achieved. The limited scope assigned to the agency does not promote the development of sustainable development policies that will be integrated into development programs. The scope of the agency, and the proposed title of "National Waste Management Agency" remove it from the realm of an environmental protection agency to that of manager of municipal works. If that was the goal of CDM, then that goal should have been stated clearly as it impacts the analysis of its recommendations. Given the lack of an existing environmental infrastructure to mimic some modes operation of sustainable development, Lebanon needs an entity that can operate across multiple levels. One of the key issues to be dealt with in the development of downtown Beirut is the issue of mobile air pollution. Resolving this issue requires the integration of urban development, transportation, emissions control, and monitoring expertise not only to come up with an appropriate resolution of the problem, but to also address the concerns of western aid agencies. The exclusion of important areas of pollution control from the scope of the regulating agency at this early stage will probably slow down the development of coherent regulatory frameworks and stymie the creation of sustainable development policies.

While integration is the last dimension of evaluation, it is the most important from a long-term developmental perspective. If it cannot be achieved at an early stage, Lebanon will not be able to assimilate many of the proposals of Agenda 21 and follow through on its sustainable development goals. Unfortunately, both CDM *i* and *ii* are lacking in this area. The approach taken by CDM is perhaps in the spirit of what was an old western style of environmental management. It not only eliminates water resource management and air pollution from its scope, it considers wastewater management and water pollution as separate issues that are not strongly interlinked. This sectoral approach goes against what is now being advocated by most western agencies, which is to look at problems from an ecosystem point of view, and manage it from that perspective.

As was highlighted in the CDM report, the existing status quo does not promote cooperation among ministries. This positioning among the ministries is not expected to

change in the future as it is caused by turf battles among ministers as well as the bureaucracies that might feel their authority usurped through cooperation. The question then becomes how to integrate environmental consideration into other ministries' activities? The U.S. system depends in many cases on the use of citizen suits to force polluters and agencies to live up to their mandates, as well as the regulatory requirement that an environmental impact assessment (EIA) be conducted by the federal agencies before major projects are undertaken. This approach forces the public disclosure of potentially damaging environmental effects and subjects the federal government to strong public pressure in those cases with negative environmental impacts. However, the federal agency does not need to get the EPA's permission to go on in those situations, as the policy for them is to conduct the impact assessment but not to stop in cases where impact is negative.

It cannot be expected in Lebanon that citizens will use the courts in the near future if such a means were available to them due to the lack of regulations to hold agencies responsible for the social, economic, and political climate of the country. Potentially, the only manner to enforce integration of regulations into all sectors of government is to link project approval to the development of EIA and prior approval of the environmental agency. In the absence of such a safety barrier, many projects would go ahead in the name of reconstruction, as they are now, with the environmental costs to be borne later. Personal conversation with members of the CDR has suggested that EIAs were not being conducted and were viewed as irrelevant as the focus was on "growth and development."

### **5.3. Analysis of MSE Policy Recommendations**

The CDM report was published in 1982, before the rise of environmental issues with global impacts. Given that periods' stage of development in understanding the social, economic, political, and environmental linkages, the report was not in a position to address them fully. It was not until 1992 that the Ministry of State for the Environment, at the request of UNCED, prepared a report on the environmental and developmental status of Lebanon. Discussion with several members of UNDP Beirut suggested that the MSE has not established any strong policies and its intentions were to use the report presented to the UNDP as a blueprint for its policy framework. The report, *Environment and Development in Lebanon*<sup>125</sup>, is a solid first step at developing an overall framework based on UNCED's Agenda 21. It contains a macro overview of the natural resources in Lebanon, the environment, the socio-economic framework as well as a sectoral analysis. The overview

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<sup>125</sup>Mohamad Fawaz, Hyam Mallat, Mohamad Khawlie, *Environment and Development in Lebanon*, Ministry of State for the Environment, Beirut, Lebanon, December, 1992.

created is essential in building a realistic action plan for sustainable development, which, unfortunately, the report fails to do.

The MSE focuses on the nine major areas: Sustainability, population, water, solid and liquid wastes, land use, food and agriculture, energy and pollution, bio-diversity, technology transfer. It is easy to see that the strategies and policies surrounding these area are not easily summarized, due to their encompassing nature, so they are presented in Appendix I. We will not specifically analyze each of the policies but will instead compare the general approach taken with what we have learned from analyzing the effectiveness of U.S. and EC policy approaches.

**5.3.1. Comparison with EC and U.S.**

There are three interlinked variables that have determined the success of policies in the U.S. and the EC: 1) scope, 2) incrementalism, 3) institutional linkage. Again, the U.S. and the EC have taken different routes due to their structural differences, and have achieved different levels of success. It should be noted that the EC's policy has shifted substantially post-Maastricht from a product-based strategy to an economic segment one<sup>126</sup>, a strategy whose effectiveness is still to be determined.

**Table 4:** Success factors in policy making and implementation

Variables	U.S.	EC	MSE
Scope	Sector <sup>127</sup> → <sup>128</sup> Industry <sup>129</sup> Based	Product ⇒ <sup>130</sup> Economic Segment Based	Sector/Economic Segment Based
Incrementalism	High	Low	Low
Institutional Linkage	High	Low	Medium

*Scope* has the same meaning in this context as in the institutional framework discussion. It takes on, however, a different perspective as it addresses not only the

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<sup>126</sup>Economic segments refer in this context to industry, transport, energy, agriculture, and tourism.  
<sup>127</sup>Sector refers to environmental sector such as air or water.  
<sup>128</sup>→ is a spatial transition.  
<sup>129</sup>Industry refers to a specific industry such as steel or chemical manufacturing.  
<sup>130</sup>⇒ is a temporal transition.

magnitude of the responsibilities of the environmental agency but also the direction of the approach taken to environmental management. In the U.S., Congress sets goals for broad environmental segments such as air, water, and land, goals which are then translated into regulations by the U.S. EPA. These regulations have tended to be industry oriented<sup>131</sup>. EC policy, on the other hand, has been much more product focused, and has achieved some success in those areas where there is consensus among the states that the product needs to be regulated, as with the production of titanium dioxide (TiO<sub>2</sub>). The U.S. approach is more expansive than the EC, encompassing it as a subset of the activities performed routinely. The EC regulates a single product at a time, which the U.S. EPA also does with many toxic materials, but the U.S. EPA also regulates the manufacturing processes themselves, which the EC does not have the authority to do. The U.S. approach seems to be more effective simply due to its broader scope, resulting in a broader coverage of environmental pollution issues.

*Incrementalism* addresses the speed and extent of new regulatory policy development relative to the existing base. The substantive U.S. regulatory body has grown in a steady but exponential manner over the last twenty years or so, while the EC regulatory system has not, resulting in a body that lacks depth and breadth. The steady development of the U.S. body has continuously created new administrative infrastructure to not only support new regulations, but to also further reinforce the implementation of the existing compliance system. Steady development of policies permit the administrative support systems to grow and assimilate fully their responsibilities, as opposed to large discontinuous jumps that tax their adaptive abilities and result in inefficient policy implementation.

Incrementalism strongly affects the development of *institutional linkages*, which addresses the compatibility of policies with the institutional framework that will ensure their implementation. In most cases, the U.S. EPA has had the necessary powers and resources to interpret and implement the policies promulgated by the U.S. Congress. The presence of strong technical capacity, resources for enforcement, and a strong political will has created strong linkages between the U.S. policies and environmental institutions. The EC, in comparison, did not develop strong linkages as it cannot directly enforce the policies and directives legislated by the Community. The delegation of responsibility to the member states has created a permanent discontinuity that cannot be reconciled except in those

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<sup>131</sup>E. Rehbinder, R. Stewart, *Environmental Protection Policy: Legal Integration in the United States and the European Community*, Walter de Gruyter & Co., Berlin, 1988.

situation where the focus of the legislation is extremely narrow and usually has a trans-boundary component, as with TiO<sub>2</sub>.

In comparison to the U.S. and the EC, we can see that the MSE report's scope is all-encompassing, assimilating both U.S. and EC philosophies into its approach. The comprehensiveness of Agenda 21 predicated this comprehensiveness in scope and supports the integration of these multiple segments and sectors into one framework. The approach to the problem is valid as demonstrated by the EC and the U.S. approaches, but the interplay of scope with incrementalism and institutional linkage precludes this approach from working in Lebanon.

Lebanon's general institutional framework is weak, with no across-ministries coordinating agencies and a nonexistent environmental protection structure. The report, however, proposes sixty major activities, all of which are slated to begin immediately. The problem manifests itself along the last two dimensions discussed: incrementalism and institutional linkage. The assumption will be made at this point that an agency with the sufficient resources will be created to deal with the environmental aspects of the policy action plan. Furthermore, it will be assumed that the agency will be centralized enough and its scope broad enough that it will be able to regulate across multiple sectors. Even with these two conditions satisfied, the chances of the recommended action plan being translated into effective regulation are small. The action plan requires this new agency to take on large responsibilities very quickly, develop the support mechanisms for the translation and implementation of policies, and to coordinate closely with other agencies regulating different segments. The incremental jump is too substantial to be effective and the institutional linkages are low due to lack of demonstrated coordination potential among agencies.

#### **5.4.Appropriate Policy Instruments**

Once the institutions have been built and the policies developed, the question then becomes which policy instruments to use to achieve the desired environmental goals. The two predominant approaches discussed were regulatory instruments (RIs) and economic instruments (EIs).

##### **5.4.1.Efficiency of Instruments**

The choice of the instrument should be determined predominantly by the six measures of efficiency highlighted in Chapter 4:



- i)* Static efficiency
- ii)* Information intensity
- iii)* Ease of monitoring and enforcement
- iv)* Flexibility in the face of economic change
- v)* Dynamic incentives
- vi)* Political considerations

The measures of efficiency in Lebanon for the near future should center around *ii*, *iii*, and *vi*. As the country stabilizes and the economy strengthens, the other efficiency measures can be included in the process of instrument choice. At this point in time, they take on secondary roles.

*Information intensity* and *ease of monitoring and enforcement* are the most important factors as they relate directly to the resources needed by the regulating environmental agency. In a developing country emerging out of war, the resources that will be dedicated to this agency will have to be used to their fullest. This means that the agency will have to choose those instruments that generate the highest values on *ii* and *iii*. Unfortunately, such measures will usually result in strong reactions from polluters, with consequential pressures on politicians to minimize the pain inflicted upon them. This is where the independence of the agency becomes crucial as some hard choices need to be made and the impact of *vi* upon decision making needs to be minimized.

In this specific situation, the EC and U.S. examples given in Chapter 4 can only guide us in the design and refinement of the instrument, not in the evaluation of efficiency. The economic and geographical context of Lebanon is very different from that of Germany and the U.S. as the monitoring infrastructure being developed, along with the legal repercussions of non-compliance, skew some of the resulting efficiency measurements. Furthermore, the political impact of environmental regulations with strong distributional tendencies can be weathered in German political circles but the large poor class in Lebanon may not deal with such measures with as much magnanimity. The weakness of the economy and governmental institutions, which undermines the success of any measure in western countries has to be addressed early on, and the leaders must choose whom is going to carry the burden of environmental protection. The choice of instrument is as crucial a component in environmental protection as is the choice of policies and institutions.

**Table 5: Policy instruments and their efficiency ratings on three measures**

Policy Instruments	Information intensity <sup>132</sup>	Ease of monitoring and enforcement <sup>133</sup>	Political considerations <sup>134</sup>
Design standards	Medium/Low <sup>135</sup>	High	Medium
Bans on products and processes	Medium	High	High
Collective facilities	Low	High	Low
Charges	High	Low	High
Subsidies in combination with other instruments	---	---	Medium
Deposit refund systems	Medium	Medium	Low

There are six policy instruments that seem to fit with the present combination of social, economic, and political factors: Design standards, bans on products and processes, collective facilities, charges, subsidies, and deposit refund systems. Other instruments were not considered as it was not believed that they would be effective, as with market creation and the use of performance standards. The judicial system in Lebanon is not stable enough to serve as a credible threat to violators, removing any real incentive for polluters to comply. Subsidies are included as an instrument due to the incentive structure that they provide but should not be considered a viable long-term option in a developing country with a weak economy.

The instruments presented are evenly divided between regulatory and economic instruments. Any of them could be applied to a variety of situations, but the key determinant of choice seems to be the political considerations. Both bans and charges will result in very high level of political response: bans will affect the purchasing patterns of consumers and the investment patterns of producers, while charges have strong negative distributional effects as they affect both the poor and the rich in an equal manner. Bans are potentially the most efficient tools from an administrative point of view as the required

<sup>132</sup>Low level of information intensity is better than high level.

<sup>133</sup>High level of ease of monitoring and enforcement is better than low level.

<sup>134</sup>Low level of political considerations is better than high level.

<sup>135</sup>Low if relying on the use of foreign design standards in conjunction with help from international institutions.

continual monitoring costs are almost driven to zero. Bans do require, however, a increased level of technical sophistication of regulators to propose substitute products or processes. This leads to the development of design standards policies.

Design standards have been used extensively in Europe and the U.S. as they represent a solution whereby compliance costs are borne by both the government (in the form of lower ease of monitoring and enforcement) and the producer (in the form of accepting stricter guidelines to work with). On the political side, design standards do not create much disturbance as they target producers specifically and are handled by the regulatory agency. It seems that the use of these standards gives producers enough flexibility that the effort to fight this approach does not seem worthwhile. The approach applies not only to production processes but to products as well. The U.S. and Germany both have laws that require the use of catalytic converters, and the U.S. requires the use of secondary treatment processes in all its wastewater treatment plants. In a context where there can be strong liability associated with the use of nonstandard approaches, this instrument can potentially stymie innovation and development of new processes.

Deposit refund systems have been previously used in Lebanon with some success in the area of glass beverage containers. The system was implemented without any regulatory requirements, demonstrating it as an economically viable instrument. This approach can be used, however, in a variety of other products such as car batteries and car hulks, but would probably require the regulatory agency to create the institutional support structure. The transaction costs in both cases mentioned are high due to the need to coordinate among car dealers, repair shops, and other agencies responsible for these wastes. The increased number of participants as well as the nature of the products involved, toxic in one case and bulky in the other, changes the mechanics sufficiently from those of the beverage container system so that the government must bear the facilitation costs.

The last approach, that of building collective facilities, has been favored in the larger Lebanese communities. Beirut, Tripoli, and Jounieh all have a well-developed, if aging, system of solid and liquid waste collection and disposal. These facilities have to be monitored just as well as private facilities, but the political benefits from building are substantial. While these facilities need to be constructed and the benefits will go the government, the ownership and operation of such facilities need not be left to government alone. The U.S. has seen the privatization of many of these facilities in the 1980s under the general deregulation and "less government" philosophies of the Reagan era, with the same being done for the city of Beirut in the area of solid waste management. The Beirut

privatization was a success as most of the administrative costs were eliminated by funding the project through an indirect general tax source.

### **5.5. Institutional Recommendation**

While CDM *i* is better than CDM *ii*, this alternative model is weak on each of the three variables mentioned before, and extremely weak when considered from a systems perspective. What is required is a true environmental agency that has the scope of an agency like the U.S. EPA, that is centralized like CDM *i*, and is integrated like some of the Scandinavian agencies.

The following recommendations are therefore being made to ensure what this author believes to be a sound development path for the future that does not sacrifice our long term environmental assets for short-term profits:

- i)* Follow through on CDM *i* in structure and in content
- ii)* Add the six sectors in Table 6 to the scope covered by the environmental agency
- iii)* Require the use of Environmental Impact Assessments on all projects, public and private, with veto power on the project by the regulating agency

The recommended changes relate to scope specifically, as it is assumed that the created agency will have the same powers as in CDM *i* and that it will be provided with the necessary funds and resources. It is recommended that in addition to the CDM proposed responsibilities, the agency be given five more areas of environmental management. These new areas of responsibility are based on the U.S. EPA's scope, and it is hoped that this increase in scope will force the integration of environmental concerns into other areas of government as many of their actions will have to be permitted through this agency. The level of centralization of this agency seems to be sufficient as long as the agency has the political power to act.

The terminology in the sectors contains the term "management." This was intentionally done to convey the understanding that the environment is not a product or some other uni-dimensional issue. It involves the balancing of multiple issues, not the least of which, in an aid recipient such as Lebanon, is the impact of a strong agency on World Bank, EC, and other agency grants and loans. As mentioned earlier, these agencies are becoming more aware of the damage they can cause through the mismanagement of development and industrialization. The creation of a strong centralized environmental

agency permits the focusing of foreign aid on capacity building, instead of creating a system of fund diffusion to those departments that seem to have some impact on environmental regulation. Furthermore, it provides one voice that can negotiate with these agencies on the many of environmental variables involved in any project of relevant size whose impact on its host eco-system may be negative. Most importantly, perhaps, it provides a coherent administrative framework that the foreign agencies can begin to trust to implement effectively the environmental management requirement upon which aid is conditional.

**Table 6: Management sectors to be placed under the new environmental institution<sup>136</sup>**

CDM <i>i</i> Recommended Management Sectors	Further Sectors to be Considered for Inclusion
Wastewater Management	Air Pollution Management ( <i>new</i> )
Solid Waste Management	Hazardous Materials Management ( <i>new</i> )
Water Pollution Management	Hazardous Waste Management ( <i>new</i> )
Waste Reuse and Reclamation Management	Pesticide Use Management
	Fisheries Management
	Water Resources Management

As with most effective agencies, this one must be allowed to participate in the policy formation process, as it is the source of technical knowledge and the bureaucracy that ensures continuity. Its participative role should be enlarged to the U.S. EPA's role and should adopt some of the characteristics of the European Commission in the policy initiation process. The policies that this agency will propose will usually affect the different ministries and regions of the country quite substantially, especially those that are heavily industrialized. If it is not supported strongly and is permitted to be independent to a high level, then it will most likely not be able to achieve its stated goals. This agency, as with the U.S. EPA (which is an agency of the executive branch of the U.S. government), must probably be attached to the COM and assigned powers similar to those of the Council for Development and Reconstruction. It needs to be created as a super ministry or it will become as ineffective as the EC.

<sup>136</sup>Based on the sectors covered by the U.S. EPA

**Table 7: Ministries and agencies with responsibilities and potential expertise in specific environmental sectors**

Sectoral Area	Agency or Ministry
Water	Ministry of Hydraulic and Electric Resources Beirut and Environs Water Authority Mount Lebanon Water Authority North Lebanon Water Authority South Lebanon Water Authority Bekaa Water Authority Litani Project
Solid and liquid wastes	Ministry of Public Works Council for Development and Reconstruction Ministry of Housing Cooperative
Food and agriculture	Green Plan
Land use (Agricultural)	Green Plan
Air pollution	<i>No indigenous capability identified</i>

### 5.6. Policy Recommendations

In our chapter on policy frameworks, we expounded heavily on the need for developing countries to adopt sustainable development policies. However, we criticized the MSE recommendation as being too much in too little time, bringing up the question as to where the middle ground lies. The linkage of policy and institutions makes this question difficult as it is the institutions that help identify issues and generate the policies, but the creation of policies also drives the creation of new institutions. The only way of addressing this problem is to stagger the adoption of sustainable development policies in a manner that permits the highest rate of institutional capacity building. This is the major weakness of the MSE report.

While it is possible at this point to propose an arbitrary staggering of activities, it is potentially more useful to suggest a short-term policy direction to be taken, and let the evolving environmental institution take on new responsibilities as it becomes administratively ready for them. The policies undertaken in the short term should match the environmental agency's jurisdictional scope, identified in Table 6. Of the ten sectors proposed, seven are not new to Lebanon, implying the existence of at least some minimal

level of expertise dispersed among the many agencies and programs. Once this expertise has been identified and relocated to the new agency, assuming it is supported with the necessary technical capacity, then policy development in that area becomes more relevant. It is at that point that prioritization of programs can be undertaken effectively, and the support structure developed.

Following this approach, we recommend that the following sectors be targeted initially as some level of expertise seems to exist in the agencies identified (Table 8). The approach strikes a needed balance between *scope*, *incrementalism*, and *institutional linkage*. While other policy areas such as population and energy are important, at this point they fall out of the scope of the environmental agency with respect to their developmental strategy. They must still interact with the agency, however, to secure the emissions permits for power plants and provide basic sanitary conditions for the population. With respect to prioritized policies, their incremental impact on existing administrative and technical capacity is manageable due to the pre-existence of a basic administration. The only sector that does not fit the same model is air pollution, whose capacity development must be undertaken due to the severity of the problem.

### **5.7. Policy Instruments Recommendation**

The instruments presented in Table 5 are all viable instruments within the general Lebanese framework, but the question as to which to use is linked to the stage of development of the institutional structure. In the early stages, the most appropriate instruments would be the ones that provide high ease of enforcement and low on information intensity: Collective facilities, design standards, and bans are such instruments. The use of collective facilities is advocated because the government has not created the environment whereby the private sector may be willing to invest in the development of such facilities and charge users for their use, as with wastewater treatment centers. The political and regulatory situation is in enough of a state of flux that the returns that investors would seek would not be feasible. In addition, the government has already embarked on such a course, demonstrating its willingness to accept this approach.

The second instrument to use in early stages of development is the creation of design standards. This option is feasible in early developmental stages through heavy reliance on the adoption of foreign standards, and the forcing local producers to abide by them. This should not sound unreasonable as the increased manufacturing costs that a producer a producer will face will not put him at a disadvantage; it will make him face the same costs as his international competitors. In a country in the early stages of industrial development,

the adoption to foreign standards will create a base of environmental protection that can be enhanced later on. In addition, it may serve to remove barriers to trade as the products produced may be very similar to local products due to adoption of the foreign standards.

Products and process bans are also viable options due to the extremely high ease of monitoring, detection, and enforcement. Local environmental agencies, per this recommendation, would have to rely on foreign aid not only for understanding what to ban but also in understanding the repercussions of such bans in different parts of the national system: banning of beverage cans may promote the use of "one-way" beverage containers that end creating more litter. It can be expected that such measures will generate pressure at both the local and international levels; the local pressure can be managed if the product is easily substitutable, but international pressure will be generated from exporting countries that may take this as a protectionist measure and retaliate. On specific product types, though, this may be the most appropriate instrument to use.

As both the institutional and policy structures develop, other instruments can be brought to bear such as charges, the creation of secondary products markets, and the use of financial enforcement incentives. These instruments will be brought to bear at the developmental stage when issues of efficiency begin to arise, and if the country stabilizes enough, this will hopefully not be very long into the future.



## **6. Conclusion**

The environmental issues that have emerged over the last decade and a half have forced policy makers to reconsider their priorities. Environmental problems do not lend themselves to the uni-dimensional analysis, forcing policy makers to re-evaluate past approaches to the management of development. Sustainable development has now emerged as the dominant developmental paradigm, reconciling the major contradictory forces of economic growth and environmental protection under its umbrella. Sustainable development relies on an appropriate and compatible set of institutions, policies, and policy tools. While these sets exist in some form or another in developed countries, developing countries have not been able to create that infrastructure, resulting in short-term-based tradeoffs of the environment to economic development and growth.

### **6.1. Conclusions on Lebanon**

This thesis produced a set of recommendations in Chapter 5 that addressed some of the institutional recommendations of Camp Dresser & Mckee (CDM), the policy framework presented by the Ministry of State for the Environment (MSE), and the potential policy instruments to use in Lebanon. These recommendations were based upon an analysis of U.S. and EC institutions, policies, and use of policy tools as well as the development of sustainable development concepts.

While both CDM and MSE were made with good intentions, they did not address the multi-sectoral nature of environmental issues. The linkages between policy, institutions, and policy instruments were not made explicitly, resulting in wide operational gaps between the two reports. The recommendations made in the case study are not intended to serve as the definitive answer. Instead, they are intended to generate closer examination of the process of environmental management in Lebanon. The first four chapters provide the reader with enough of a background so that the recommendations made become obvious in the context defined. The issues highlighted in the first four sections are by no means

exhaustive, but should help identify the major trends in environmental protection and its evolution and linkage to sustainable development.

What was clearly identified, though, is the need for change in Lebanon. The existing framework is clearly unsatisfactory, with substantial economic sectors unregulated. The government needs to give the environment due consideration, and not leave it as a secondary issue to be dealt with post-development. As demonstrated by the U.S. and Germany, the costs of reclamation are orders of magnitude higher than prevention. The tradeoff that the government needs to make is not between development and the environment, but between a certain rate of growth and the environment. Political pressure from the more disadvantaged economic sectors to increase growth need to be met with education as to the consequences of the tradeoffs that will be made.

The consequences of the absence of regulations and the government unwillingness to take action to develop strong regulatory plans are beginning to manifest themselves more strongly than ever before. Air pollution, which has never been strongly regulated, is beginning to cause serious deterioration of air quality in Beirut. It is expected that the situation will worsen as work in the downtown area begins, with potential repercussion on foreign aid. If the government thinks it will be able to address this problem in the long term, it need only look at Mexico City, Athens, and Rome to realize that the harm is not easily undone.

Lebanon can ill afford to have its environment deteriorate. Its water resources are scarce due to poor water resource management, and its seashore, once a substantial source of tourist revenue, has deteriorated steadily over the years. Agriculture, which used to provide 20% of the GNP, has seen that number fall to under 10%, and the lack of concern has permitted substantial areas to lose their topsoil. Overall, industries that have their basis in a high-quality environment represent a substantial portion of Lebanon's income, and the repercussions of mismanaging its water resources could have devastating ripple effects throughout the economy.

The present state of the government, in the reform atmosphere that prevails, should make it easier to implement the recommendations made. The Council for Development and Reconstruction has taken on a strong "super-ministry" role, and is able to devise plans and implement them much quicker than under the old bureaucracy. The rebounding economy is helping improve the state of most economic sectors, permitting a shift from a short-term perspective to a longer-term one. Perhaps most importantly, the Lebanese people that are able to pressure the government the most are beginning to pressure the government to take

action on the environmental front. It is up to the existing government to take the strong measures needed to ensure sustainability of the Lebanese economy and, more importantly, use sustainable development to advance Lebanon into the ranks of developed nations.

## **6.2.Areas of Further Study**

The recommendations made by CDM and the MSE highlighted some of the weaknesses in the body of knowledge regarding the process of developing an integrated environmental protection framework. These areas are institutional development and policy prioritization and should be the subject of further study.

While much research seems to have been done in the areas of efficiency enhancement of existing organizations, not much seems to have been done on the early developmental stages of these organizations. This issue is of great importance as most developing countries do not have a strong basic institutional infrastructure, much less any kind of environmental protection agencies. Western environmental protection agencies either evolved from the combination of other agencies, as with the EPA, or were created to develop the required environmental regulatory structure. There was already in existence a strong administrative backbone to which this agency could be attached. Developing countries are still developing this backbone, and in most case, it is too weak to support the addition of a multi-sectoral multi-disciplinary environmental agency. The question of how to achieve this concurrent development needs to be further studied.

The development of institutions goes hand in hand with the policy programs that these agencies are supposed to execute. The policy programs undertaken need to achieve two goals: 1) protect the environment, and 2) develop the agencies' capacity to further protect the environment. The comprehensiveness of the MSE plan (Appendix I) was its major weakness as it became very difficult to prioritize the various interlinked programs. Lacking more comprehensive data about the political situation, the future path of the government, demographic and social trends, it is impossible to prioritize in a rational manner. However, the availability of that data does not generate a solution immediately due to the weakness of prioritization frameworks.. The weakness emerges from these frameworks' reliance on cost benefit calculations that are uni-dimensional in most cases, whereas the issues addressed are rarely uni-dimensional in nature. The process of policy development and its linkages to institutional development are closely linked, and developing countries would benefit tremendously from further research into the operationalization of the general recommendation being made.

# **Appendix I: Strategy, Policies, and Plan of Action for the Environment in Lebanon (MSE)**

## **A. ENVIRONMENTAL STRATEGY**

### **SUSTAINABILITY**

Immediately tackle the environmental damage inflicted the last decades through a 5-years plan where government, industry and the community cooperate in capacity building to safeguard the Lebanese terrain and its resources in order to continue to sustain life for the coming generations. Empower an agency to monitor environmental affairs.

### **POPULATION**

Population strategy is at the interface between people and their environment. It requires a new look examining population dynamics in conjunction with other factors. The Government must secure the necessities of public health, promotion of a reliable model of human settlements, help fight against poverty, enhance the active role of NGOs and the participation of women, workers and trade unions in a framework of sustainable development.

### **WATER**

The key to water problems is in efficient use, i.e., proper resource management; this would provide quality drinking water to everyone, reduce a great deal of wasted water in agriculture, industry and household, and make fresh water bodies in nature available for all purposes.

### **SOLID AND LIQUID WASTES**

As wastes are the main cause for environmental pollution, their collection, treatment and sanitary disposal should be secured all over the country through a

comprehensive National Plan that emphasizes a shift from pollution control to prevention with sound waste management following the 4Rs: Reduce, Reuse, Recycle and Recover as best feasible by the year 2000.

## **LAND-USE**

Land is the basis of the Nation and only the legal authorities decide, in view of a comprehensive plan for public welfare, what is the best land-use. This will include protecting the natural, ecological and cultural components of the land. The authorities must also give directives in land-use that will secure current and future needs of the population, both rural and urban.

## **FOOD AND AGRICULTURE**

The country must re-emphasize developing its agricultural sector in a sustainable approach which will strengthen the national economy; it should secure an optimum level of food sufficiency for all, and develop rural areas to encourage local people to stay rather than leaving the land to urban complexes; women involvement in agriculture must be upgraded and helped through cooperatives and optimum technology; the exhaustive patterns of food consumption must be reoriented within the framework of sustainability.

## **ENERGY AND POLLUTION**

Seek a framework of a unified national energy grid in order for everyone to have secure energy needs within a system that integrates environmental and economic factors taking into account environmental damage, therefore applying cost effectiveness and reliance on local renewable less polluting sources rather than expanding on external ones.

## **BIODIVERSITY**

The human environment is part of a widespread ecosystem that must be preserved. The right to life of all species is essential and has direct value to humanity. Natural habitats inclusive of their life-forms must not be destroyed nor polluted. Biodiversity must be regarded as a useful resource for the benefit of present and future generations. Local groups and NGOs must cooperate with the Government to secure the above in Lebanon.

## **TECHNOLOGY TRANSFER**

The scientific and technological community has an enormous task for coming up with solutions to the many problems of today and tomorrow. The transfer of technology

could generate links between the scientific technological know-how and the decision-makers on one hand, and the public on the other, benefiting the community or the country at large. Therefore, there is a need to improve communication and cooperation between all involved, i.e., in the public and private sectors.

## **B. ENVIRONMENTAL POLICIES**

### **SUSTAINABILITY**

- Integrate environmental management into all programs through implementation of existing environmental legislation, plus updating and upgrading.
- Updating standards of living in rural and less fortunate areas (health, education, training, energy, women).
- Strengthen decentralization for all parts of the country to grow on market-economy basis.
- Legalize environmental protection of natural resources.
- Introduce environmental consideration and implementation in all policies on resources (physical and biological), on preventive measures, on accountability of damage (ppp), economic reprioritization with five principles: (1) Precaution (2) PPP (3) Cooperation (4) Comprehensive Approach (5) Environmental Impact Assessment (EIA).
- Incorporate more public and gender participation, at different levels, more effectively.
- Incorporate more scientific contribution, at different levels, more effectively, notably keeping up on information acquisition and updated statistics.
- Government optimization and conservation as exemplary to private sector.
- Increase and actualize more regional cooperation on all levels.

### **POPULATION**

#### **Dynamics**

- Improve and disseminate information concerning the links between demographic trends and sustainable development.
- Support the rural population and low-income families to an easy access to a system of family planning and education, to upgrade the role of women and youth in the society.

#### **Health**

- Secure the basic health needs of the society: first-aid, food, water and infrastructure for public health.
- Fight and eradicate diseases by securing normal access to disease prevention and vaccinations.

- Protecting the vulnerable categories of the society, children, women, and the old.
- Create and update a system of statistical information in urban and rural areas for health indicators, mortality, health of new-born, literacy, diseases, and other vital statistics.
- Reduce the risks for public health due to pollution and other problems, environmental deterioration.

### **Human Settlements**

- Promote town planning within a framework of sustainable management of land resources.
- Establish or actualize proper land-use of planning schemes.
- Establish a housing policy to provide houses for all categories of population and solve the problems of the displaced and refugees.
- Improve the management of human settlements through securing a proper environmental infrastructure (water, sewages, solid wastes etc.).
- Promote a new upgraded transportation policy and plan and, where possible, use new sources of non-polluting energy.
- Establish and apply new standards to take precautions against natural disasters like floods, earthquakes among others.

### **Consumption**

- Promote new consumption and production patterns which are in stream with sustainability.
- Encourage the population, especially new generations, to adopt a new style of life avoiding excessiveness and exploitation.
- Fight against poverty and improve low income revenues by an even spread of social benefits among the over-population.
- Increase the possibilities of jobs for low-income category by strengthening productive in-house sectors.
- Invest in human capital through programs and plans in rural areas and the homeless in cities, as well as women and children.

### **NGOs**

- Promote and strengthen the participation of NGOs as partners in the implementation of the National Agenda 21.
- Develop mechanisms to strengthen NGO's role and responsibilities in the spread of sustainable development among the public.
- Promote the particular capacities of NGOs especially in the fields of education, public awareness, public health, environmental protection and rehabilitation.

**Women**

- Implement recommendations of the Nairobi Conference concerning the participation of women in managing natural ecosystems and the struggle against the degradation of the environment.
- Increase the number of women involved in the processes of decision-making in the fields of environment and development.
- Formulate and apply a national policy concerning upgrading women's education, nutrition, health, and working conditions.

**Youth**

- Promote their access to education training, employment and better livelihood opportunities.
- Set up and upgrade existing national mechanisms including youth committees, task forces, etc., to promote dialogue with the youth. Implement programs in the areas of environment and development as they relate to children, in particular: health, nutrition, education, literacy, poverty, etc.

**Training and Information**

- Incorporate sustainable development concepts into all levels of education, through development of new and alternative teaching methods involving the community.
- Reorient education towards sustainable development particularly in basic learning, employing both formal and non-formal methods of communication.
- Promotion of public awareness through increasing public sensitivity to integrating environment and development problems.
- Establish advisory bodies to act as catalyst for the public on environment and development information.
- Promote a cooperative relationship with the media, entertainment and advertising industries initiating and strengthening dialogue to mobilize public behavior and change consumption patterns.

**Trade Unions**

- Trade unions must feature strongly in the quest for sustainable development.
- Trade unions should participate in local, environmental and developmental activities at all levels.
- Governments should ensure that trade unions participate actively in decisions on implementation and evaluation of national policies and programs on environment and development.

**WATER**

- Come up with a coherent administrative body and unified plan to implement water policies in a more integrated system and under expert supervision.



- Upgrade networks and install new ones independent from other infrastructure with full revision of public services to be offered only at competitive prices and the five principles (mentioned above).
- Price water at marginal cost but implement strict allocations with fees, fines and/or efficiency ratings for applications; upgrade service network.
- Regulate and/or make better control of natural wasted water, and introduce watershed management plans; install climatic monitoring stations.
- Groundwater pumping should be strictly regulated, controlled and fees, fines and/or ratings applied within differential and selective geographic areas.
- Strict control on water pollution, point source, non-point source, short and long run with enforcement of ppp.
- Incorporate the biosphere in the water balance notably for preserving forests, soil moisture or other water harvesting.
- Encourage, introduce and implement recycling, reuse of safe waste water and waste water treatment.
- Upgrade existing management personnel, reduce bureaucratic overlap, train new staff and increase effective control of local authorities.

#### **SOLID AND LIQUID WASTES**

- Establish an efficient Governmental unit with authority to functionalize the existing Master Plan, taking into consideration environmental safety and needs of the population, rural and urban.
- Support and implement the Basel Convention on transboundary pollution.
- Update and implement the Master Plan especially through upgrading of responsible local authorities.
- Establish standards, regulations and monitoring operations to safeguard air, soil, fresh water and the sea from wastes pollution effects with emphasis on prevention and the 4Rs: Reduce, Reuse, Recycle and Recover.
- Integrate the productive sectors and different social slices into sound waste management practices starting at the source through economic incentives, education and public awareness campaigns with application of the five principles: Precaution, PPP, Cooperation, Comprehensive Approach, EIA (Environmental Impact Assessment).

#### **LAND-USE**

- Establish the higher council for land-use to come up with a coherent National Plan on land-use taking into consideration the safety of the environment and socio-economic needs of the population.
- Open up legal local branches giving them authority to assure local compliance with National Plan, and train staff for that purpose.
- Update and upgrade legislature concerning land-use and assure legal implementation and compliance of projects development in rural, urban and coastal areas.

- Introduce and apply economic and tax incentives in implementing the National Plan as to give a certain flexibility to the citizen according to zonal categorization and transfer of rights of exchangeable use.
- Create experts subunits to survey local areas and make known to the public the benefits of land-use planning, charts and data on sectoral land classification in view of the characteristics of the land with special consideration to natural hazardous areas related to earthquakes, floods, mass movements and other disasters, or man-induced critical areas like sanitary land-fills or similar unhealthy environmental setting, and train staff for that purpose.

## **FOOD & AGRICULTURE**

- Directives to secure food sufficiency in the local products.
- Reorient emphasis for agro-export of competitive high-value products.
- Preserve remaining forests and start reforestation to at least 20% country coverage.
- Fight desertification and soil erosion, and stop urban encroachment on agricultural land.
- Strengthen institutional organizations and functions and integrate them with agricultural communities.
- Encourage the spread and upgrade the adequacy of irrigation methods for optimum water use and expansion of irrigated land.
- Secure credit to environmentally sustainable agriculture through agricultural cooperatives.
- Help establish a properly controlled market, domestic and foreign, for agricultural produce, including promoting agro-industries.
- Monitor and apply strict regulation on agro-chemicals.

## **ENERGY AND POLLUTION**

- Upgrade the existing network and services of the energy sector within a coherent plan linking the country in a single grid and secure energy to all areas but at priority allocations with fees, fines and efficiency rating.
- Utilize an energy system that depends on a logical energy mix (conventional and alternates) within a time-plan that depends less on the former while expanding the latter by 20% in the year 2000 and more onward to reduce overall pollution effects.
- Revitalize previous efforts encouraging and expanding use of solar, hydro and wind power sources in Lebanon, with public awareness campaigns and tax incentives, plus looking into biomass as additional alternative.
- Make final investigations on availability of conventional energy sources in Lebanon.
- Proper planning to increase energy efficiency in all sectors by 20%-30% through encouraging research, giving rebates and low interest loans.

- Apply immediate transformation in energy-source related environmental concerns including the fuel used in thermal power stations and in the transport sector and cutting/burning of forest areas.
- Apply immediate regulations and standardization on energy utilization-related environmental pollution concerns including industrial emissions, transport and urban pollution.
- Upgrade institutional and legislative energy-related aspects to cover monitoring on quality and pollution, enforcing regulations, public awareness and training.

## **BIODIVERSITY**

- Regard species protection as a moral obligation and biodiversity as a resource therefore promoting its sustainability.
- A comprehensive management of the ecosystem including measures to create an inventory of species, to protect them and secure their living space.
- Improve standards of living in rural, coastal and other areas where poor local groups are exploiting species for economic purposes, therefore preventing them from over exploitation and stopping the degradation of natural habitats.
- Develop an environmental bill of rights to legally protect all living species and strengthen wildlife law enforcement applying fines and strict penalties on offenders.
- Consider the wide ecosystem spectrum as an inherent part of EIA when exploiting resources.
- Increase participation of the public (local people, women, NGOs, scientists) in development planning, wildlife science and health research decision making and project implementation in matters relating to biodiversity.
- Create and strengthen links with regional and international community in actions and plans on biodiversity.

## **TECHNOLOGY TRANSFER**

- Implement long-term perspectives and integrate local and regional effects of environmental change into the development process.
- Implement long-term scientific assessment capacities at regional and local levels.
- Build up scientific capacity and capability in the generation and application of the results of scientific research for sustainable development.
- Promote guidelines concerning science and technology for sustainable development.
- Implement programs of global partnership with countries rich in biological resources to encourage local interest of such resources through shared biotechnology.
- Promote the development of sustainable applications of biotechnology through establishing appropriate national capacities and mechanisms.

- Promotion of codes of practice and guidelines in order for the scientific and technological community to best advise the development process.

## **C. PLAN OF ACTION**

### **1. Aim and Directives**

The main aim of the Action Plan is to allow the Government of Lebanon through National expertise and international help to rehabilitate, improve and maintain the environment of the country, and to manage its resources in a comprehensive approach seeking the collective interest at present and for generations to come.

The Directives of the Action Plan are:

- Assurance of a sustainable development for the whole country in both its public and private sectors.
- Upgrading, strengthening and creation of national capabilities and institutional arrangements for environment-oriented implementation of development projects notably the infrastructure.
- Upgrading and updating a comprehensive national environmental legislation to safeguard the country and to secure international cooperation on environmentally competitive basis.
- Developing and strengthening environmental management methods and personnel that suit the country through proper utilization of resources and maintaining the quality of life.
- Continuous monitoring and assessment of the state of the environment for the sake of the country, the region and the world.

### **2. Development of National Capabilities**

The sustainability of Lebanon can be achieved only through developing the National framework. This consists of self realization, awareness of the environment and commanding know-how, as obvious in the Aim of the Action Plan. The Directives outlined above also persistently call for assuring, upgrading and strengthening this National framework. Therefore, it becomes inevitable that for the Action Plan to succeed, the National capabilities of Lebanon must be developed. These capabilities are operations, processes, and functions or otherwise, that are obvious in the Work Program. They imply that every action or environmental situation must be planned and assessed properly; the on-going operations must be managed realistically which call for the availability of high standards institutions and legislation; and thus the necessity for availing qualified personnel through training.

## **2.1 Environmental Planning and Assessment**

By definition, sustainability deals with environmental problems and their solutions through a long-term approach. This imposes the urgency of having environmental and resource-information for a proper decision-making. Like the National Action Plan itself which tries to reflect current problems and project their future logical solutions, every action or environmental situation must be planned ahead. Environmental Impact Assessment (EIA) must become an inherent part of development projects at whole country scale thus serving immediate, intermediate and long-term effects. The lack of basic information is very critical for that purpose and therefore continuous monitoring and assessment of all issues relating to the quality of life in Lebanon must be done. Necessary equipment (networking and monitoring) must be secured for this purpose.

## **2.2 Management**

Sound management of resources and situations on a sustainable basis is the key to a sound environment. The Activities of the Work Program must have a good management component to ensure that implementation is environmentally effective. Environmental management takes into account the carrying capacity of the environment and the goals and economic plans of the country. Proper management must lead to a logical balance between natural resources, current needs and future projections for development.

## **2.3 Institutions and Legislation**

The decision-making process required for an effective implementation of the Action Plan as well as international cooperation necessitates the availability of environmental institutions and updated legislation. Both, at the public level, through a Ministry of the Environment aided by a permanently present National Council of the Environment in addition to local Municipal Environmental Units, and at the private level through a diversity of Non-Governmental Organizations, these institutions will review on a timely basis the progress of Activities and monitor their environmental effects. Again here, the necessary equipment (networking and monitoring) must be secured. Collaboration and coordination between several Government Departments is inevitable when it comes to environmental concerns, therefore legislative terms of reference must be well framed and structured for allowing this collaboration to be effective, as well assure enforcement of environmental codes and regulations.

## **2.4 Training**

All the preceding requires that National Expertise and knowledgeable man-power be available. The basic data for proper assessment and evaluation is lacking. The previous war conditions in the country led to the immigration of high-skilled labor as well as management and technical expertise. All the above must be regained, improved and maintained. Certain environmental areas must be professionally researched as they affect not only the local but also the regional and international communities. Therefore, training staff must be an ongoing operation at its different levels, from labor to management, from education to scientific research and from directing to legislating.

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